

Mcenter

Analyze MyPerformance /OEE

Operating Manual

Introduction	1
Fundamental safety instructions	2
Product functions	3
Operating on the server	4
Using Mcenter on the server	5
Working with Analyze MyPerformance /OEE	6
Configuring AMP /OEE	7
Analyze MyPerformance API	8
Mendix integration	9
Appendix	A

Valid for control:
SINUMERIK 840D, 840D sl/ 840DE sl,
SINUMERIK 828D, SINUMERIK ONE
Software
Mcenter, version 5.3.0.0
Analyze MyPerformance /OEE, version 1.3.0.0

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

DANGER

indicates that death or severe personal injury will result if proper precautions are not taken.
--

WARNING
--

indicates that death or severe personal injury may result if proper precautions are not taken.

CAUTION
--

indicates that minor personal injury can result if proper precautions are not taken.
--

NOTICE

indicates that property damage can result if proper precautions are not taken.
--

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

WARNING
--

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.
--

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Table of contents

1	Introduction	9
1.1	About SINUMERIK	9
1.2	About Mcenter	9
1.3	About Analyze MyPerformance /OEE	9
1.4	About this documentation	10
1.5	Documentation on the internet	11
1.5.1	Documentation overview SINUMERIK ONE	11
1.5.2	Documentation overview SINUMERIK 840D sl	12
1.5.3	Documentation overview SINUMERIK 828D	13
1.6	Feedback on the technical documentation	13
1.7	mySupport documentation	13
1.8	Service and Support	14
1.9	OpenSSL	16
1.10	Compliance with the General Data Protection Regulation	16
2	Fundamental safety instructions	17
2.1	General safety instructions	17
2.2	Warranty and liability for application examples	17
2.3	Security information	17
3	Product functions	19
4	Operating on the server	21
4.1	Introduction	21
4.2	Logging in to Mcenter	22
4.2.1	Without an external authentication provider	22
4.2.2	With an external authentication provider	25
4.3	Displaying information about the product and the version	26
4.4	Switch language	27
4.5	Password change	28
4.6	Filtering	30
4.6.1	List filtering	30
4.6.2	Quick filtering	33
5	Using Mcenter on the server	35
5.1	Administration Overview	35
5.2	Managing plant hierarchy	35

5.3	Manage users	38
5.3.1	Overview of the users	38
5.3.2	Users and functions	40
5.3.3	Creating new users	44
5.3.4	Updating the account status	46
5.3.5	Deleting user accounts.....	49
5.3.6	Resetting the password	52
5.4	Manage machines.....	54
5.4.1	Overview of machines	54
5.4.2	Creating a new machine type	58
5.4.3	Creating a machine	60
5.4.4	Editing a machine	65
5.4.5	Deleting a machine	68
5.5	Manage applications on machines.....	69
5.5.1	Overview of assignments	69
5.5.2	Machine overview of applications	72
5.5.3	Changing assignments.....	74
5.5.4	Updating assignments	76
5.6	Manage openness clients	80
5.6.1	Creating a new openness client.....	82
5.6.2	Editing an openness client	85
5.6.3	Changing the secret of an openness client.....	85
5.6.4	Deleting openness clients.....	86
5.7	Manage adapters (experimental).....	88
5.7.1	Overview of adapters	88
5.7.2	Uploading an adapter.....	90
5.7.3	Deleting an adapter	91
5.8	Platform Open API.....	92
5.8.1	Prerequisites	92
5.8.2	Retrieve machine states	92
5.8.3	Order management	95
5.8.3.1	Retrieve machines.....	95
5.8.3.2	Creating a new work sequence.....	97
5.8.4	Virus scan (experimental)	100
5.8.4.1	Retrieve scanable files	101
5.8.4.2	Update the state of a file	103
5.8.4.3	Get a one time URL for downloading a file	104
6	Working with Analyze MyPerformance /OEE.....	107
6.1	Performance Monitoring	107
6.1.1	Opening the Performance Monitoring	107
6.1.2	Performance Monitoring - OEE	107
6.1.3	Machine details.....	111
6.1.3.1	Controlling the performance of the machines.....	111
6.1.3.2	Manual states	118
6.1.3.3	Defining the custom date	122
6.1.3.4	Exporting machine status.....	123
6.1.3.5	Displaying machine information	125
6.1.3.6	Adding tags	126

6.1.4	Machine comparison.....	127
6.1.5	Dashboards.....	130
6.1.5.1	Dashboard overview	130
6.1.5.2	Configuring the Welcome page	132
6.1.5.3	Generating charts	135
6.1.5.4	Editing charts	145
6.1.5.5	Creating KPIs	148
6.1.5.6	Editing KPIs.....	153
6.1.5.7	Filtering charts.....	154
6.1.5.8	Exporting data	157
6.1.5.9	Dashboard settings	158
6.1.5.10	Dashboard templates	162
6.2	Utilization Planning.....	164
6.2.1	Overview	164
6.2.2	Applied plan	165
6.2.3	Edit plans.....	167
6.2.3.1	Creating machine utilization plans.....	167
6.2.3.2	Edit status.....	171
6.2.3.3	Copy daily plan	173
6.2.4	Assign plan	175
6.2.5	Workday details	177
6.2.6	Factory calendar	179
6.3	Production Quality	183
6.3.1	Opening the Production Quality	183
6.3.2	Checking the workpieces.....	184
6.3.3	Finding missing workpieces.....	185
6.3.4	Activating workpiece counters	186
6.4	Operator States.....	188
6.4.1	Opening the Operator States.....	188
6.4.2	Starting an operator state	190
6.4.3	Stopping an operator state	192
6.4.4	Example of working with Operator States	192
6.5	Operator States in HMI	194
6.5.1	Operator States in HMI.....	194
6.5.2	Opening Operator States in HMI	195
6.5.3	Using Operator States in the HMI.....	197
6.5.4	Starting an Operator State in HMI.....	198
6.5.5	Stopping an Operator State in HMI	199
6.5.6	Using workpiece functions in HMI	200
6.5.7	Error message.....	201
6.6	Connecting Fanuc machines to Analyze MyPerformance /OEE	202
6.7	Configure AMP /OEE	202
7	Configuring AMP /OEE	203
7.1	Overview	203
7.2	Customizing the KPI calculation.....	204
7.2.1	Overview	204
7.2.2	Customizing KPI parameters.....	204
7.2.2.1	Working with KPI parameters	204

7.2.2.2	Creating KPI parameters	206
7.2.2.3	Deleting KPI parameters	209
7.2.2.4	Resetting KPI parameters.....	210
7.2.3	Customizing KPIs	210
7.2.3.1	Working with KPI parameters	210
7.2.3.2	Creating KPIs	211
7.2.3.3	Deleting KPIs.....	215
7.2.3.4	Resetting KPIs	216
7.2.3.5	Editing the OEE algorithm	216
7.3	Opening the Configuration.....	219
7.4	Editing the Display	219
7.5	Editing the production level	222
7.6	Operator States	223
7.6.1	Configuring operator states	223
7.6.2	Displaying the configuration history	229
7.6.3	Displaying the manual/operator state history.....	230
7.7	Machine tags	232
7.8	Sustainability level	237
7.9	Production logic.....	238
7.9.1	Addresses	238
7.9.2	Machine state calculation.....	242
7.10	Customize utilization states.....	244
8	Analyze MyPerformance API.....	249
8.1	Token for openness interface (extension interface)	249
8.2	Providing and obtaining data via the ERP/MES systems.....	250
8.2.1	Assigning a shift plan	250
8.2.2	Providing shift results.....	260
8.2.3	Getting shift based OEE	265
8.2.4	Getting average OEE/KPI.....	269
8.2.5	Getting granular OEE/KPI.....	272
8.2.6	Adding custom state	275
8.2.7	Getting all custom states.....	279
9	Mendix integration	283
9.1	Overview	283
9.2	Authentication.....	283
9.2.1	Creating an openness client	283
9.2.2	Acquiring an access token	283
9.2.3	Using the access token	284
9.3	Using the openness client in Mendix	284
9.3.1	Storing the openness client	284
9.3.2	Getting access token from server.....	285
9.3.3	Storing access token.....	285
9.3.4	Getting data from Mcenter server.....	285
9.4	Using the provided Mendix authentication module.....	286

9.4.1	Installing the module	287
9.4.2	Setting up authentication.....	289
9.4.3	Accessing Mcenter open API.....	291
A	Appendix.....	293
A.1	List of abbreviations.....	293
A.2	Controller addresses.....	294
	Index.....	295

Introduction

1.1 About SINUMERIK

From simple, standardized CNC machines to premium modular machine designs – the SINUMERIK CNCs offer the right solution for all machine concepts. Whether for individual parts or mass production, simple or complex workpieces – SINUMERIK is the highly dynamic automation solution, integrated for all areas of production. From prototype construction and tool design to mold making, all the way to large-scale series production.

Visit our website for more information SINUMERIK (<https://www.siemens.com/sinumerik>).

1.2 About Mcenter

About Mcenter

The open, on-premise shopfloor platform Mcenter ensures full transparency and data consistency. It provides information about tools, NC programs and machine utilization and connects the machine tools with your IT landscape.

This is possible due to deep integration of higher-level systems with the CNC.

With Mcenter, you can manage different types of machines. You can also work with a range of third-party controllers via the Machine agent application.

1.3 About Analyze MyPerformance /OEE

Overview

Analyze MyPerformance /OEE calculates important KPIs for the entire plant (such as Overall Equipment Effectiveness - OEE) and provides important indicators for measures to increase efficiency.

Through the automatic recording of machine data and conditions as well as through user dialog entered data, Analyze MyPerformance /OEE provides all the information required for production optimization.

Customizable options allow for individual calculation and visualization of KPIs to address customer's needs.

1.4 About this documentation

Target group

The operating manual is aimed at all machine tool users. This publication provides information required by the user to understand the software.

Scope of validity

This manual is valid for use with the following product versions:

- Mcenter, version 5.3.0.0
- Analyze MyPerformance /OEE, version 1.3.0.0

Benefits

The operating manual allows the target group to get familiar with the software user interface. Based on the manual, the target group is capable of responding to problems and to take corrective action.

Standard scope

This documentation only describes the functionality of the standard version. This may differ from the scope of the functionality of the system that is actually supplied. Please refer to the ordering documentation only for the functionality of the supplied drive system.

It may be possible to execute other functions in the system which are not described in this documentation. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

For reasons of clarity, this documentation cannot include all of the detailed information on all product types. Further, this documentation cannot take into consideration every conceivable type of installation, operation and service/maintenance.

The machine manufacturer must document any additions or modifications they make to the product themselves.

Websites of third-party companies

This document may contain hyperlinks to third-party websites. Siemens is not responsible for and shall not be liable for these websites and their content. Siemens has no control over the information which appears on these websites and is not responsible for the content and information provided there. The user bears the risk for their use.

1.5 Documentation on the internet

1.5.1 Documentation overview SINUMERIK ONE

Comprehensive documentation about the functions provided in SINUMERIK ONE Version 6.13 and higher is provided in the Documentation overview SINUMERIK ONE (<https://support.industry.siemens.com/cs/ww/en/view/109768483>).



You can display documents or download them in PDF and HTML5 format.

The documentation is divided into the following categories:

- User: Operating
- User: Programming
- Manufacturer/Service: Functions
- Manufacturer/Service: Hardware
- Manufacturer/Service: Configuration/Setup
- Manufacturer/Service: Safety Integrated
- Information and training
- Manufacturer/Service: SINAMICS

1.5.2 Documentation overview SINUMERIK 840D sl

Comprehensive documentation about the functions provided in SINUMERIK 840D sl Version 4.8 SP4 and higher is provided in the Documentation overview SINUMERIK 840D sl (<https://support.industry.siemens.com/cs/ww/en/view/109766213>).



You can display the documents or download them in PDF and HTML5 format.

The documentation is divided into the following categories:

- User: Operating
- User: Programming
- Manufacturer/Service: Functions
- Manufacturer/Service: Hardware
- Manufacturer/Service: Configuration/Setup
- Manufacturer/Service: Safety Integrated
- Manufacturer/Service: SINUMERIK Integrate/MindApp
- Information and training
- Manufacturer/Service: SINAMICS

1.5.3 Documentation overview SINUMERIK 828D

Comprehensive documentation about the functions provided in SINUMERIK 828D Version 4.8 SP4 and higher is provided in the 828D documentation overview (<https://support.industry.siemens.com/cs/ww/en/view/109766724>).



You can display documents or download them in PDF and HTML5 format.

The documentation is divided into the following categories:

- User: Operating
- User: Programming
- Manufacturer/Service: Configuring
- Manufacturer/Service: Commissioning
- Manufacturer/Service: Functions
- Manufacturer/Service: Safety Integrated
- SINUMERIK Integrate/MindApp
- Info & Training

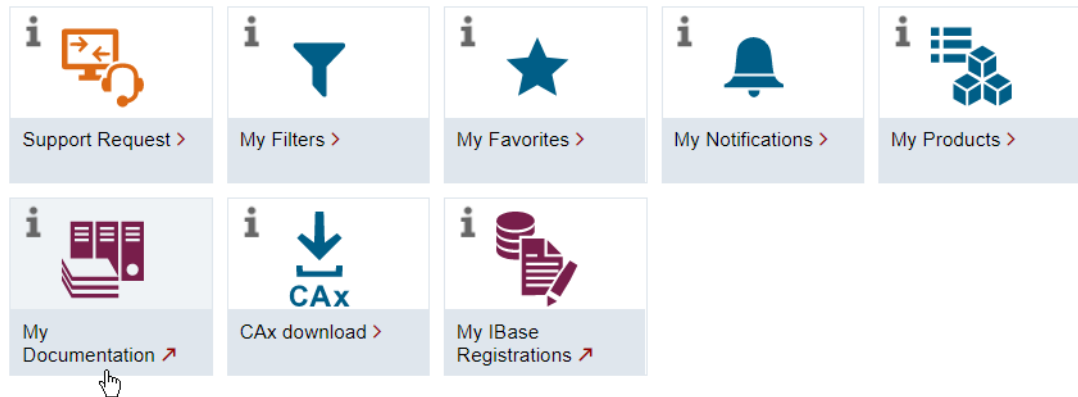
1.6 Feedback on the technical documentation

If you have any questions, suggestions or corrections regarding the technical documentation which is published in the Siemens Industry Online Support, use the link "Provide feedback" which appears at the end of the entry.

1.7 mySupport documentation

With the "mySupport documentation" web-based system you can compile your own individual documentation based on Siemens content, and adapt it for your own machine documentation.

To start the application, click on the "My Documentation" tile on the mySupport homepage (<https://support.industry.siemens.com/cs/ww/en/my>):

mySupport Links and Tools

The configured manual can be exported in RTF, PDF or XML format.

Note

Siemens content that supports the mySupport documentation application can be identified by the presence of the "Configure" link.

1.8 Service and Support

Product support

You can find more information about products on the internet:

Product support (<https://support.industry.siemens.com/cs/ww/en/>)

The following is provided at this address:

- Up-to-date product information (product announcements)
- FAQs
- Manuals
- Downloads
- Newsletters with the latest information about your products
- Global forum for information and best practice sharing between users and specialists
- Local contact persons via our Contacts at Siemens database (→ "Contact")
- Information about field services, repairs, spare parts, and much more (→ "Field Service")

Technical support

Country-specific telephone numbers for technical support are provided on the internet at address (<https://support.industry.siemens.com/cs/ww/en/sc/4868>) in the "Contact" area.

If you have any technical questions, please use the online form in the "Support Request" area.

Training

You can find information on SITRAIN at the following address (<https://www.siemens.com/sitrain>).

SITRAIN offers training courses for automation and drives products, systems and solutions from Siemens.

Siemens support on the go



With the award-winning "Siemens Industry Online Support" app, you can access more than 300,000 documents for Siemens Industry products – any time and from anywhere. The app can support you in areas including:

- Resolving problems when implementing a project
- Troubleshooting when faults develop
- Expanding a system or planning a new system

Furthermore, you have access to the Technical Forum and other articles from our experts:

- FAQs
- Application examples
- Manuals
- Certificates
- Product announcements and much more

The "Siemens Industry Online Support" app is available for Apple iOS and Android.

Data matrix code on the nameplate

The data matrix code on the nameplate contains the specific device data. This code can be read with a smartphone and technical information about the device displayed via the "Industry Online Support" mobile app.

1.9 OpenSSL

Using OpenSSL

This product can contain the following software:

- Software developed by the OpenSSL project for use in the OpenSSL toolkit
- Cryptographic software created by Eric Young.
- Software developed by Eric Young

You can find more information on the internet:

- OpenSSL (<https://www.openssl.org>)
- Cryptsoft (<https://www.cryptsoft.com>)

1.10 Compliance with the General Data Protection Regulation

Siemens observes standard data protection principles, in particular the data minimization rules (privacy by design).

For this product, this means:

The product does not process or store any personal data, only technical function data (e.g. time stamps). If the user links this data with other data (e.g. shift plans) or if he/she stores person-related data on the same data medium (e.g. hard disk), thus personalizing this data, he/she must ensure compliance with the applicable data protection stipulations.

Fundamental safety instructions

2.1 General safety instructions

 WARNING
Danger to life if the safety instructions and residual risks are not observed If the safety instructions and residual risks in the associated hardware documentation are not observed, accidents involving severe injuries or death can occur. • Observe the safety instructions given in the hardware documentation. • Consider the residual risks for the risk evaluation.

 WARNING
Malfunctions of the machine as a result of incorrect or changed parameter settings As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death. • Protect the parameterization against unauthorized access. • Handle possible malfunctions by taking suitable measures, e.g. emergency stop or emergency off.

2.2 Warranty and liability for application examples

Application examples are not binding and do not claim to be complete regarding configuration, equipment or any eventuality which may arise. Application examples do not represent specific customer solutions, but are only intended to provide support for typical tasks.

As the user you yourself are responsible for ensuring that the products described are operated correctly. Application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

2.3 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected

2.3 Security information

to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit

<https://www.siemens.com/industrialsecurity>.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

<https://www.siemens.com/cert>.

Further information is provided on the Internet:

Industrial Security Configuration Manual (<https://support.industry.siemens.com/cs/ww/en/view/108862708>)



WARNING

Unsafe operating states resulting from software manipulation

Software manipulations, e.g. viruses, Trojans, or worms, can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.

- Keep the software up to date.
- Incorporate the automation and drive components into a holistic, state-of-the-art industrial security concept for the installation or machine.
- Make sure that you include all installed products into the holistic industrial security concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.
- On completion of commissioning, check all security-related settings.

Product functions

Functions

Use Analyze MyPerformance /OEE to adjust the representation and visualization of all machine tools connected to Mcenter:

- **Performance Monitoring**
With "Performance Monitoring", you have the option to check the performance of the machines using the performance monitoring function.
Further information can be found in the Chapter: Performance Monitoring (Page 107)
- **Utilization Planning**
With "Utilization Planning", you have the option of defining the utilization plans for the individual control system.
Further information can be found in the Chapter: Utilization Planning (Page 164)
- **Production Quality**
With "Production Quality", you have the option to check the quality of your production.
Further information can be found in the Chapter: Production Quality (Page 183)
- **Configure AMP /OEE**
With "Configure AMP /OEE", you have the option to configure OEE Machines.
Further information can be found in the Chapter: Configure AMP /OEE (Page 202)
- **Operator States**
With "Operator States", you have the option to apply operator states created by the system administrator/supervisor to a machine.
Further information can be found in the Chapter: Operator States (Page 188)

Operating on the server

4.1 Introduction

To access Mcenter, call the corresponding URL in a web browser.

Overview

The start page is called after logging on.

Displaying information about the product and the version (Page 26)

You can start the following applications:

- Analyze MyPerformance /OEE
 - Performance Monitoring (Page 107)
 - Utilization Planning (Page 164)
 - Production Quality (Page 183)
 - Configure AMP /OEE (Page 202)
 - Operator States (Page 188)
- Mcenter
 - Administration Overview (Page 35)
 - Manage machines (Page 54)
 - Manage applications on machines (Page 69)
 - Manage users (Page 38)
 - Manage openness clients (Page 80)
 - Manage adapters (experimental) (Page 88)

Calling applications with HTTP communication

This Operating Manual only describes calling applications with HTTPS communication.

You can also call all applications with HTTP communication. To do this, use "http" instead of "https" and add port ":8080" after the IP address.

4.2 Logging in to Mcenter

4.2.1 Without an external authentication provider

Prerequisite

You have set up your user account.

Procedure

1. Open the following URL: Start page (<https://{ServerIP}/start-page>)
The login window opens.
 - Enter your user credentials.
 - Click on the "Login" button.



Note

Invalid login attempt

The error message "Invalid login attempt" is displayed when you enter incorrect credentials. After the fifth unsuccessful attempt, your user account is locked for 5 minutes.

2. The start page opens.
To use the functions, click on the required application. If you do not see the required application, the user does not have the necessary role to view it.
E.g. you need administrator rights to use certain Mcenter functions, for example "Administrate Mcenter".



Logging out

1. To log out from the application, open the drop-down menu in the upper right section of the window.
2. Click "Logout" to log out from all applications.



4.2.2 With an external authentication provider

Prerequisite

The user account for the external user has been set up.

Note

Login as an external user

You must configure an external authentication provider to log in as an external user. Additional information is provided in the Installation Manual "Mcenter, Manage MyResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData /Collector".

Procedure

1. Open the following URL: Start page ([https://\[ServerIP\]/start-page](https://[ServerIP]/start-page))
The external authentication provider login window opens.
2. Enter your user credentials.

Note

Invalid login attempt

The error message "Invalid login attempt" is displayed when you enter incorrect credentials or no user with a matching external user ID exists.

After the fifth unsuccessful attempt, your user account is locked for 5 minutes.

3. The Mcenter start page opens.
To use the functions, click on the required application.
You need administrator rights to use certain Mcenter functions, for example "Administrate Mcenter".



Logging out

1. To log out from the application, open the drop-down menu in the upper right section of the window.
2. Click "Logout" to log out from all applications.



Authentication with an internal user

Logging in with an external authentication provider depends on the configuration. Follow the file path "Siemens\Mcenter\Platform\SinInt.Identity.Service\appsettings.production.json" and check the "UseExternalUserManagement" value: "UseExternalUserManagement": {value}.

"UseExternalUserManagement": false

If the value is "false", logging in with an internal user is allowed.

Open the following URL: Start page (<https://{ServerIP}/int/identity/account/login/start-page>)

Follow the steps as described in Without an external authentication provider (Page 22).

"UseExternalUserManagement": true

If the value is "true", logging in with an internal user is not allowed.

4.3 Displaying information about the product and the version

The following Mcenter data is displayed:

- Product version
- Build identifier

Prerequisite

The start page is open.

Procedure

1. In the header of the Mcenter window, click on the hamburger menu ☰ (upper left corner).
2. The "Main menu" window pane opens.
3. Click on entry "Mcenter".
The "Product information" dialog box opens and shows the installed version.
Click on the "OK" button to close the dialog box.



4.4 Switch language

The user interface is available in the following languages:

- English
- German
- Spanish
- Chinese
- Hungarian

If you select a language in a server application, this language is used for the GUI of any other application even if you log out.

Procedure

1. Open the drop-down menu in the upper right section of the window.
2. Click on your chosen language.
The user interface is displayed in the desired language.



Note

Language support for Analyze MyPerformance /OEE

Analyze MyPerformance /OEE only supports English, German, Spanish and Chinese languages for current version.

4.5 Password change

You have the possibility to change your password at regular intervals.

This function is not available for external users.

Prerequisites

This function only applies to internal users.

Procedure

1. In the header of the Mcenter window, click the user icon  (upper right corner).
A drop-down menu opens.
2. Click "Change Password".



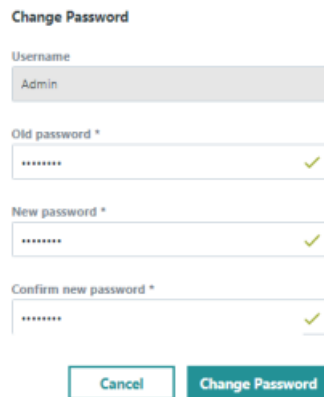
3. The "Change Password" window opens.
 - Enter your current password in the "Old password *" input field.
 - Enter a new password in the "New password *" input field.

Note

Properties of a strong password

- Use at least 8 characters
 - Contains at least one uppercase letter
 - Contains at least one lowercase letter
 - Contains at least one special character
 - Contains at least one numerical character
-

- Repeat the new password in the "Confirm new password *" input field.
 - To change the password, click on "Change Password".
 - OR -
 - To cancel processing without saving, click on "Cancel".
- The window is closed.



The image shows a 'Change Password' form. It has a title 'Change Password' at the top. Below the title is a 'Username' field with the value 'Admin'. There are three password fields: 'Old password *', 'New password *', and 'Confirm new password *'. Each password field contains a series of asterisks and a green checkmark icon on the right. At the bottom of the form are two buttons: 'Cancel' and 'Change Password'.

Error messages

An appropriate error message is displayed below the input field if the entries are not correct.

- Input required.
Enter a password.
- The old and the new password must be different.
Enter a new password that is different from the old one.
- The new passwords must be identical.
Enter the new password and confirm it by entering it again, exactly as before.
- An error message is displayed in the top-right window area: "The old password may be wrong or the new password is too weak."
 - Enter the correct password.
 - Enter a password that satisfies the security criteria.

4.6 Filtering

4.6.1 List filtering

On many overview pages, you can use the filter function to reduce the amount of displayed data.

When you save a filter, it is stored even if you refresh the page.

When, on logout, you have active filters set for an application, the filters remain active when you log in again and open the application. The saved filters are stored, even after logout.

Symbols

The filter symbols are the following:

Symbol	Description
	Opens or closes the "My Filters" window.
	Copies the selected filter to the "My Filters" list.
	Removes the selected filter criterion from the current filter. Removes the corresponding filter from the "My Filters" list.
	Adds additional criteria to the current filter.
	Shows that a filter is active.

Operators

The following operators are taken into account when filtering text fields or datetime fields:

- is equal
- includes
- starts with
- ends with
- empty
- not empty

The following operators are taken into account when filtering numbers:

- is equal
- larger than
- smaller than
- empty
- not empty

The following operators are taken into account when filtering enum fields:

- is equal

Procedure

1. Click the "Filter" symbol.
The "My Filters" window opens.

The screenshot shows the 'My Filters' interface. At the top, there's a 'New filter' section with a text input field containing 'NCTOOL' and a 'Reset filter' link. Below this is a table with filter criteria. The table has columns for 'Attribute', 'Operator', and 'Value'. The first row shows 'ID of tool component' as the attribute, 'starts with' as the operator, and 'NCTOOL' as the value. There are icons for adding and deleting criteria. At the bottom, there's a 'Save' button and a text input field containing 'NCTOOL'.

2. Select a filter from the "My Filters" list.
- OR -
Define a new filter.
3. To do this, select the filter criterion from the "Attribute" drop-down list.
Each filter criterion can be used multiple times, but only once with the same operator.
4. Select the desired filter operator from the drop-down list.
5. In the "Value" field, precisely enter the text, and in its full length, for which a search is to be made.
6. Add the filter criterion for the current filter using the "+" character.
Remove the corresponding filter criterion using the "Delete" symbol.
7. If you wish to reuse the filter:
 - Enter a filter name.
 - Click on "Save".
The filter is displayed in the "My Filters" list.
8. Click on "Reset filter" to redisplay all of the data.

Note

Filters

The filters are saved in your user profile. Once you have selected a filter, it remains active until you deactivate it.

4.6.2 Quick filtering

The Quick filter is an additional filter function. You can use it to reduce the amount of displayed data.

You can use the general and quick filters simultaneously.

The conditions from both filters are applied to the set of records.

The Quick filter resets when the page is reloaded, for instance when you switch between pages or press the <F5> button.

According to the column, you can enter

- String values
- Yes/No values
- Context-based values
- Numbers

Prerequisite

You have selected the columns to display in the three dots drop-down list.

For more information, see List filtering (Page 30).

Symbols

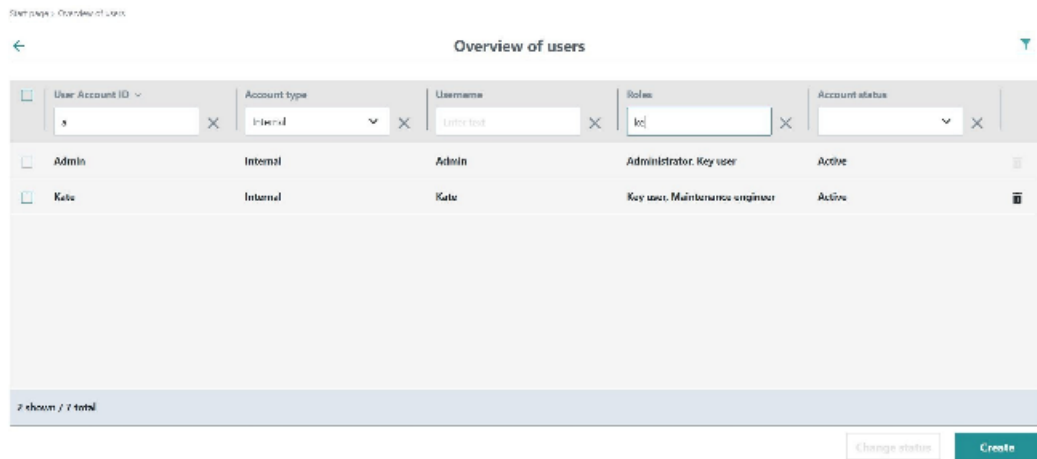
The filter symbols are the following:

Symbol	Description
	When the green filter icon is active, the general and the quick filter work simultaneously.
	Opens the drop-down list in the column header. This functionality does not apply to all columns.
	Clears the entry and resets filtering on the column.

4.6 Filtering

Procedure

1. The overview page, with a table that supports the quick filtering functionality, is open.
Select a column.
Enter a text in the header of the selected column or choose an option from the drop-down list.
The quick filtering results are displayed immediately.
Click the cross symbol to clear an entry and reset the filtering on the column.



2. In addition, you can filter the other columns, to display only the data you need.

Note**Entering a string**

When entering text, you can use

- the complete term
- part of the term
- the letters at the beginning or end of the term

Using Mcenter on the server

5.1 Administration Overview

The "Administration overview" window allows administration with the following option:

- Managing the hierarchy of the plant.
For more information, see Managing plant hierarchy (Page 35).

Prerequisite

You need the rights of the Administrator or Key user role to access the "Administration overview" window.

Procedure

1. On the start page of Mcenter, click on "Administrate Mcenter"

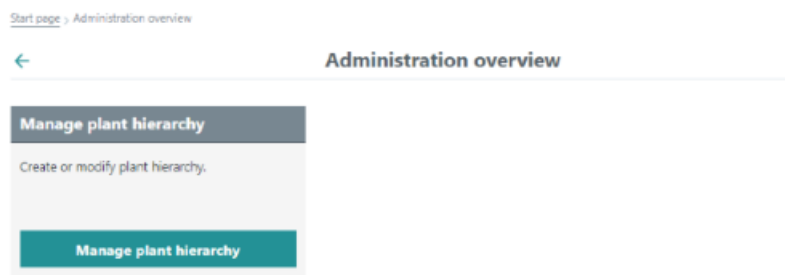


- OR -

Open the following URL: Administration overview (<https://{ServerIP}/admin-overview>)

– Enter a username and password.

2. The "Administration overview" window opens.



5.2 Managing plant hierarchy

Prerequisite

You need rights of the Administrator or Key user role to access the "Plant management" window.

Parameter

The following parameters are available:

Parameter	Description
Hierarchy path *	Select the hierarchy path from the drop-down list. If you do not select a path, the displayed path is adopted.
Node name *	Enter a unique name. A maximum of 30 characters can be entered.
Node type *	Select the node point from the drop-down list. The following node points can be selected: • Enterprise • Site • Area • Production line • Work cell • Storage zone • Storage unit
	Shows further information.

*) All fields with an asterisk are mandatory. If you enter a value that does not comply with the rules, a red warning symbol and a corresponding red highlighted error message below the input field are displayed.

Definition of node types

Enterprise: The Enterprise is a collection of one or more plants, connected within the given installation. An alternative interpretation is about the owner of the installation. There can only be one single enterprise node.

Example: Siemens AG

Site: The site is a structural, logical or geographical arrangement that is determined by the enterprise. The delimitation of a plant is usually based on organizational and entrepreneurial criteria as opposed to technical criteria.

Example: Factory at a given address

Area: The area complex is a structural, geographical, or logical arrangement that is determined by the site. The areas may represent different stages, steps, or processes in the production lifecycle of the product.

Example: Preprocessing Area

Production line: The production line contains all sub-areas, technical facilities and individual machines that are required to manufacture one or more batches. A batch does not always have to use all facilities within the production line, but it will usually perform the same operation on the products in the production. Additionally production planning is usually done on line level based on the capacity of the underlying working cells.

Example: Manufacturing of Servomotors

Working cell: A cell consists of technical equipment and machines. The parts that make up the working cell, can be part of the subsystem or can be used temporarily to perform certain tasks. A cell can perform one or more major processing activities. It combines all the necessary process engineering and I&C equipment needed to carry out these activities as an

independent facility group. Often most of the machines within a cell are able to process the very same manufacturing process.

Example: Drilling holes in shafts

Storage zone: The storage zone is a designated location within the area, which holds the materials that are required for the production, or the already manufactured products.

Storage unit: A physical unit which is located in the storage zone. This can usually be a desk or shelves to store the required parts or produced products.

Example: Tool cabinets

Procedure

1. Click "Administrate Mcenter" on the Mcenter start page.
2. In the "Administration overview" window, click on "Manage plant hierarchy".
3. The "Plant management" window opens.
4. Fill in the required fields.
5. To create a node, click "Add node".
 - A success message is displayed in the upper right corner of the window.
 - OR –
 - To return to the "Administration overview" window, click "Back".

[Start page](#) > [Administration overview](#) > [Plant management](#)

Plant management

Hierarchy path *

root > Siemens > SIG > 10.1.6.181.NCU

Node name *

test1

Node type *

Site

Back Add node

Note

Nodes

You cannot delete or update the nodes you created.

5.3 Manage users

Note

External user management

When you use the external user management, the functionalities of "Manage users" are not usable.

Additional information is provided in the Installation Manual "Mcenter, Manage MyResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData / Collector".

5.3.1 Overview of the users

The "Overview of users" window allows administration with the following options:

- Create users
 - internal
 - external
- Update users
 - account status
 - roles
- Delete users

When your session expires, press the <F5> button and you are redirected to the login page.

Prerequisite

You need an administrator or key user role to manage users.

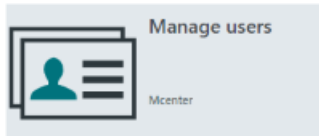
Parameters

Parameter	Description
	This symbol appears when you click on the column heading. Click on the symbol to sort the elements alphabetically/numerically, either in ascending or descending order.
User Account ID	Provides user identification. - Displays the username of internal users. - Displays the external user Id with the prefix "extId". The external users are displayed at the top of the list. You can create, disable and delete users. For more information, see - Creating new users (Page 44) - Updating the account status (Page 46) - Deleting user accounts (Page 49)
Account type	Shows the account type: - Internal: Internal user - External: External user
Username	Shows the name of the user. Note: The currently logged in <Admin> user with the administrator role can disable another administrator, but not himself/herself.
Roles	Shows the roles. You cannot sort the elements in this column. For more information, see Users and functions (Page 40)
Account status	Shows the account status: - Active - Disabled
	Deletes the user account. Note: When you delete a user account, you cannot use the same username to create a new one.
	Opens the "My Filters" window and filters the user table according to the following criteria: - User Account ID - Account type - Username - Roles - Account status For more information, see List filtering (Page 30). Click on the filter icon again to close the filter window.

5.3 Manage users

Procedure

1. On the start page of Mcenter click on "Manage users".



- OR -

Open the following URL: Manage users (<https://{ServerIP}/user-overview>)

2. The "Overview of users" window opens and displays an overview of all users with their rules. In order to set your preferred column width, press the left mouse button and drag the column edges to the left or to the right. The respective parameters are automatically saved when you release the mouse button. The next time you log in with your user Id, the columns are displayed with the width you opted for.

User Account ID	Account type	Username	Roles	Account status
Admin	Internal	Admin	Administrator, Key user	Active
block_user	Internal	block_user	Production planner	Active
key_user	Internal	key_user	Key user	Active
maintenance_engineer	Internal	maintenance_engineer	Maintenance engineer	Active
new_admin	Internal	new_admin	Administrator	Active
production_planner	Internal	production_planner	Production planner	Active

6 shown / 6 total

Change status Create

5.3.2 Users and functions

The following users are available in the Mcenter:

- The user "Admin" is set up during the installation.
- The "Admin" user can create further users.

Overview

Users have access to the following functions:

- Write: The user has writing rights.
- Read: The user has only reading rights.
- Read+: The user has reading rights and can, in addition, assign or write the sistertool for a greenfield tool.

Mcenter	Roles										
Views	Admin- istrator	Key user	Manu- factur- ing en- gineer	Tech- nolo- gist	NC Pro- gram- mer	Pro- duc- tion plan- ner	Tool preset- ting opera- tor	Logis- tician	NC Pro- gram- mer ex- pert	Ma- chine opera- tor	Main- ten- ance engi- neer
Manage appli- cations on ma- chines	write	write				read			read		read
Manage open- ness clients	write										
Administrate/ Manage plant hierarchy	write	write				read			read		read
Manage users	write	write									
Manage ma- chines	write	write				read			read		read
Manage tasks	write	write				read			read		read
Manage NC Packages	write	write	write	write	write				write	read	
Storage loca- tions	write	write						write	write	write	write
Tool compo- nent stacks	write	write						write	write	write	write
Plan manufac- turing equip- ment /Add	write	write	write	write	read	write	read		read	read	
Plan manufac- turing equip- ment /Balanc- ing	write	write	write	write	read	write	read		read	read	
Monitoring tools change lifetime	write	write				write		read	write	read	read
Monitoring tools add sister tool	write	write				write		write	write	write	write
Set Trial tool	write	write				write					
Update Trial tool life	write	write				write				write	
Provide tools	write	write		write		write	write		write		

5.3 Manage users

Mcenter	Roles										
Views	Admin- istrator	Key user	Manu- factur- ing en- gineer	Tech- nolo- gist	NC Pro- gram- mer	Pro- duc- tion plan- ner	Tool preset- ting opera- tor	Logis- tician	NC Pro- gram- mer ex- pert	Ma- chine opera- tor	Main- ten- ance engi- neer
Tool stock	write	write		read	read	read		write	write	write	write
Tool master da- ta	write	write	write	write	read		read		write	read	
OEM tool data sets	write	write	write	write	read		read		write	read	
Tool compo- nent master da- ta	write	write	write	write	read		read		write	read	
Display OEE & KPIs	read & write					read			read		read
Custom Date Queries	read & write					read			read		read
Display to all da- ta shown on the charts	read & write					read			read		read
Display Applied Plans to the Ma- chines	read & write					read			read		read
Edit Templates (Create new templates & De- lete Existing Template)	read & write										
View Templates	read & write	read	read	read	read		read	read			
Assign Tem- plates to the As- set	read & write										
Display Pro- duced Workpie- ces (Total Piece, Scrap Piece, etc.)	read & write					read			read		read
Edit Produced Workpieces (To- tal Piece, Scrap Piece, etc.)	read & write										
Display Missing Workpieces	read & write					read			read		read
Display Selec- ted KPI Formu- las	read & write	read	read	read	read	read	read	read	read		read
Edit KPI Formu- las	read & write										

Mcenter	Roles										
Views	Admin- istrator	Key user	Manu- factur- ing en- gineer	Tech- nolo- gist	NC Pro- gram- mer	Pro- duc- tion plan- ner	Tool preset- ting opera- tor	Logis- tician	NC Pro- gram- mer ex- pert	Ma- chine opera- tor	Main- ten- ance engi- neer
Display Selec- ted Color Op- tions for the KPIs	read & write	read	read	read	read	read	read	read	read		read
Edit Color Op- tions for the KPIs	read & write										
Display Selec- ted Production Levels	read & write	read	read	read	read	read	read	read	read		read
Edit Production Levels	read & write										
Operator States Configuration	read & write										
Using Operator States	read & write									read & write	
Manual State History	read & write										
Operator States History	read & write										
Exploring Ma- chine Status	read & write					read			read		read
Tools on Man- aged Machines	write	write	read	read	read	write	read	read	read	write	read
Programs on Managed Ma- chines	write	write	write		write	write			write	write	
Tool lifecycle distribution	read	read				read					
Tool scheduling	read	write				write					
Tool statistics	read	read				read					
Additional re- sources master data	write	write	write	write			read		write	read	
Additional re- sources instan- ces	write	write		write		write	write	write	write	write	write

Note**Users with multiple roles**

If you are assigned multiple roles, you receive the rights for each respective role. There is no hierarchical relationship between the roles.

5.3.3 Creating new users

Parameters

The following parameters are available:

Parameter	Description
Username *	Enter the username. You can enter a maximum of 50 characters. The following characters are permitted for user names: [a...z], [A...Z], [0...9], [-]; [_]
Account type *	You can choose the following type: • Internal user • External user
Account status	You can choose the following status: • Active • Disabled
External ID *	• Enter the unique identifier used in the external authentication provider. You can enter a maximum of 255 characters. • Only visible and mandatory if the account type is: External User
Roles *	Set role(s) to the new user. You can choose the following roles: • Administrator • Key user • Maintenance engineer • Production planner • NC Programmer • NC Programmer expert • Technologist • Manufacturing engineer • Tool presetting operator • Logistician • Machine operator For more information, see Users and functions (Page 40)
Password *	• Enter a secure password. Password criteria: – Use at least 8 characters – Contains at least one uppercase letter – Contains at least one lowercase letter – Contains at least one special character – Contains at least one numerical character • Only requested and mandatory if the account type = Internal user

Parameter	Description
Confirm password *	Re-enter the password.
	Shows further information.

*) The fields marked with an asterisk are mandatory and must be completed. An error message is output if you make an erroneous entry.

Procedure

1. Click "Create" on the "Overview of users" window.
The "New user account" window opens.
2. Enter the required information.
3. Click "Save" to create a new user.
- OR -
Click "Cancel" to discard the inputs.

Start page > Overview of users > User1

← User1

Username *

User1

Account type *

Internal user

Account status

Active

Roles*

☐ Administrator
☐ Key user
☐ Maintenance engineer
☐ Production planner

☐ NC Programmer
☐ NC Programmer expert
☐ Technologist
☒ Manufacturing engineer

☐ Tool presetting operator
☐ Logistician
☐ Machine operator

Reset password

Edit

4. Enter a password for the new user.
Confirm the password and click "Save".

Enter password for new user

Password *

✓

Confirm password *

✓

Cancel

Save

5. You receive the message "User created successfully" in the top-right window area.
The users created are displayed in the " Overview of users" window.

5.3.4 Updating the account status

You can enable and disable users. Disabled users cannot login to the Mcenter applications, but they still have access to the applications until their next logout.

Note

Administrator or Key user rights

The currently logged in users with "Administrator" or "Key user" rights cannot disable themselves.

Parameters

The following parameters are available:

Parameter	Description
Username *	Shows the username. The username must be unique. You cannot use the name of a deleted user account.
Account type *	Shows the Account type: - Internal user - OR - - External user
Account status	You can choose the following status: - Active - Disabled
Roles *	You can choose the following roles: - Administrator - Key user - Maintenance engineer - Production planner - NC Programmer - NC Programmer expert - Technologist - Manufacturing engineer - Tool presetting operator - Logistician - Machine operator For more information, see Users and functions (Page 40)
	Shows further information.

*) The fields marked with an asterisk are mandatory and must be completed. An error message is output if you make an erroneous entry.

Procedure

1. Click on the underlined name of the user in the "Overview of users" window.
The "<username>" window opens.
 - Click "Edit".
 - Enter the required information.
 - Click "Save" to change the user.
 - OR -
 - Click "Cancel" to discard the inputs.

Start page > Overview of users > User1

← User1

Username *	Account type *	Account status
User1	Internal user	Active

Roles*

☐ Administrator	☐ NC Programmer	☐ Tool presetting operator
☐ Key user	☐ NC Programmer expert	☐ Logician
☐ Maintenance engineer	☐ Technologist	☐ Machine operator
☐ Production planner	☒ Manufacturing engineer	

Reset password Edit

- OR -

2. Open the "Overview of users" window.

5.3 Manage users

3. Activate the checkbox in front of the User Account ID.
You have two possibilities:
 - Activating individual checkboxes.
 - Activating the column header checkbox in order to select all users except the logged-in admin.

Start page > Overview of users

Overview of users

☐ User Account ID	Account type	Username	Roles	Account status	
☐ Admin	Internal	Admin	Administrator, Key user	Active	
☐ User1	Internal	User1	Manufacturing engineer	Disabled	

2 shown / 2 total

[Change status](#) [Create](#)

Delete user

4. Click "Change status".

The message "The status of the selected user accounts have successfully been changed" is displayed in the top-right window area.

Start page > Overview of users

The status of the selected user accounts have successfully been changed. ✓

← Overview of users

☐	User Account ID v	Account type	Username	Roles	Account status	
☐	Admin	Internal	Admin	Administrator, Key user	Active	
☐	User1	Internal	User1	Manufacturing engineer	Active	
☐	User2	Internal	User2	Technologist	Active	

Change status Create

Note**Change status button**

The "Change status" button is only activated if

- you activate one or several checkboxes and
- all selected user checkboxes have the same account status.

5. If you want to change the password, see further information in Chapter: Password change (Page 28)

5.3.5 Deleting user accounts

You have the possibility to delete user accounts.

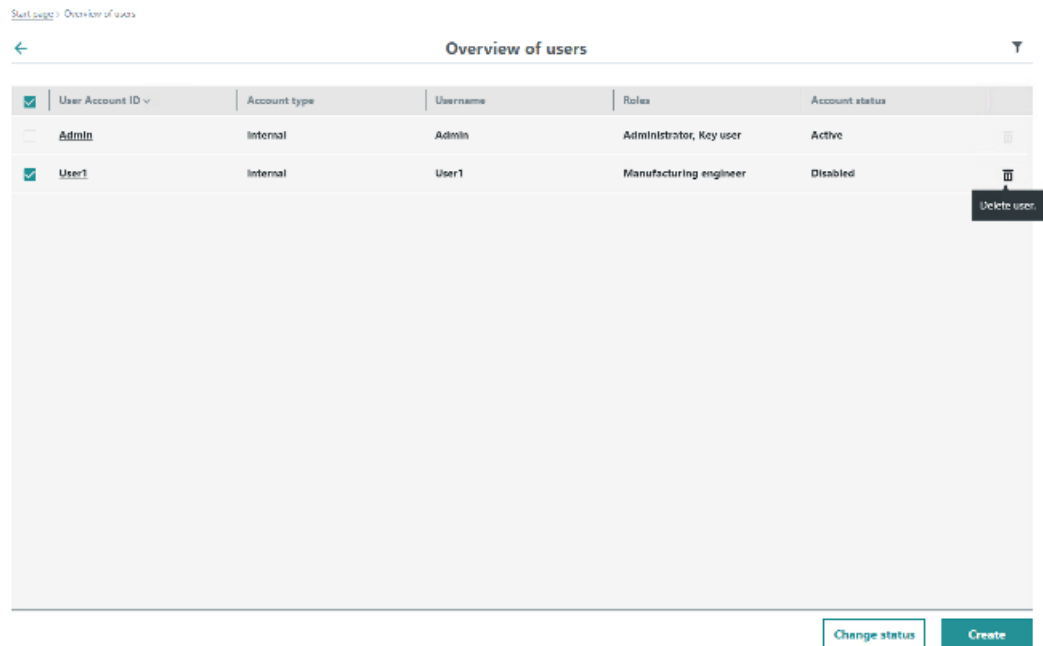
Parameters

The following parameters are available:

Parameter	Description
	This symbol appears when you click the column heading. Click the symbol to sort the elements alphabetically/numerically, either in ascending or descending order.
User Account ID	Provides user identification. - Displays the username of internal users. - Displays the external user Id with the prefix "extId".
Account type	Shows the account type: - Internal: Internal user - External: External user
Username	Shows the username. Note: The currently logged in <Admin> user with the administrator role can disable another administrator, but not himself/herself.
Roles	Shows the roles. For more information, see Users and functions (Page 40).
Account status	Shows the account status: - Active - Disabled
	Deletes the user account.
	Opens the "My Filters" window and filters the user table according to the following criteria: - User Account ID - Account type - Username - Roles - Account status For more information, see List filtering (Page 30). Click on the filter icon again to close the filter window.

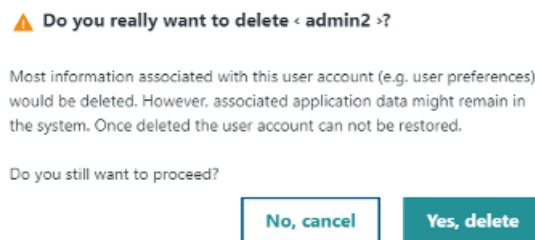
Procedure

1. Open the "Overview of users" window.



2. Click the "Delete" symbol next to the user account you wish to delete..
A dialog box appears.
 - Click "Yes, delete" to delete the user account.
 - OR -
 - Click "No, cancel" to cancel the operation.

Once a user account has been deleted, the message "Invalid log-in attempt" appears if the user tries to log in again.



Note

Deleted user accounts

Once you have deleted user accounts, the respective users have a time slot to finish ongoing operations, and can log out. By default, the time slot is 10 minutes and the count-down starts with the user log-in. If the administrator deletes an account 5 minutes after the user has logged in, the user has 5 minutes left to work on an open application. If the user clicks another application, the message "Access denied. You do not have access to this resource" is displayed. You can change the default time slot within Consul.

Note

User account data

The data from deleted user accounts is permanently erased from the system.

5.3.6 Resetting the password

You have the possibility to reset the password if it has been deactivated after a long absence. You can enter a new password or the user's old one which is thus reactivated.

The administrator sends the reset password to the user via a communication channel outside Mcenter. The system does not automatically notify the user.

Prerequisites

- In order to reset a password, you need the following rights:
 - Administrator rights
 - OR –
 - Key user rights
- You can reset the password only for the internal users.
When you select an external user, there is no "Reset" button on the detail page.

Parameters

The following parameters are available:

Parameter	Description
Account status	You can choose the following status: - Active - Disabled
Password *	Enter a secure password. Password criteria: - Use at least 8 characters - Contains at least one uppercase letter - Contains at least one lowercase letter - Contains at least one special character - Contains at least one numerical character
Confirm password *	Re-enter the password.
	Shows further information.

*) The fields marked with an asterisk are mandatory and must be completed. An error message appears if you make an erroneous entry.

Procedure

1. Log in as Administrator or Key user.
2. Click "Manage users".
3. The window "Overview of users" is open. Select the user who needs a password reset.
4. Click on the username and open the detail page.
5. Click on the button "Reset password" in the bottom-right window area.

[Start page](#) > [Overview of users](#) > [User planning](#)


User planning

User name *

Account type *

Account status

Roles*

☐ Administrator
☐ Key user
☒ Maintenance engineer
☒ Production planner

☐ NC Programmer
☐ NC Programmer expert
☐ Technologist
☐ Manufacturing engineer

☐ Tool presetting operator
☐ Logistician
☐ Machine operator

5.4 Manage machines

6. Enter the new password and confirm it by retyping it in the line underneath.
Click on "Reset password" to save the new password.
- OR -
Click "Cancel" to discard to cancel the operation.

Enter the new password for User_planning

Password *

Confirm password *

Cancel Reset password

7. A green message appears in the top-right window area indicating that the operation was successful.

Start page > Overview of users > User_planning

← User_planning

Password has been successfully reset. ✓

User name * Account type * Account status

User_planning Internal user Active

Roles*

☐ Administrator ☐ NC Programmer ☐ Tool presetting operator

☐ Key user ☐ NC Programmer expert ☐ Logistician

☒ Maintenance engineer ☐ Technologist ☐ Machine operator

☒ Production planner ☐ Manufacturing engineer

Reset password Edit

5.4 Manage machines

5.4.1 Overview of machines

The "Manage machines" window shows an overview of all created machines.

Parameter

The following information is displayed for machines:

Parameter	Description
	This symbol appears when you click on the column heading. Click on the symbol to sort the elements alphabetically/numerically, either in ascending or descending order.
	Activate the column header checkbox to select all machines. - OR - Activate the checkbox in the first column to select the desired machines. Only the "Machine Agent" type machines can be selected.
	Shows a managed machine.
	Shows an onboarded and online machine.
	Shows an onboarded and offline machine.
	Shows a not onboarded machine.
Connectivity type	Shows the supported connectivity types: • SINUMERIK Integrate • Machine Agent • Managed Client
Onboard state	Shows the onboard state: • Onboarded: The machine has been connected to the server at least once. It does not indicate whether there is a continuous connection between the machine and the server, at any given point in time. • Not onboarded: The machine has not yet been connected to the server. • Not applicable : The machine connection is not defined. In this column, you can sort the onboard connection state alphabetically, either in an ascending or descending order.
Connection state	Shows the connection state between the machine and the server: • Online • Offline • <empty> = The machine has not yet been connected to the server. The machine is not onboarded • Undefined In this column, you can sort the state alphabetically in an ascending or descending order.
Machine type	Shows the type of the machine. You can create, edit and delete machine types. In this column, you can sort the machine types alphabetically, either in an ascending or descending order.
Autoconnect address	Shows the IP or MAC address or None, if the machine connection is not defined. In this column, you can sort the autoconnect address alphabetically, either in an ascending or descending order. The sort works inside in groups (IP or MAC or "other").

5.4 Manage machines

Parameter	Description
Machine agent version	- Not applicable: Those machines which with connectivity type other than Machine Agent. - Not available: Those machines which have Machine Agent connectivity type, but the version not available for some reason. <empty>: Those machines which have Machine Agent connectivity type, but the connection is not defined. - Version (e.g.: 1.5.5): Shows the machine agent version of machine. In this column, you can sort the machine agent version, either in an ascending or descending order. The right ordering: <empty>, Not applicable, Not available and the concrete versions as alphabetically.
Hierarchy path	Shows the path of the hierarchy. In this column, you can sort the hierarchy paths, either in an ascending or descending order.
...	Opens a window in which you select additional columns to be displayed in the overview. These columns can optionally be configured to show further information: - Connectivity type - Connection state - Machine type - Autoconnect address - Machine agent version You can sort the individual columns in the overview. The next time you log in with your user Id, the selected columns are on display.
	Opens the "My Filters" window and filters the machine table according to the following criteria: - Machine name - Connectivity type - Onboard state - Connection state - Machine type - Autoconnect address - Machine agent version - Hierarchy path For more information, see List filtering (Page 30). Click on the filter icon again to close the filter window.
	Deletes the machine after a confirmation prompt.

Procedure

1. On the start page of the Mcenter, click on "Manage machines".



- OR -

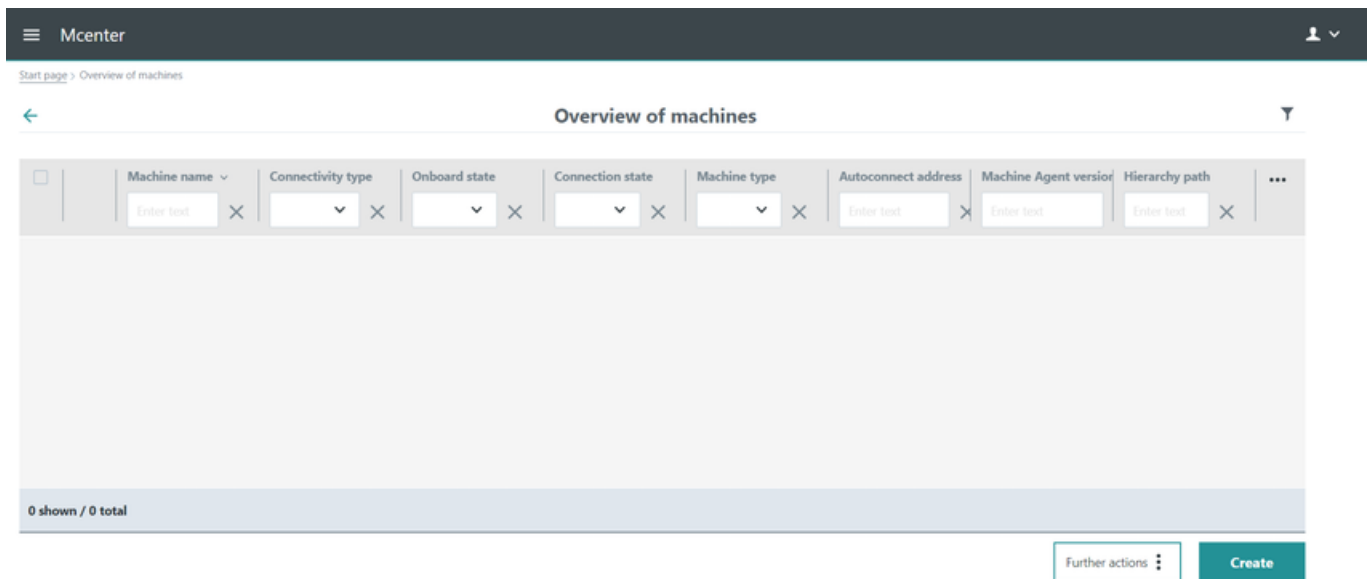
Open the following URL: Overview of machines (<https://{ServerIP}/configure-plant>)

2. The "Overview of machines" window opens and displays an overview of all created machines with their respective properties.

To set your preferred column width, press the left mouse button and drag the column edges to the left or to the right. The respective parameters are automatically saved when you release the mouse button. The next time you visit the "Overview of machines" page, the columns are displayed with the width you opted for.

You can create, edit, or delete a machine:

- Creating a machine (Page 60)
- Editing a machine (Page 65)
- Deleting a machine (Page 68)



3. If you click the underlined name of the machine with the right mouse button, you have the following options:

- Open in a new tab
- Open link in new window
- Open link in incognito window
- Save link as ...
- Copy link address

5.4 Manage machines

- Inspect

Download "Machine Agent installer"

If you connect the machine and the server via the Machine Agent, you need the "Download Machine Agent installer".

User rights are important because the admin, key user, production planner, NC programmer expert and maintenance engineer can download.

1. Click on the "Further actions" button.
2. Click on "Download Machine Agent installer".
3. The browser opens. The file "machineagent_v...tar.gz" is displayed in the default directory.

Additional information about installing and configuring the Machine Agent client is provided in the Installation Manual "Mcenter, Manage MyResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData /Collector".

Download "onboarding keys"

If you connect the machine and the server via the Machine Agent, you need the "onboarding keys".

At least 1 Machine Agent type machine must be selected for this feature. If no Machine Agent is selected, the item is disabled.

User rights are important because the admin, key user, production planner, NC programmer expert, maintenance engineer can download.

1. In the "Overview of machines", select the machine(s) the key(s) of which can be downloaded. You can only select "Machine Agent" connectivity type machine(s).
2. Click on "Further actions" button.
3. Click on "Download onboarding keys".
4. Depending on your browser settings, you have the following options:
 - The download starts and the file "onboardingkeys.zip" is displayed in the lower left window area.
 - The file "save dialog" is open. You can select where the file are saved to.
5. Transfer the onboarding key to your Machine Agent client.

Additional information is provided in the Installation Manual "Mcenter, Manage MyResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData /Collector".

5.4.2 Creating a new machine type

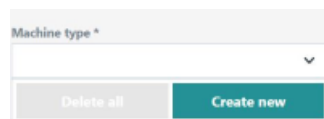
You can create a new machine type and it is added to the machine type list.

Parameters

Parameters	Description
Machine type *	
	Indicates that the input is correct.
	Cancels the data you entered into the field.
	Edits the machine type name.
	Deletes a machine type.

Procedure

1. Open the "Overview of machines" window.
2. Click on the "Create" button.
The dialog window "Please select the connectivity type for your machine" opens.
 - Select the desired connectivity type and click on the "Select" button.
 The "Create new machine" window opens.
 - Click the "Machine type" field to display the "Create new" and "Delete all" button.
3. Click on the "Create new" button.
 - Enter the machine type into the "Machine type" field.
 - Click the check symbol to save the new machine type. The check symbol turns green when you click it.



4. The new machine type becomes part of the drop-down list and can be selected.
It is displayed in the "Overview of machines" window.
5. To delete the unused machine types, click the "Delete all" button in the activated "Machine type" menu.
A dialog box appears.
 - Click "Yes, delete" to delete all unused machine types.
 - OR -
 - Click "No, cancel" to cancel the operation.

ATTENTION!

Do you really want to delete all unused machine types?

Do you really want to delete all unused machine types? You are about to delete all machine types that are not associated with machines in the system. This cannot be undone. You may want to ensure that any references to these machine types in applications are corrected first.

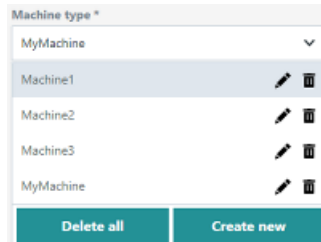
Do you still want to proceed?

No, cancel

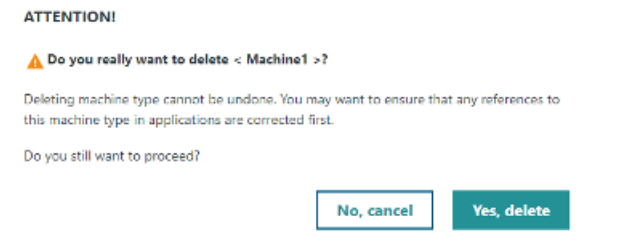
Yes, delete

5.4 Manage machines

6. To delete an individual machine type, click the "Machine type" field.
 - The drop-down list displaying the machine types opens.
 - Select a machine type and click the "Delete" symbol.



7. A dialog box appears.
 - Click "Yes, delete" to delete the selected machine type.
 - OR
 - Click "No, cancel" to cancel the operation.



8. To change the name of a machine type, click the "Machine type" field. The drop-down list opens. Click the "Edit" symbol and enter the new name. Confirm the new name by clicking the check symbol.

Note

List filtering

You can search for a specific machine type by entering the name into the "Machine type" field.

5.4.3 Creating a machine

Create a machine in the "Create new machine" window.

With the Mcenter, machine tools with different controller manufacturers can be connected. The controller manufacturer must be specified when creating a machine.

Connectivity types have a physical connection between the machine tool and the Mcenter Server.

The following connectivity types are supported:

- SINUMERIK Integrate: Machine Tools with Siemens SINUMERIK controllers
 - Machine Agent: Other controller manufacturers.
 - Managed Client: Other unsupported controller manufacturers
- Connectivity types which do not have a physical connection between the machine tool and the Mcenter server.

Parameter

The following parameters are available:

Parameter	Description
Connectivity type	Activate the connection type: • SINUMERIK Integrate • Machine Agent • Managed Client
Machine name *	Enter a unique name for the machine. You can enter up to 50 characters.
Machine type *	Create a new machine type if the required type does not exist. Click the "Machine type" field in the "Create new machine" window to add a new machine type. The application recognizes whether the machine type exists while you fill in the input field. It displays an error message if the machine type is not unique. When you enter a new machine type, you need to save it to add it to the machine type list. For further information, see Creating a new machine type (Page 58).
Controller type *	Open the drop-down list and select the controller type of the machine. The controller type is a mandatory field which must be specified when creating the machine. The content must match the controller type of the machine to be connected to the server. If the correct controller type is not in the list, you should choose a similar controller type or the "Other" option. The controller type can influence which applications can be assigned or installed to the given machine.
Hierarchy path	Open the drop-down list and select the hierarchy path. A newly created machine can be assigned to an existing hierarchy path. The machine can be assigned to only one parent.
Description	Enter a detailed description of the machine. You can enter a maximum of 280 characters.
Connection details	
Connectivity type	Shows the connectivity type you have selected.
Onboard state	Shows the onboarded state.

5.4 Manage machines

Parameter	Description
Autoconnect address *	For the connectivity type "SINUMERIK Integrate", enter the IP address or MAC address. Enter the unique and valid IP address or MAC address. - IP addresses consist of 4 decimal integers between 0 and 255. Separate each of the numbers with a period, for example 192.168.0.254. - MAC addresses consist of six two-digit hexadecimal numbers separated consistently by colons or hyphens, for example 00:A0:C9:14:C8:29.
Machine agent version	Shows the machine agent version of machine.
Connection state	Shows the connection state.
MAC address *	For the connectivity type "Machine Agent", enter the MAC address of the system or the IPC on which the Machine Agent is running. Enter a unique and valid MAC address. MAC addresses consist of 6 two-digit hexadecimal numbers separated consistently by colons or hyphens, for example 00:A0:C9:14:C8:29.
Adapter details - If the connectivity type is "Machine Agent"	
Adapter type *	Open the drop-down list and select the adapter of machine.
Adapter configuration *	Enter the adapter configuration of machine. The configuration depends on the adapter.
	Shows further information.
	Indicates that input is required in the field. - OR - Shows that the input is incorrect and provides a short description.
	Indicates that the input is correct.

*) All fields with an asterisk are mandatory. If you enter a value that does not comply with the rules, a red warning symbol and a corresponding red highlighted error message below the input field are displayed.

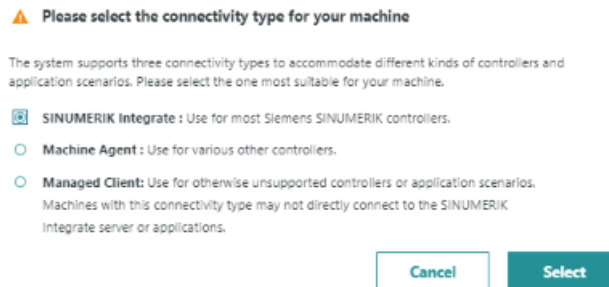
Procedure

1. Click "Create" in the "Overview of machines" window.
2. The dialog window "Please select the connectivity type for your machine" opens.
Select the connection between the machine and the server.

The following options are available:

- SINUMERIK Integrate
- Machine Agent
- Managed Client

Activate the option "SINUMERIK Integrate" and click "Select" button.



3. The "Create new machine" window opens.
 - Enter the required information.
 - Click "Create" to create the machine.
The machine is shown in the "Overview of machines": Overview of machines (Page 54)
- OR -
Click "Cancel" to discard the inputs.

5.4 Manage machines

Start page > Overview of machines > Create new machine

Create new machine

Machine identity

Machine name *

Machine type *

Controller type *

Hierarchy path

Description

Connection details

Connectivity type

Machine Agent

Onboard state

MAC address *

Connection state

Adapter details

Adapter type *

Adapter configuration *

Cancel Create

For the Machine Agent machines, you can enter the adapter details, adapter type and adapter configuration.

Adapter details

Adapter Type *

Fanuc (1.0.35)

Adapter configuration *

```
{
  ip: '1.1.0.22',
  port: '1850'
}
```

**License management**

After a machine is successfully connected, a license is issued.

The Managed machines are not required licenses.

If problems occur at this point, the following error messages are displayed:

Error message "Problem: New machine could not be created. Reason: There is no connection to the license server or the license server actively refused it."

The new machine cannot be created, because there is no connection to the license server.

Remedy: Additional information on resolving the error is available under:

- "Siemens PLM user guide"
- "Flexera manual"
- Installation Manual "Mcenter, Manage MyResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData /Collector"

Error message "Problem: New machine could not be created. Reason: No more licenses left."

The new machine cannot be created because no further licenses are available.

Remedy: Additional Information on resolving the error is available under:

- "Siemens PLM user guide"
- "Flexera manual"

Error message "Problem: New machine could not be created. Reason: No valid license found."

The new machine cannot be created because the license file is invalid or does not contain Mcenter license.

Remedy: Additional information on resolving the error is available under:

- "Siemens PLM user guide"
- "Flexera manual"

Error message "Problem: New machine could not be created. Reason: The license has expired."

The new machine cannot be created because the license has already expired.

Remedy: Additional information on resolving the error is available under:

- "Siemens PLM user guide"
- "Flexera manual"
- Contact the Mcenter sales representative

Error message "Problem: New machine could not be created. Reason: No valid Mcenter license found. The new machine could not be created because it has no valid Mcenter license."

Remedy: Additional information on resolving the error is available under:

- "Siemens PLM user guide"
- "Flexera manual"
- Contact the Mcenter sales representative

5.4.4 Editing a machine

Once a machine has been created successfully, the associated data can be edited at any time, and you can display the controller details.

Prerequisite

The machine is onboarded.

Parameter

The following parameters are available:

Parameter	Description
Machine identity	
Machine name *	Enter a unique name for the machine. You can enter up to 50 characters.
Machine type *	Open the drop-down list and select the type of machine or create a new machine type.
Controller type *	It is not editable, but displays the selected controller type of machine.
Hierarchy path	Open the drop-down list and select the hierarchy path. The machine can be assigned to an existing hierarchy path. The machine can be assigned to only one parent.
Description	Enter a detailed description of the machine. A maximum of 280 characters can be entered.
	Indicates that the input is correct.
Connection details - The following parameters are not editable	
Connectivity type	Displays the connectivity type.
Onboard state	Displays the onboarded state.
Autoconnect address *	Displays the autoconnect address
Machine agent version	Displays the machine agent version.
Connection state	Displays the connection state.
Controller details	
PCU	Displays the version of the connected PCU hardware component. The property is displayed, when a PCU is connected to the server.
NCU	Displays the version of the connected NCU hardware component.
Operating system	Displays the operating system and version.
HMI	Displays the SINUMERIK Operate type and version.
HMI components	Displays information about an additional software that is running on the machine, e. g. SINUMERIK Integrate client version or Machine Handler version.
Adapter details - If the connectivity is "Machine Agent". These parameters are not editable	
Adapter type *	Displays the selected adapter of machine
Adapter configuration *	Displays the entered adapter configuration of the machine.

*) All fields with an asterisk are mandatory. If you enter a value that does not comply with the rules, a red warning symbol and a corresponding red highlighted error message below the input field are displayed.

Procedure

1. Click the underlined name of the desired machine in the "Overview of machines" window.
2. Window "<Machine name>" opens and displays the machine data.
Click on "Edit" button.

[Start page](#) > [Overview of machines](#) > [Sample Machine](#)

←
Sample Machine

Machine identity



Machine name *

Machine type *

Controller type *

Hierarchy path

Description

Connection details

Connectivity type

Onboard state

Machine agent version

Connection state

MAC address *

Adapter details

Adapter type *

Adapter configuration *

```
{
  "host": "localhost",
  "port": 8193,
  "timeout": 10,
  "file_transfer_timeout": 900
}
```

3. The input fields can be edited.
 - Enter the new data and select the desired changes from the drop-down lists.
You cannot enter any changes in the "Connection details" section!

5.4 Manage machines

- To save the changes, click on the "Save" button.
The "Overview of machines" window opens and displays the changed machine in the list.
- OR -
Click on the "Cancel" button to cancel the editing without saving and to return to the "Overview of machines" window.

5.4.5 Deleting a machine

You can delete superfluous machines from the "Overview of Machines".

Note

Deleting machines without installed applications

Delete only machines without Mcenter applications.

If you have deleted a machine with such an application, uninstall it later manually. This can result in full or partial loss of the HMI functionality.

For information about uninstalling an application from a machine, see Changing assignments (Page 74).

Note

Deleting machines without tools

Only delete machines that are not equipped with tools.

If necessary, shift the tools to "Assembly" or "Cabinet".

If you have deleted a machine equipped with tools, you must subsequently delete the tools in the Manage MyResources /Tools, Tool stock application. As these tools are still known to Manage MyResources /Tools, they will be shown in the following location: <hierarchy of the deleted machine>-LostMagazine.

Additional information about containers is provided in Operating Manual ManageMyResources.

Procedure

1. Select the desired machine in the "Overview of machines" window.
2. Click the "Delete" symbol.

3. If there is no application on the machine, the following dialog box appears.

- Click "Cancel" to cancel the operation.
- OR -
- Click "Delete" to delete the machine.

Delete machine 'MyMachine'?

Please confirm whether machine 'MyMachine' should be permanently deleted. This could possibly affect system availability.



- OR -

If at least one application is installed on the machine, the following dialog box appears.

- Click "Cancel" to cancel the operation.
- OR -
- Click "Force delete" to delete the machine.

ATTENTION!

There are installed applications on machine 'MyMachine'!

Please make sure the applications are uninstalled before deleting the machine, otherwise they can only be removed manually later on!

If you would like to proceed despite of this, you can force delete the machine.



4. A success message is displayed in the upper right corner of the window.

5.5 Manage applications on machines

5.5.1 Overview of assignments

You can assign Mcenter applications to the connected machines. The assigned applications are installed automatically. The only necessary user interaction on the machine's side is a reboot.

The "Overview of assignments" window shows an overview of all created machines from "Manage machines".

Prerequisites

- The connection between the server and the machine is configured.
- Appropriate roles are required to open the "Overview of assignments" page".
For more information, see Manage users (Page 38).
- The connections between the server and the machines must be established to use the application assignment.
For more information, see Manage machines (Page 54).

5.5 Manage applications on machines

- Before installing any applications using the Mcenter Server, uninstall all applications, which were installed with the SINUMERIK Integrate 4.1 Installer. If you do not do this, the installation using "Manage applications on machines" fails, and neither of the installed applications works properly.
- Applications that were installed with the SINUMERIK Integrate 4.1 Installer are not recognized and displayed on the Application assignment page.
- If HMI-Advanced machines are connected to the server, check the configuration in the Installation Manual.
For more information, see the chapter "Manage applications on the machines" in the Installation Manual "Mcenter, Manage MyResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData /Collector".

Parameter

The following information is displayed for machines:

Parameter	Description
▼	This symbol appears when you click on the column heading. Click on the symbol to sort the elements alphabetically/numerically, in ascending or descending order.
Machine name	Shows the name of the machine.
Machine type	Shows the type of the machine.
Hierarchy path	Shows the path of the hierarchy.
Number of assignments	Shows the number of assigned client applications.
New version available	Shows the availability of a new version: • "Yes"- A new version is available on the server. You can select the machine for an update if the client of the target machine meets the update requirements. • "No"- No new version is available on the server. • "Unknown"- The machine cannot be updated. The server did not receive the hardware or software information from the machine or the machine is switched off and is in an unknown state. Restart the machine and try again later.

Parameter	Description
Status	Shows the application status: • "No changes in progress" for one of the following reasons: – No application has been assigned yet – No installation is in progress – No uninstallation is in progress – No update is in progress • "Changes in progress" for one of the following reasons: – Installation is in progress – Uninstallation is in progress – Update is in progress • "Manual action required" for one of the following reasons: – Machine or HMI needs to be restarted to complete the install/uninstall/update operation – Error during the install/uninstall/update operation
	Opens the "My Filters" window and filters the machine table according to the following criteria: • Machine name • Machine type • Hierarchy path • Number of assignments • New version available • Status For more information, see List filtering (Page 30). Click on the filter icon again to close the filter window.

Procedure

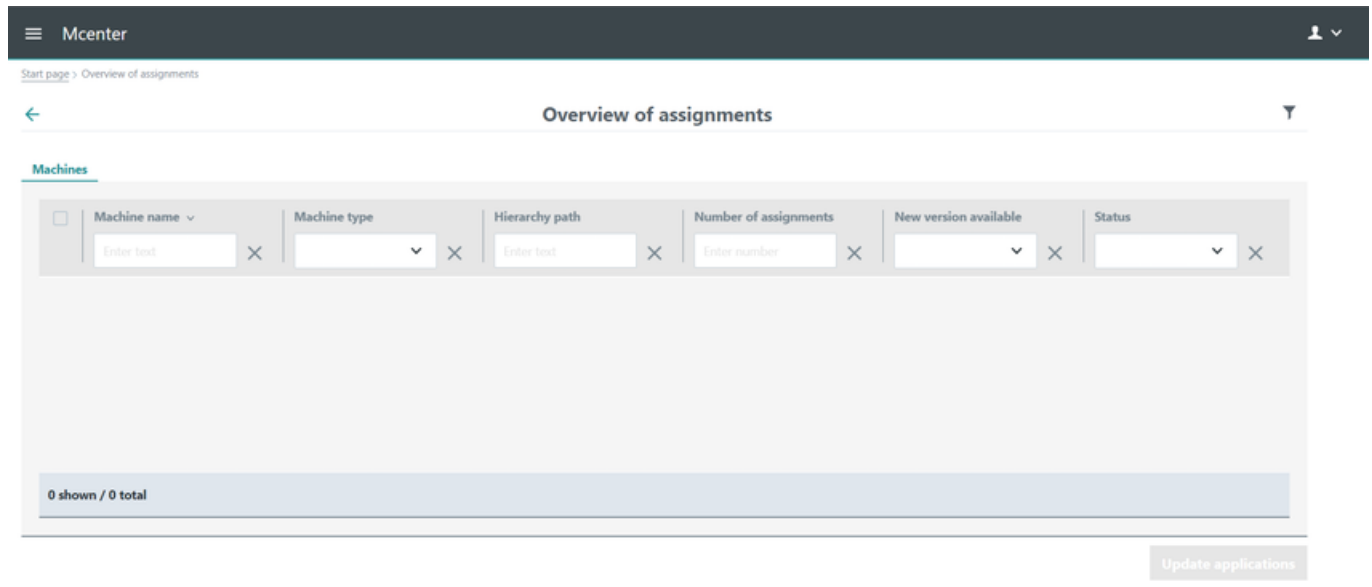
1. On the start page of Mcenter, click on "Manage applications on machines".



- OR -

Open the following URL: Manage applications on machines (<https://{ServerIP}/appassignment-overview>)

2. The "Overview of assignments" window opens and displays an overview of all machines with their properties.
In order to set your preferred column width, press the left mouse button and drag the column edges to the left or to the right. The respective parameters are automatically saved when you release the mouse button. The next time you log in with your user Id, the columns are displayed with the width you opted for.



3. When you select a machine for the first time, an update is carried out and the following message appears: "Post update information: Any actions regarding the application assignments are not possible due to performed Mcenter update. Please, wait a few minutes until the machine is ready to use and try again."

5.5.2 Machine overview of applications

The "<Machine name>" window shows details of the application assignments on the selected machine. If no application is assigned to the machine, the table is empty.

Prerequisites

- The proper rights are required to open the "Overview of assignments".
For more information, see Manage users (Page 38).
- The connection between the server and the machine is configured.
For more information, see Manage machines (Page 54).

Parameter

The following information is displayed for machines:

Parameter	Description
Application name	Shows the name of the assigned software application.
Client application state	Shows the application state, for example: • Waiting for machine client to install • Installing • Installed • Uninstalling • Downloading • Error occurred during installation
Client application version	Only contains information when "Client application state" of this application is "Installed". Version can be: • Up-to-date • Not updatable • Update available For more information, see Updating assignments (Page 76). The tooltip shows the version of the applications that is available on the server and the version of the assigned and installed application.

Procedure

1. Click on the underlined name of the machine in the "Overview of assignments" window. The "<Machine name>" window opens and displays an overview of assigned software packages with their properties.



The screenshot shows a web interface with a breadcrumb trail: 'Start page > Overview of assignments > 89'. Below this is a section titled 'Assignments' containing a table with three columns: 'Application name', 'Client application state', and 'Client application version'. The table lists three applications, all with a state of 'Installed' and a version status of 'Up-to-date'.

Application name	Client application state	Client application version
Manage MyResources / Programs	Installed	✓ Up-to-date
Analyze MyPerformance	Installed	✓ Up-to-date
Manage MyResources / Tools	Installed	✓ Up-to-date

2. Click on "Change assignments" to add or delete assignments for the machine:
 - Changing assignments (Page 74)
3. If the machine is stuck in state "Installing" more than 5 minutes, check whether the machine is connected to the server.

4. If the application is in state "Reboot required on machine client ...", then:
 - Reboot the HMI to successfully complete the installation. For an HMI-Advanced machine, you must switch to the service mode configuration to reboot the PCU.
 - OR -
 - Restart the Machine Agent client. Additional information is provided in the Installation Manual "Mcenter, Manage MyResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData /Collector".
5. If the application is in state "Uninstall failed", the application has to be removed manually.
6. You can change the assignments at any time before the HMI is rebooted. Even if an assignment is already in the "Reboot required..." state.
 - Apply the changes of the assignments.
 - Wait until the assignment are in the "Reboot required..." state again.
 - Reboot the HMI.

5.5.3 Changing assignments

In "Change assignment of <Machine name>" window, select applications for installation and uninstallation on the machine.

Prerequisites

- The proper rights are required to open the "Overview of assignments".
For more information, see Manage users (Page 38).
- The machine model of the machine is available on the server. If the machine's machine model is not available, a message is displayed. Wait until the machine uploads its machine model to the server. If the problem persists, contact your system administrator.
- The connection between the server and the machine is configured.
For more information, see Manage machines (Page 54).

Parameter

The following parameters are available:

Column	Description
Available applications	Displays the applications and their versions which are available on server.
Applications assigned to the machine	Displays the applications and their versions which are assigned to the machine.

Note

Not all applications have SINUMERIK Operate and HMI-Advanced compatible versions, so the application list depends on the software version.

For example, if an application is only compatible with SINUMERIK Operate, this application does not appear in the "Available applications" column, for HMI-Advanced machines.

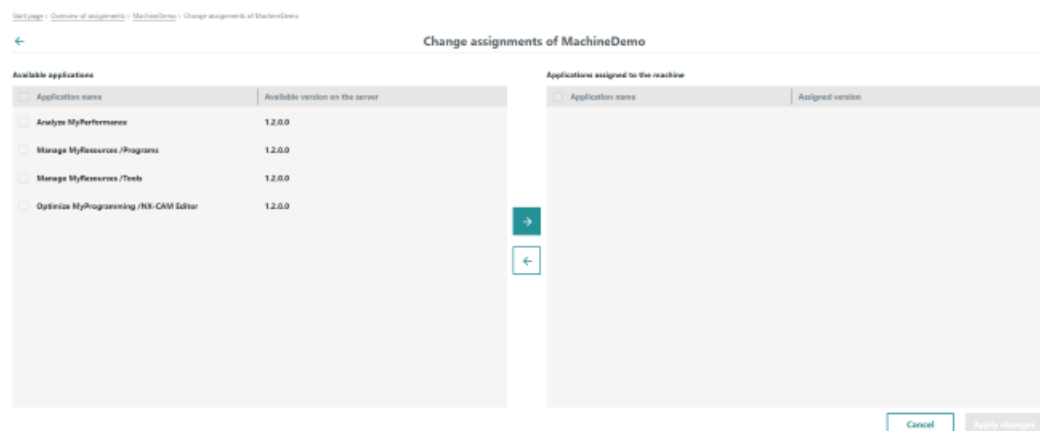
Note

Changing assignments on Managed machines

In case of machines with a Managed Client connectivity type, the changing assignments procedure is the same. However, the client application state is installed immediately.

Procedure with an activated checkbox

1. Click on "Change assignment" button in the "<Machine name>" window.
The "Change assignments of <machine name>" window opens.



2. In the column "Available applications", select the applications, that you want to assign to the machine. Click the arrow button to the right.
To select all applications, activate the checkbox in the column header.
3. In the column "Applications assigned to the machine", select the applications, that you want to delete from the machine and click the arrow button to the left.
To select all applications, activate the checkbox in the column header.
4. Click "Apply changes".
- OR -
Click "Cancel" to discard the changes.
5. The "Summary of changes" windows opens. Click "Apply" to confirm the changes.
6. Click symbol "Back".
The "<Machine name>" window reopens. The previously chosen applications are displayed. The "Client application state" is "Waiting for machine client to install". The "Client application version" is empty.

Note

Inactive checkbox

The checkbox is inactive when the machine is unavailable. A tooltip displays the information "The application cannot be assigned to the machine due to incompatible hardware or software."

5.5.4 Updating assignments

In the "Overview of assignments" window, select machines to update their applications. On the selected machines, all previously installed applications are updated.

Prerequisites

- The proper rights are required to open the "Overview of assignments".
For more information, see Manage users (Page 38).
- Applications are installed on the machine.
Server update is required to get new version of applications on server.

Note

Updating assignments on Managed machines

After the Mcenter server update, the client application version is "Up-to-date" instead of "Update available".

Procedure

1. In the "Overview of assignments" window, updatable machines are indicated with a "Yes" value in the "New version available" column.
To display the status of the individual applications of a machine, click on the name of a machine.

Start page > Overview of assignments > PCU 52

← PCU 52

Assignments

Application name	Client application state	Client application version
Analyze MyPerformance	Installed	✓ Up-to-date
Manage MyResources /Programs	Installed	⚠ Update available
Manage MyResources /Tools	Installed	⚠ Not updatable

Change assignments

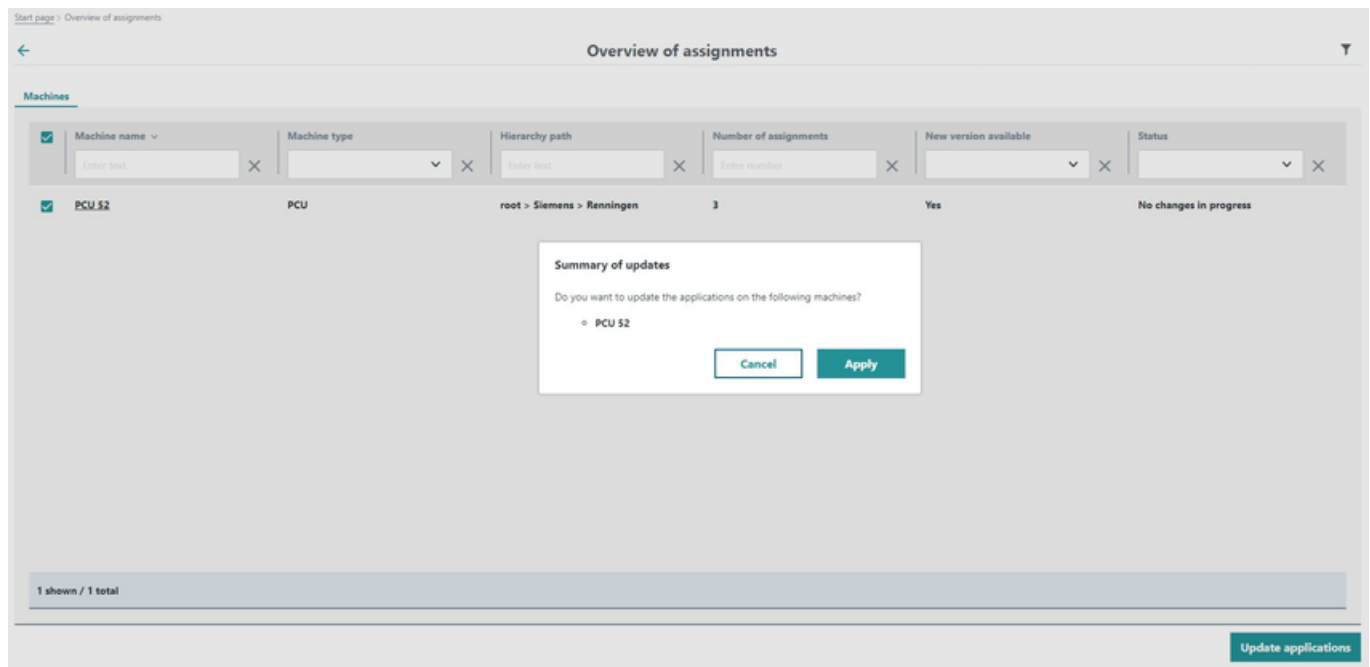
An application with the status "Update available" can be updated.

An application with the status "Not updatable" must be uninstalled and a new version of the application must be installed.

2. In the "Overview of assignments" window, select the checkboxes for those machines that should be updated.
3. Click on the "Update applications" button.
The "Summary of updates" window opens and displays all machines that will be updated.
If you update a machine, all installed applications will be updated.

5.5 Manage applications on machines

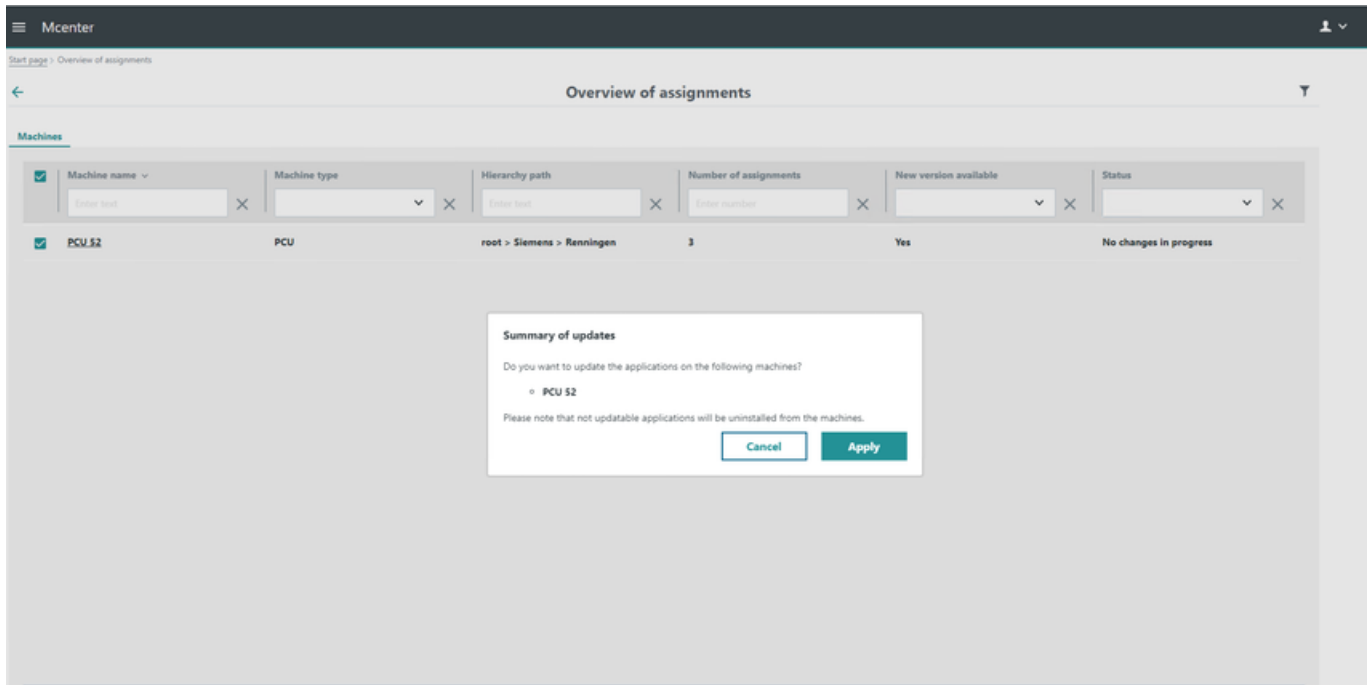
4. Click on the "Apply" button to continue.
For the affected machines, the value in the "Updates available" column changes to "No" and the value in the "Status" column changes to "Changes in progress".
- OR -
Click the "Cancel" button to abort the process.



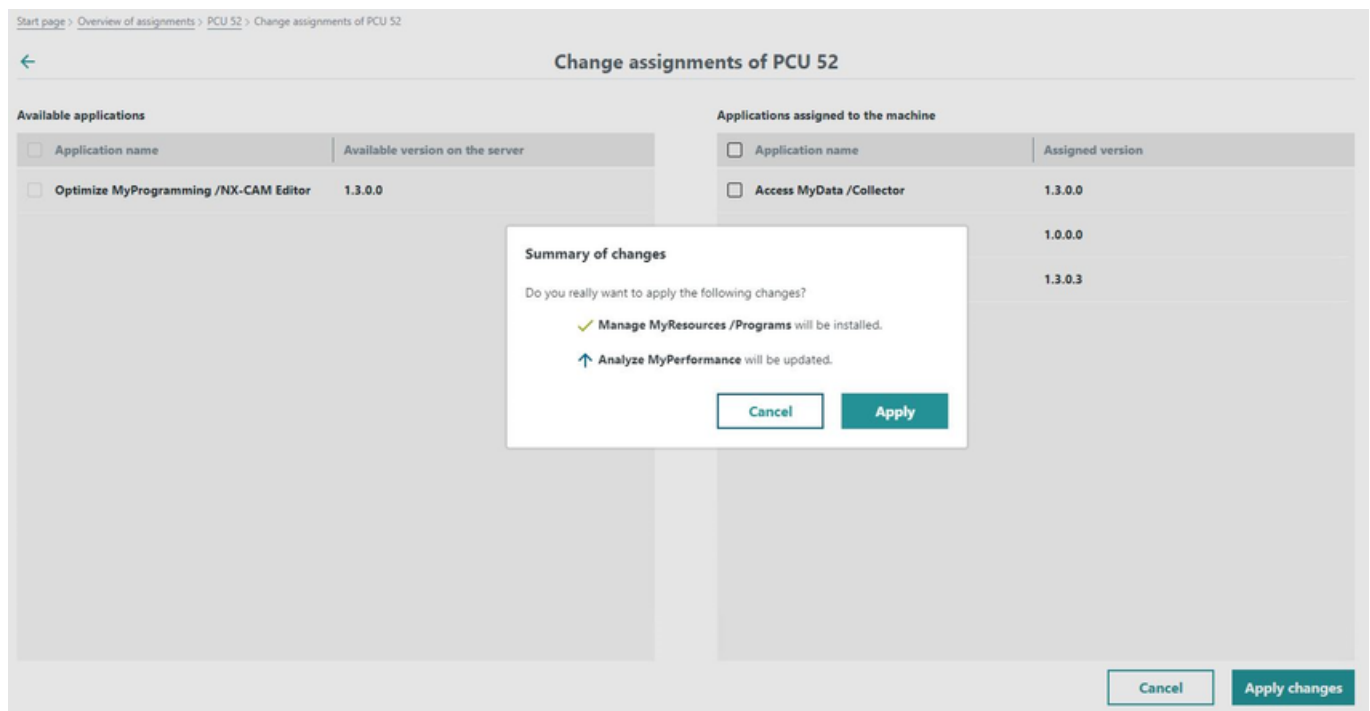
5. Click on the name of a machine.
During the update process, the "Client application state" is "Download pending" and the "Client application version" is empty.
6. As soon as all applications of the affected machines have the state "Reboot required on machine client after installation", reboot the HMI.

Forced update or uninstall

If you have applications with the "Update available" version and you want to install a new so previously not installed application, you are informed that during the installation an update process also will start for the applications with the "Update available" version.



If there are applications with outdated or previous versions and the user starts an update process, the "Summary of changes" window comes up. The window informs the user about the applications with outdated versions that will be uninstalled and applications with previous versions that will be updated.

**Note****Machines with a Machine Agent connectivity type**

Concerning machines with a Machine Agent connectivity type, additional information is provided in the Operating manual "Mcenter, Analyze MyPerformance /OEE".

5.6 Manage openness clients

Prerequisite

You need administrator rights to manage openness clients.

Software products from third-party suppliers can access data or functions from the Mcenter via its open interfaces. As a first step, external clients must authenticate themselves with Mcenter. An access token obtained from the Identity service is used for identification.

Use the Manage openness clients application to create an openness client. The created openness client includes all information you require to get an access token. With such a token you are able to use MMR-API and instantiate tools with geometry data, for example. You must create a dedicated openness client for each client.

Validity of openness clients

Newly created openness clients are valid for one year. After this period, you must change the secret or create a new client.

Note

Expiration of openness API client

The expiration date of the openness API client for which an access token was requested is checked.

If the client secret expires within the next 31 days (compared to the server time), a warning level entry is written to the Identity service log.

The "Manage openness clients" window shows an overview of all created openness clients. It provides the following functions:

- Listing openness clients
- Create a new openness client
- Edit the name of an openness client
- Change the secret of an openness client
- Delete one or multiple openness clients

Parameters

Parameter	Description
ID	Shows the Client-Id of the openness client.
Name	Shows the name of the openness client.
Creation date	Shows the creation date of the openness client.
Expiration date	Shows the expiration date of the openness client.
Actions	The following actions are available: • Edit • Change secret • Delete

Procedure

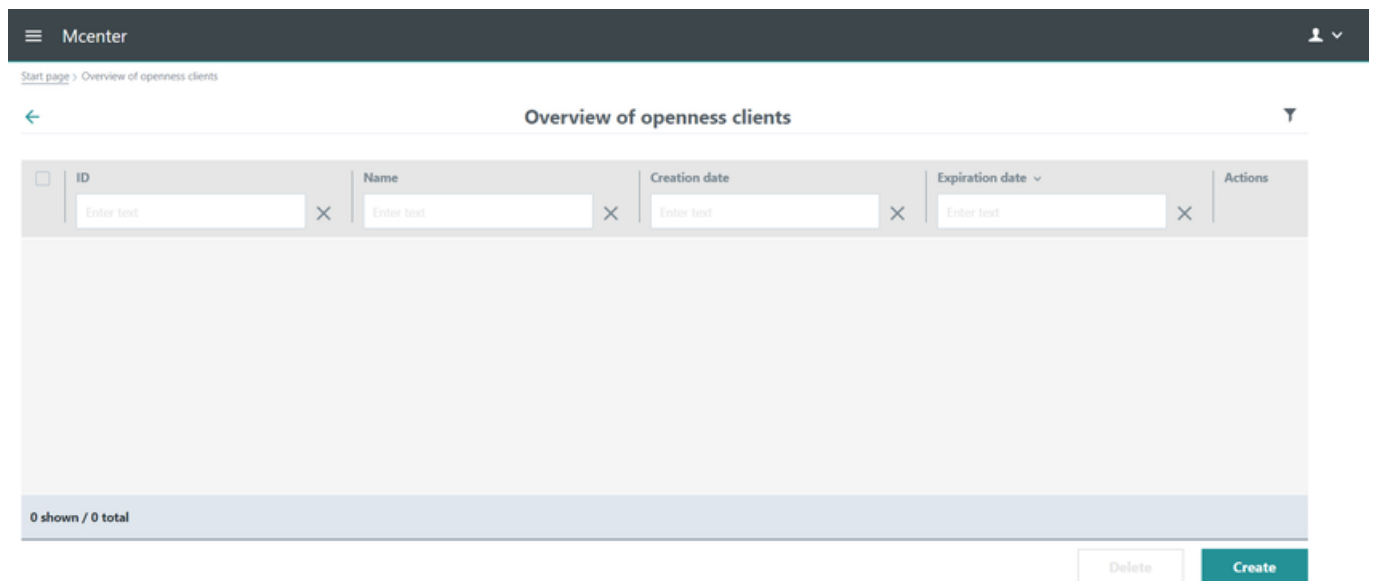
1. On the start page of Mcenter, click on "Manage openness clients".



- OR -

Open the following URL: Overview of openness clients (<https://{ServerIP}/opennessclient-overview>).

2. The "Overview of openness clients" window opens and displays an overview of all created openness clients with their properties.



5.6.1 Creating a new openness client

You can create openness clients in the "Overview of openness" window.

Note

Openness client name

The name of the openness client does not have to be unique.

Parameter

Parameter	Description
Create new openness client	
Openness client*	Enter the name of the openness client.

*) The fields marked with an asterisk are mandatory and must be completed. An error message is output if you make an erroneous entry.

Procedure

1. Click on the "Create" button in the "Overview of openness clients" window.
2. The "Create new openness client" window opens.
Enter the name of the openness client.
Click on the "Confirm & Download" button to create an openness client.
- OR -
Click on the "Cancel" button to discard the inputs.

Create new openness client

This action will create a new openness client.

Openness client *

✓

Please note: New openness client credentials (clientId and secret pair) will be created and offered to be downloaded.

CancelConfirm & Download

3. The created openness client is displayed in the " Overview of openness clients" window.

4. The "OpennessToken.json" file is created. This file contains all information required to receive an access token from the Identity service.

Depending on the browser you use, the file is shown in the status bar.

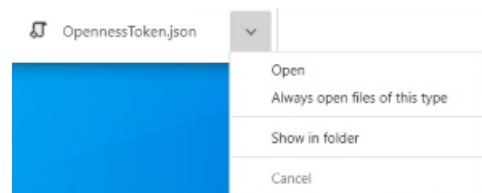
If you click the checkmark, you have the following options:

- Open: To open the file select the corresponding program, for example the Editor.
- Always open files of this type: The generated file is always opened.
- Show in folder: Open the "Downloads" directory in which all previously generated files are stored with their dates.

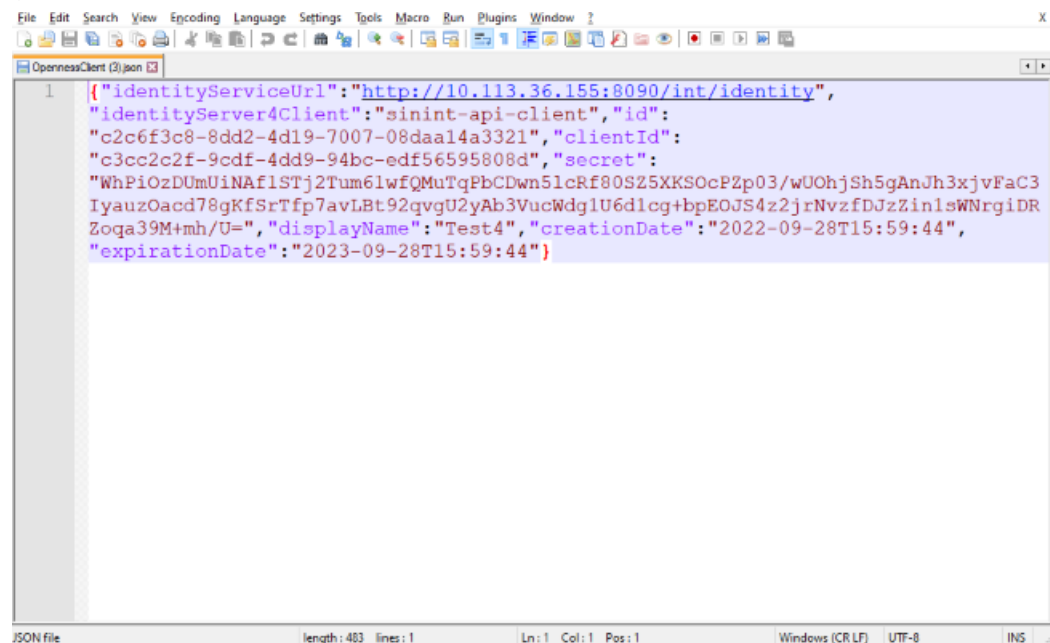
Note

"OpennessToken.json" file

If the "OpennessToken.json" file has been created, it is not possible to create a new file again. If the file is missing, you can change the token, which will invalidate the previously created file.



5. If you open the file, you receive the access token with the information from the secret generator.



5.6.2 Editing an openness client

You can rename existing openness clients.

Note

Openness client name

The name of the openness client does not have to be unique.

Parameter

Parameter	Description
Rename <openness client name>	
New name*	Enter the name of the openness client.

*) The fields marked with an asterisk are mandatory and must be completed. An error message is output if you make an erroneous entry.

Procedure

1. Click on the "Actions" button in the "Overview of openness clients" window and click on "Edit".
2. The "Rename <openness client name>" window opens.
Enter the name of the openness client.
Click on the "Rename" button to rename the selected openness client.
- OR -
Click on the "Cancel" button to discard the inputs.

Rename Test3

This action will rename the Openness client Test3.

New name *

✓

Cancel

Rename

3. The renamed openness client is displayed in the "Overview of openness clients" window.

5.6.3 Changing the secret of an openness client

You can change the secret of a selected openness client.

Procedure

1. Click on the "Actions" button in the "Overview of openness clients" window and click on "Change secret".
2. The "Change secret for <openness client name>" window opens.
Click on the "Confirm & Download" button to change the secret of the selected openness client.
- OR -
Click on the "Cancel" button to cancel the operation.

Change secret for Test3

A new secret will be created for the client 'Test3', its id will remain the same.

Please take into account that right after confirming this dialog the system will not accept requests with the previously used secret!

Note: If a new interface is provided or a new function for an existing interface is introduced with a new version of Mcenter then a new Openness client must be created. An existing Openness client cannot be reused for this because the necessary rights might be missing.



3. The "OpennessToken.json" file is created. If you open the file, you receive the access token with the information from the secret generator.

Note

Change secret

If the secret has been changed, the previous secret and json file do not work anymore. Only the newly regenerated secret will be accepted.

5.6.4 Deleting openness clients

You can delete unnecessary openness clients from the "Overview of openness clients" window.

Procedure

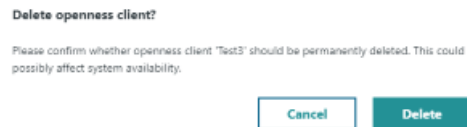
1. Click on the "Actions" button in the "Overview of openness clients" window and click on "Delete".

The "Delete openness client?" window opens.

Click on the "Delete" button to delete the openness client.

- OR -

Click on the "Cancel" button to cancel the operation.



- OR -

2. Activate the checkbox of the desired openness client in the "Overview of openness clients" window.

– Activate individual checkboxes.

- OR -

– Activate the column header checkbox to select all openness clients.

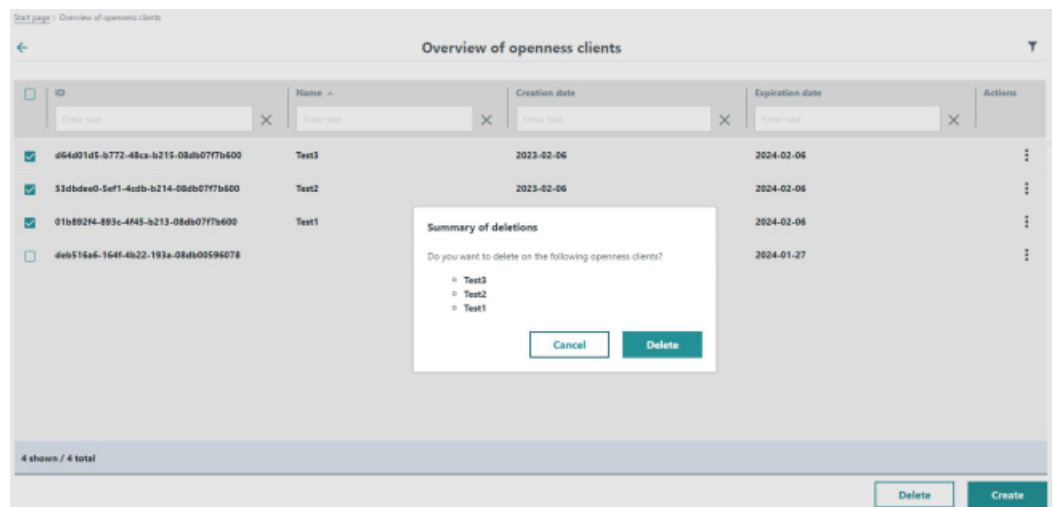
Click on the "Delete" button.

The "Summary of deletions" window opens.

– Click on the "Delete" button to delete the selected openness clients.

- OR -

– Click on the "Cancel" button to cancel the operation.



3. The selected openness clients are deleted.

5.7 Manage adapters (experimental)

5.7.1 Overview of adapters

The "Overview of adapters" window shows an overview of all uploaded Machine Agent adapters. It provides the following functions:

- Listing adapters both provided by Siemens and uploaded by users
- Displaying adapter package info content (pkginfo.json)
- Uploading new adapters
- Deleting user-uploaded adapters if those are not assigned to any machine (Generic adapters cannot be deleted)

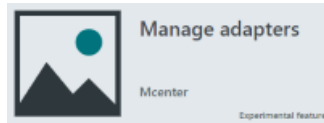
Parameters

The following information is displayed for adapters:

Parameter	Description
	This symbol appears when you click on the column heading. Click on the symbol to sort the elements alphabetically/numerically, either in ascending or descending order.
	Click on the symbol to expand the actual row and show the adapter package info content (pkginfo.json). Click again on the symbol to collapse the row.
	Shows that the adapter is a generic adapter, meaning it is provided by the installer.
Adapter name	Shows the name of the adapter.
Adapter version	Shows the version of the adapter.
	Deletes the adapter after a confirmation prompt.
	Opens the "My Filters" window and filters the adapters table according to the following criteria: • Adapter name • Adapter version • Generic adapter For more information, see List filtering (Page 30). Click on the filter icon again to close the filter window.

Procedure

1. On the start page of Mcenter, click on "Manage adapters".



- OR -

Open the following URL: Overview of adapters (<https://{ServerIP}/adapter-overview>).

2. The "Overview of adapters" window opens and displays an overview of all uploaded adapters with their properties.
In order to set your preferred column width, press the left mouse button and drag the column edges to the left or to the right. The respective parameters are automatically saved when you release the mouse button. The next time you open the "Overview of adapters" window, the columns are displayed with the width you opted for.
You can upload or delete an adapter.

Note

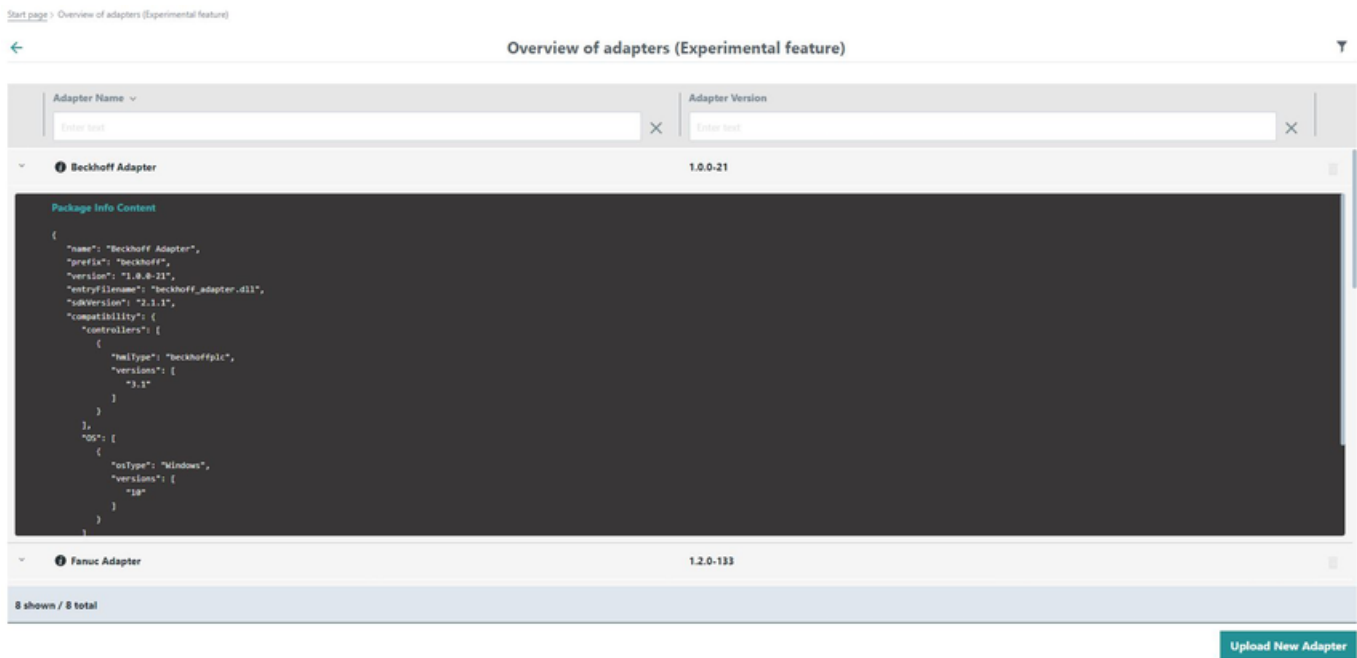
Black info icons

Black info icons are only shown for generic adapters which are installed during setup. Generic adapters cannot be deleted.

Adapter Name	Adapter Version
Beckhoff Adapter	1.0.0-23
Fanuc Adapter	1.4.0-62
Heidenhain Adapter	1.2.0-27
MTConnect Adapter	1.2.0-10
OPCUA Adapter	1.2.0-39
REST Adapter	1.1.0-8

7 shown / 7 total

Upload New Adapter

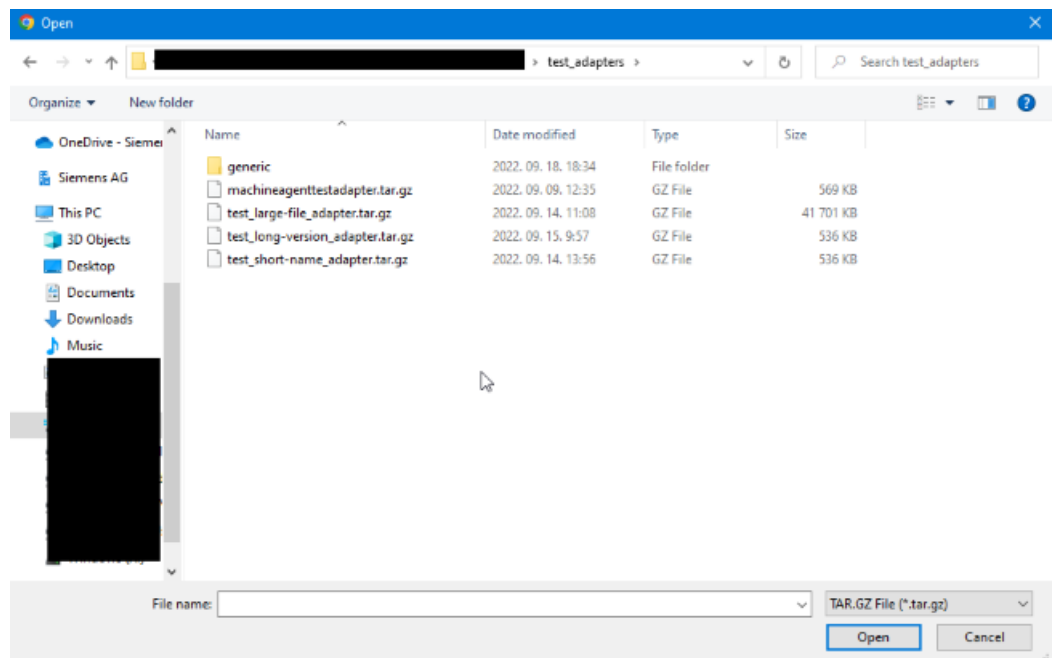


5.7.2 Uploading an adapter

You can create a new adapter by uploading its package file.

Procedure

1. Click the "Upload New Adapter" button in the "Overview of adapters" window to install a new adapter.
The file selection dialog opens.
2. Select the desired adapter file and click on the "Open" button.
 - Multiple file selection is not allowed.
 - During the upload process, user interactions are disabled on the page.
 - If the extension of the selected file is not ".tar.gz", the following error message is displayed: "File extension must be '.tar.gz!'".
 - If the selected adapter file has an incorrect content, its size is too big, there is a version mismatch or 'pkginfo.json' is missing, error messages are displayed.
 - If there is already an adapter installed with the same name and version, the following error message is displayed: "Problem: The adapter could not be created. Reason: Adapter with the same name and version already exists for this user."



5.7.3 Deleting an adapter

You can delete adapters from the "Overview of adapters" window

Note

"Delete" symbol not enabled for generic adapters

The "Delete" symbol is not enabled for generic adapters, because they cannot be deleted. Deleting an adapter is only possible if the adapter is not assigned to any machine.

Procedure

1. Open the Overview of adapters" window.
2. Click the "Delete" symbol in the "Actions" column to delete an adapter.
3. The following dialog box appears.
Click on the "Delete" button.
- OR -
Click on the "Cancel" button to abort the process.

Delete adapter 'Test Adapter (v1.0.0-23)'?

Please confirm whether adapter 'Test Adapter (v1.0.0-23)' should be permanently deleted.
This could possibly affect system availability.

Cancel

Delete

4. If deletion is successful, a success message is displayed in the upper right corner of the window.
5. If the adapter cannot be deleted, an error message is displayed in the upper right corner of the window.

5.8 Platform Open API

5.8.1 Prerequisites

You need to create a new openness client to use the platform's open API. It is not possible to reach the new endpoints with existing openness clients. This external client must authenticate itself with Mcenter. To authenticate on the swagger page use the access token received from the Identity service.

For more information, see:

- Manage openness clients (Page 80)
- Logging in to Mcenter (Page 22)

5.8.2 Retrieve machine states

GET /machinestate/v1/machines



CAUTION

"/machines/v1" endpoint is deprecated and will be removed in a future release. Please use the latest endpoint as described below.

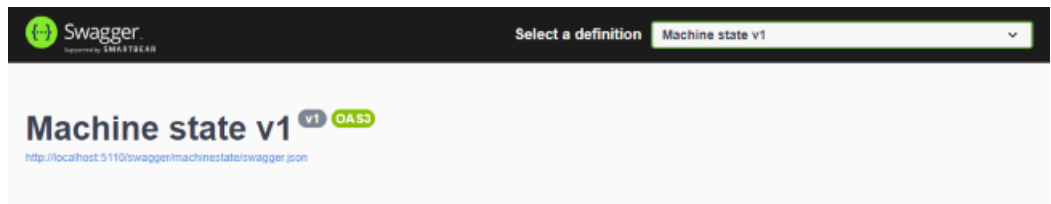
- Retrieves the state of all machines.
- The full URL depends on your protocol settings:
 - `http://<IP address of the Mcenter server>:8090/platform/api/machinestate/v1/machines`
 - or
 - `https://<IP address of the Mcenter server>/platform/api/machinestate/v1/machines`

Restrictions

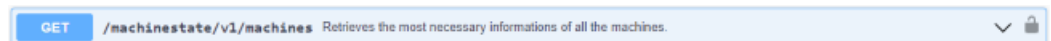
- The online status for machines with connectivity type "Managed Client" is always "Undefined".

Procedure

1. Open the Swagger page depending on your protocol settings:
 - `http://<IP address of the Mcenter server>:8090/platform/api/swagger/index.html`
 - or
 - `https://<IP address of the Mcenter server>/platform/api/swagger/index.html`



2. Select definition "Machine state v1"
3. Scroll to the area titled "MachineState".



4. Open the field "GET" and click on "Try it out".
5. Click on "Execute" to start the request.

Example: Server response for "Get /machinestate/v1/machines" in json string

```
{
  "collection": [
    {
      "id": "48691a62-2426-4ce8-86e1-0126518b8f2f",
      "name": "machine1",
      "connectivityType": 1,
      "isOnboarded": true,
      "onlineState": 2,
      "lastSeen": "2023-01-05T12:45:02.2970876"
    },
    {
      "id": "c74cfee5-fd2c-4615-b935-1029a98d147f",
      "name": " machine2",
      "connectivityType": 1,
      "isOnboarded": true,
      "onlineState": 1,
      "lastSeen": "2022-12-15T10:32:28.3702985"
    },
    {
      "id": "7a29f987-7fd0-4575-9ce7-2a1651bb7ec5",
      "name": "machine3",
      "connectivityType": 1,
      "isOnboarded": false,
      "onlineState": 1,
      "lastSeen": null
    }
  ]
}
```

Parameters

Parameters	Type	Description
id	string	ID of the machine in GUID format
name	string	Name of the machine
connectivityType	number	Connectivity type of the machine 1 = SINUMERIK Integrate 2 = Machine Agent 3 = Managed Client
isOnboarded	"true" or "false"	Onboarded state of the machine
onlineState	number	Online state of the machine 0 = Undefined 1 = Offline 2 = Online
lastSeen	string or "null"	The last time when the machine communicated with the server in DateTime format. "null" value indicates that the machine has not been onboarded yet.

Note**Online state for connectivity type SINUMERIK Integrate**

If the connectivity type is "SINUMERIK Integrate", the parameter "onlineState" is "online", if "lastSeen" is no longer than 10 minutes before the time of the request. The machine communicated with the server in the last 10 minutes. This threshold is configurable. Check the threshold in Consul. Use following path:

key / Values > Processes > SinInt.Machine.Service > isOnlineSection

Service responses

- The request does not contain a valid token
 - status code 401: unauthorized - invalid or expired token.
 - status code 403: forbidden - You do not have the permission for the requested endpoint.
- An error occurred during the request
 - status code 500: an internal error has occurred. The error is described in the SinInt.PlatformOpenAPI.Service log file
- Platform Open API service unavailable:
 - status code 503: the service is unavailable. Platform Open API service is down or unreachable due to some network issue

System performance

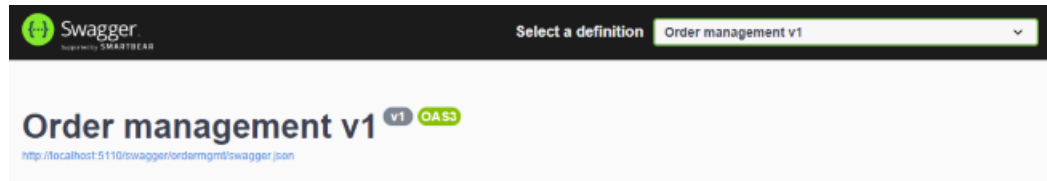
As with every request made to the server, calling this endpoint too many times can impact system performance. Thus monitor the system for degradation. The endpoint should not be called more than once every minute by a client.

5.8.3 Order management**5.8.3.1 Retrieve machines****GET /ordermgmt/v1/machines**

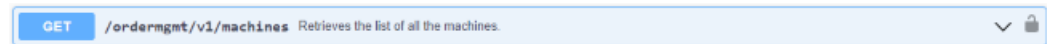
- Retrieves the list of machines.
- The full URL depends on your protocol settings:
 - http://<IP address of the Mcenter server>:8090/platform/api/ordermgmt/v1/machines
 - or
 - https://<IP address of the Mcenter server>/platform/api/ordermgmt/v1/machines

Procedure

1. Open the Swagger page depending on your protocol settings:
 - `http://<IP address of the Mcenter server>:8090/platform/api/swagger/index.html`
 or
 - `https://<IP address of the Mcenter server>/platform/api/swagger/index.html`



2. Select definition "Order management v1".
3. Scroll to area titled "OrderManagement".



4. Open the field "GET" and click on "Try it out".
5. Click "Execute" to start the request.

Example server response for "GET /ordermgmt/v1/machines" in json string

```
{
  "collection": [
    {
      "id": "B4874871-628E-2942-E2D5-3ED2D312893D",
      "name": "machine1"
    },
    {
      "id": "C4024637-E628-4291-F125-312893D3ED2D",
      "name": "machine2"
    }
  ]
}
```

Parameters

Parameters	Type	Description
id	string	ID of the machine in GUID format.
name	string	Name of the machine.

Endpoint responses

The endpoint response could be one of the following:

- The request was processed successfully.
 - 200 status code: ok - The machine list returned.
- If the request did not contain a valid token, you can receive the following responses:
 - 401 status code: unauthorized - Invalid or expired token.
 - 403 status code: forbidden - You do not have the permission for the requested endpoint.
- If any error occurred during the request:
 - 500 status code: internal error - An error occurred trying to acquire the machines. The error is described in the SinInt.PlatformOpenAPI.Service log file.

5.8.3.2 Creating a new work sequence

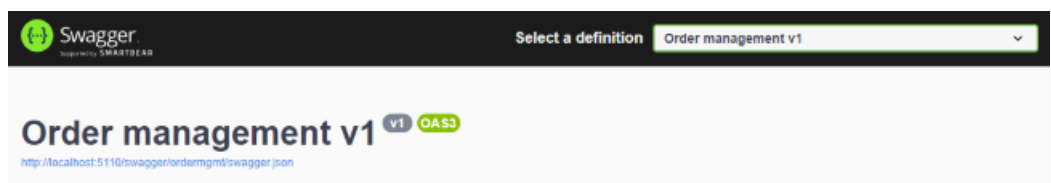
POST /ordermgmt/v1/worksequences

The full URL depends on your protocol settings:

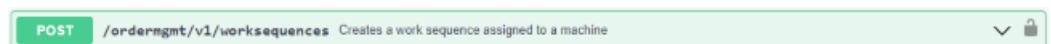
- <http://<IP address of the Mcenter server>:8090/platform/api/ordermgmt/v1/worksequences>
- or
- <https://<IP address of the Mcenter server>/platform/api/ordermgmt/v1/worksequences>

Procedure

1. Open the Swagger page depending on your protocol settings:
 - <http://<IP address of the Mcenter server>:8090/platform/api/swagger/index.html>
 - or
 - <https://<IP address of the Mcenter server>/platform/api/swagger/index.html>



2. Select definition "Order management v1".
3. Scroll to area titled "OrderManagement".



4. Open the field "POST" and click on "Try it out".
5. Click "Execute" to start the request.

Example request body for "POST /ordermgmt/v1/worksequences" in json string

```
{
  "workOrderId": "90003",
  "sequenceNumber": "10002",
  "description": "new worksequence",
  "plannedStartDateMin": "2023-03-10T13:08:32.812Z",
  "plannedStartDateMax": "2023-03-20T13:08:32.812Z",
  "plannedEndDateMin": "2023-04-10T13:08:32.812Z",
  "plannedEndDateMax": "2023-04-20T13:08:32.812Z",
  "timePerUnit": 0,
  "timeForPreparation": 0,
  "actualStartDate": "2023-03-09T13:08:32.812Z",
  "actualEndDate": "2023-03-09T13:08:32.812Z",
  "state": 1,
  "confirmationNumber": "12345",
  "priority": 1,
  "lotSize": 1,
  "material": "string",
  "assignedMachineId": "A6274021-2E68-4291-AFD5-3ED2D312893D"
}
```

Example server response for "POST /ordermgmt/v1/worksequences" in json string

```
{
  "workOrderId": "90003",
  "sequenceNumber": "10002",
  "description": "new worksequence",
  "plannedStartDateMin": "2023-03-10T13:08:32.812Z",
  "plannedStartDateMax": "2023-03-20T13:08:32.812Z",
  "plannedEndDateMin": "2023-04-10T13:08:32.812Z",
  "plannedEndDateMax": "2023-04-20T13:08:32.812Z",
  "timePerUnit": 0,
  "timeForPreparation": 0,
  "actualStartDate": "2023-03-09T13:08:32.812Z",
  "actualEndDate": "2023-03-09T13:08:32.812Z",
  "state": 1,
  "confirmationNumber": "12345",
  "priority": 1,
  "lotSize": 1,
  "material": "string",
  "assignedMachineId": "A6274021-2E68-4291-AFD5-3ED2D312893D"
}
```

Parameters

Parameters	Type	Description
workOrderId	string	Work order provided for example via MES. The work order is typically split in steps named work sequences.
sequenceNumber	string	Work sequence number within a given work order.
description	string	Details about the work sequence, which is a step within a given work order.
plannedStartDateMin	string	The earliest planned start of production
plannedStartDateMax	string	The latest planned start of production
plannedEndDateMin	string	The earliest planned end of production
plannedEndDateMax	string	The latest planned end of production
timePerUnit	number	Time it takes to produce / manufacture a unit
timeForPreparation	number	Time needed for preparation of the machine so that the work sequence can be produced.
actualStartDate	string	Actual start of production.
actualEndDate	string	Actual end of production.
state	number	Possible states: 1 - created 2 - started 3 - partial acknowledged 4 - acknowledged 5 - cancelled 6 - on hold 7 - deleted In the request the 'state' must be '1', created, other values result in a validation error.
confirmationNumber	string	Identifier to report state changes back to external MES or ERP system.
priority	number	Defines the priority of the work sequence.
lotSize	number	Defines how many work pieces must be created. This value is provided in conjunction with the work order.

Parameters	Type	Description
material	string	Name, ID or description of the material the work piece is generated from.
assignedMachineId	string	Reference to an Mcenter registered machine's unique identifier in GUID format.

Endpoint responses

The endpoint response could be one of the following:

- The work sequence in the request was successfully created.
 - 201 status code: created - The work sequence was created.
- The body of the request was incorrectly parameterized.
 - 400 status code: bad request - The body of the request was empty or invalid or a work sequence with the same workOrderId and sequenceNumber already exists.
- If the request did not contain a valid token, you can receive the following responses:
 - 401 status code: unauthorized - Invalid or expired token.
 - 403 status code: forbidden - You do not have the permission for the requested endpoint.
- If any error occurred during the request:
 - 500 status code: internal error - An error occurred trying to create the work sequence. The error is described in the SinInt.PlatformOpenAPI.Service log file.

5.8.4 Virus scan (experimental)

In Mcenter, you have the option of introducing additional information into the system via files at various points. These files could be infected with viruses. To protect Mcenter from viruses, you now have the option of using your existing virus scanner with this interface.

The virus scan functionality is disabled by default and can be enabled manually. You can enable it as described in the Installation Manual "Mcenter, Manage myResources, Optimize MyProgramming /NX-Cam Editor, Analyze MyPerformance /OEE, Access MyData /Collector".

The following open APIs are still available regardless of this setting, so files still can be downloaded and their state can be updated. However if this setting is disabled applications can access not scanned or unsafe files as well.

Note

Foundations for supporting virus scanners has been added to the system but this function is currently not being utilized by any Mcenter application.

The related open API control surfaces are subject to change."

5.8.4.1 Retrieve scanable files

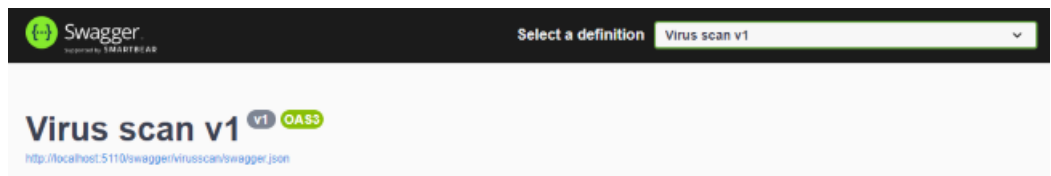
GET /virusscan/v1/files

One time URLs give you access to one specific file to download it. You can acquire a one time URL using the following endpoint supplied with the Id of a file. File Ids can be acquired via the "GET /virusscan/v1/files" endpoint.

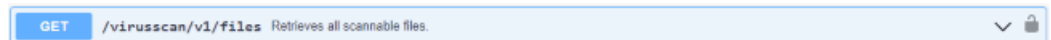
- Retrieves the scanable files
- The full URL is
 - `http://<IP address of the Mcenter server>:8090/platform/api/virusscan/v1/files`
- or
 - `https://<IP address of the Mcenter server>/platform/api/virusscan/v1/files`

Procedure

1. Open the Swagger page depending on your protocol settings:
 - `http://<IP address of the Mcenter server>:8090/platform/api/swagger/index.html`
 - or
 - `https://<IP address of the Mcenter server>/platform/api/swagger/index.html`



2. Select the definition "Virus scan v1".
3. Scroll to the area titled "VirusScan".



4. Open the field "GET" and click on "Try it out".
5. Click "Execute" to start the request.

Example server response for "GET /virusscan/v1/files" in json string

```
{
  "collection":
  [
    {
      "sequenceNumber": 0,
      "rowId": "3fa85f64-5717-4562-b3fc-2c963f66afa6",
      "hash": "string",
      "localPath": "string"
    }
  ]
}
```

Parameters

Parameters	Type	Description
sequenceNumber	number	Order of the scanable files
rowId	string	Id of the file in GUID format
hash	string	The hash of the file
localPath	string or "null"	The path of the file or null

Service responses

- The scanable files in the request are successfully retrieved
 - 200 status code: the scanable files are retrieved
- If the request did not contain a valid token, you can receive the following responses:
 - 401 status code: unauthorized - invalid or expired token
 - 403 status code: forbidden - You do not have the permission for the requested endpoint
- If any error occurred during the request:
 - 500 status code: An error occurred trying to acquire the scannable files. The error is described in the SinInt.PlatformOpenAPI.Service log file
- Platform Open API service unavailable:
 - 503 status code: the service is unavailable The Platform Open API service is down or unreachable due to some network issue.

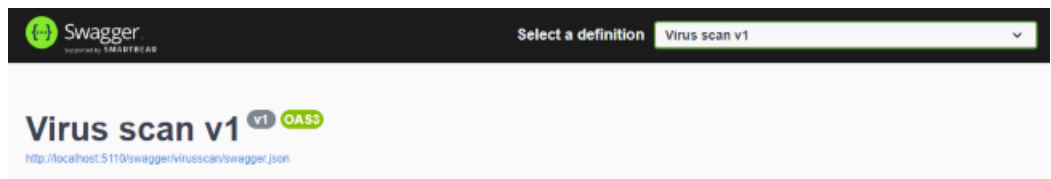
5.8.4.2 Update the state of a file

PUT /virusscan/v1/files/{rowId}

- Updates the state of a file with the result of the scan
- The full URL is
 - `http://<IP address of the Mcenter server>:8090/platform/api/virusscan/v1/files/{rowId}`
- or
 - `https://<IP address of the Mcenter server>/platform/api/virusscan/v1/files/{rowId}`

Procedure

1. Open the Swagger page depending on your protocol settings:
 - `http://<IP address of the Mcenter server>:8090/platform/api/swagger/index.html`
 - or
 - `https://<IP address of the Mcenter server>/platform/api/swagger/index.html`



2. Select the definition "Virus scan v1".
3. Scroll to the area titled "VirusScan".
4. Open the field "PUT" and click on "Try it out".
5. Click "Execute" to start the request.

Example request body for "PUT /virusscan/v1/files/{rowId}" in json string

```
{
  "fileState": 0,
  "virusScanDescription": "string"
}
```

Parameters

Parameters	Type	Description
fileState	number	State of the file: 0 - no result 1 - unsafe 2 - safe
virusScanDescription	string or "null"	Any additional notes regarding to the virus scan

The rowId in the URL is the id of the file. You can get the value from the response of the GET /virusscan/v1/files API.

Service responses

- The state of the file was successfully updated
 - 200 status code
- If the request did not contain a valid token, you can receive the following responses:
 - 401 status code: unauthorized - invalid or expired token
 - 403 status code: forbidden - You do not have the permission for the requested endpoint
- If any error occurred during the request:
 - 400 status code: bad request- The request body is invalid: {error reason}
 - 404 status code: not found - File is not found with the given Id: {rowId}
 - 500 status code: An error occurred when tried to update the state of the files. - the error is described in the SinInt.PlatformOpenAPI.Service log file
- Platform Open API service unavailable:
 - 503 status code: the service is unavailable - Platform Open API service is down or unreachable due to some network issue

5.8.4.3 Get a one time URL for downloading a file

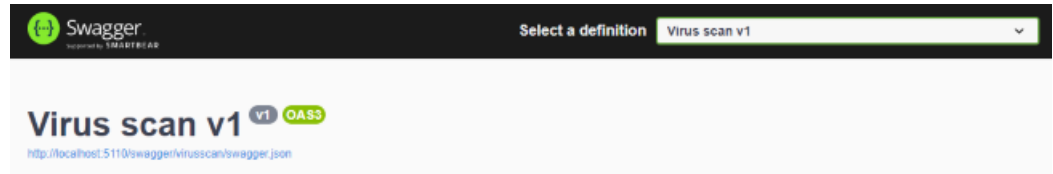
GET /virusscan/v1/files/{rowId}/downloaduri

- Get a one time URL that allows you to download the content of the requested file
- The full URL is
 - http://<IP address of the Mcenter server>:8090/platform/api/virusscan/v1/files/{rowId}/downloaduri
- or
 - https://<IP address of the Mcenter server>/platform/api/virusscan/v1/files/{rowId}/downloaduri

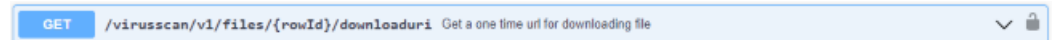
The rowId in the URL is the id of the file. You can get the value from the response of the GET /virusscan/v1/files API.

Procedure

1. Open the Swagger page depending on your protocol settings:
 - `http://<IP address of the Mcenter server>:8090/platform/api/swagger/index.html`
or
 - `https://<IP address of the Mcenter server>/platform/api/swagger/index.html`



2. Select the definition "Virus scan v1".
3. Scroll to the area titled "VirusScan".



4. Open the field "GET" and click on "Try it out".
5. Click "Execute" to start the request.

Service response

- The state of the file was successfully updated
 - 200 status code: the content of the requested file
- If the request did not contain a valid token, you can receive the following responses:
 - 401 status code: unauthorized - invalid or expired token
 - 403 status code: forbidden - You do not have the permission for the requested endpoint
- If any error occurred during the request:
 - 400 status code: bad request- The request body is invalid: {error reason}
 - 404 status code: not found - File is not found with the given Id: {rowId}
 - 500 status code: An error occurred when tried to update the state of the files. - the error is described in the SinInt.PlatformOpenAPI.Service log file
- Platform Open API service unavailable:
 - 503 status code: the service is unavailable - Platform Open API service is down or unreachable due to some network issue

Working with Analyze MyPerformance /OEE

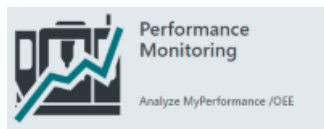
6.1 Performance Monitoring

6.1.1 Opening the Performance Monitoring

You can check the performance of the machines using the performance monitoring function.

Procedure

1. On the start page of the Mcenter, click "Performance Monitoring".



2. The "Performance Monitoring" window opens with 2 tabs:
 - OEE: For more information see Performance Monitoring - OEE (Page 107).
 - Machine comparison: For more information, see Machine comparison (Page 127).
3. To switch to the "Machine Details" view, select a machine on the OEE tab. The "Machine Details" view opens with 2 tabs:
 - Summary: For more information, see Machine details (Page 111).
 - Dashboards: For more information, see Dashboards (Page 130).

6.1.2 Performance Monitoring - OEE

The "Key Performance Indicator (KPI)" and the "Overall Equipment Efficiency (OEE)" will be calculated instantly.

If the selected time interval includes the current workday, the OEE, and the KPIs results are calculating when the Performance Monitoring page opens for that machine in real-time with the latest arrived machine data.

The formula that you set under "Configuration" for the Analyze MyPerformance /OEE is used.

For more information on processing the KPI calculation, see Opening the Configuration (Page 219).

Parameters and elements

The following parameters and elements are available for editing:

Parameter/element	Description
Root	Select the root to see all child machines of this root.
Machine Filtering	Opens the drop-down list to select a tag. Only the machines with this tag are displayed. For more information on tagging a machine see Adding tags (Page 126) and Machine tags (Page 232).
Time selection	
Today	Clicking on "Today" allows you to see the values for the current day, taking into account the time of day.
Current Week	Clicking on "Current Week" allows you to see the values for the current week. Starts on Monday and ends on the current workday.
Current Month	Clicking on "Current Month" allows you to see the values for the current month. Starts on the 1st day of the month and ends on the current workday.
Current Quarter	Clicking on "Current Quarter" allows you to see the values for the current quarter. Starts on the 1st day of the current quarter and ends on the current workday.
Current Year	Clicking on "Current Year" allows you to see the values for the current year. Starts on January 1 and ends on the current workday.
Custom Date	Clicking on "Custom Date" opens the calendar to select a date range. After selection, this time interval is displayed in the line. For more information, see Defining the custom date (Page 122).
Last week	Clicking on "Last Week" allows you to see the values of the previous week. Starts from previous week's Monday and ends on previous week's Sunday.
Yesterday	Clicking on "Yesterday" allows you to see the values of the previous day, taking into account the time of day.
Symbols	
	Clicking on the "Screenshot" button generates a screenshot of the current window.
	If you click on the "Refresh" icon, you update the opened window.

Procedure

You see the "OEE/KPI Overview" of all machine.

You can select a root to view all child machines of this parent.

In the overview, the OEE value is displayed in percent in the large circle. Online/Offline signals of the machines are also displayed.

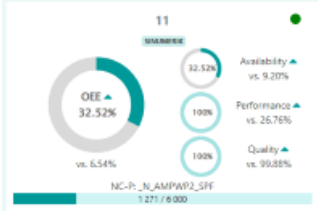
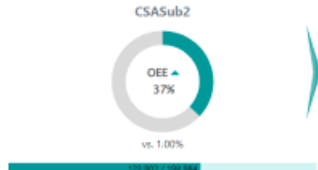
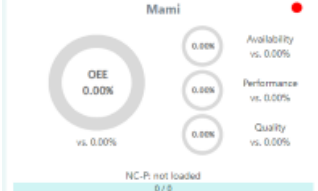
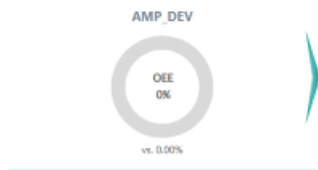
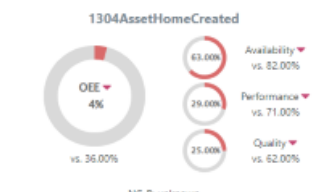
The KPI values for the selected time interval are displayed in the three circles on the right:

- Availability
- Performance
- Quality

A progress bar below the circles displays a workpiece summary for the ongoing shifts (good workpieces/target number of workpieces).

Click on the required period to display the number of good and target workpieces based on the selected period of time.

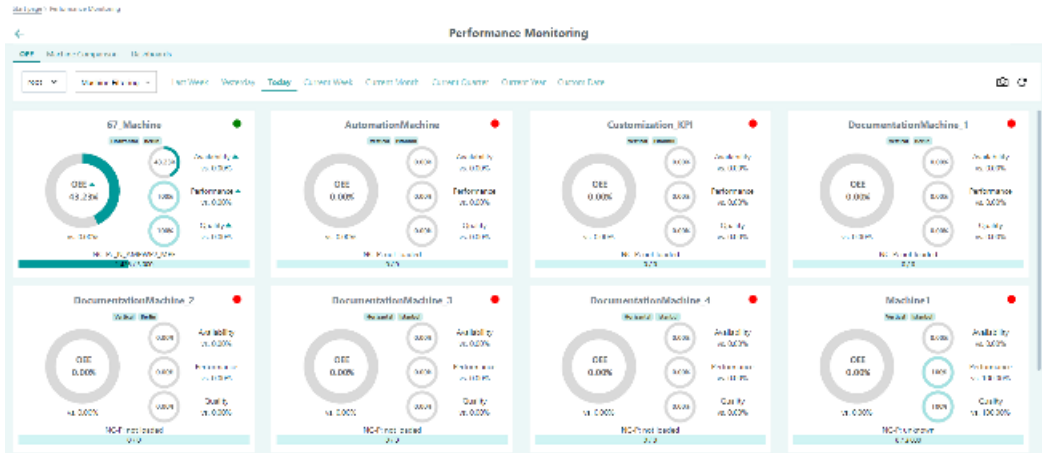
Click on one of the "OEE/KPI Overview" tiles to see a detailed view.

	Regular tile: - NC program name (NC-P) is displayed. - For long NC program names, a tooltip with the full NC program name is shown when hovering the cursor over it. - Online/Offline signals: - Green circle icon = Machine is online - Red circle icon = Machine is offline
	Grouping tile: NC program name is not displayed as the program name is related to an asset.
If there is no planned production, the program is not loaded:	
	For regular tiles, the text "NC-P: not loaded" is displayed and the number of workpieces is 0/0.
	For grouping tiles, the number of workpieces is 0/0.
	If the program name could not be read, "NC-P: unknown" message is displayed.
	If the number of "Good" and target workpieces could not be read, "NaN / NaN" message is displayed.

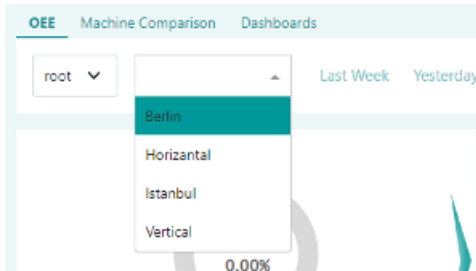
6.1 Performance Monitoring

Machine filtering

1. You see all machines.
2. Click "Machine Filtering".



3. Select the tag that you want. You can select several tags.



The machines are filtered.



6.1.3 Machine details

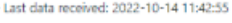
6.1.3.1 Controlling the performance of the machines

Parameters/symbols

The following parameters and elements are available for editing:

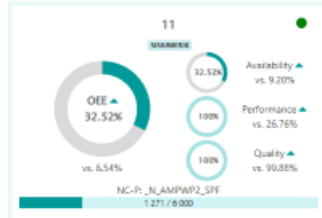
Parameter/element	Description
Machine List	Open the drop-down list to select the machine. After selecting the machine, the machine name is displayed in the header.
Add Tag	Adds a tag to the machine.
Time selection	
Today	Clicking on "Today" allows you to see the values for the current day, taking into account the time of day.
Current Week	Clicking on "Current Week" allows you to see the values for the current week. Starts on Monday and ends on the current workday.
Current Month	Clicking on "Current Month" allows you to see the values for the current month. Starts on the 1st day of the month and ends on the current workday.
Current Quarter	Clicking on "Current Quarter" allows you to see the values for the current quarter. Starts on the 1st day of the current quarter and ends on the current workday.
Current Year	Clicking on "Current Year" allows you to see the values for the current year. Starts on January 1 and ends on the current workday.
Custom Date	Clicking on "Custom Date" opens the calendar to select a date range. After selection, this time interval is displayed in the line. For more information, see Defining the custom date (Page 122).
Last week	Clicking on "Last Week" allows you to see the values of the previous week. Starts from last Monday and ends on the previous Sunday.
Yesterday	Clicking on "Yesterday" allows you to see the values for the previous day, taking into account the time of day.
Symbols	
	The sustainability icon indicates the sustainability level of the machine. - Gray: below the sustainability level - Green: above the sustainability level
	The machine is online. For Machine Agent connected devices, the green icon is always displayed which means the machine is displayed as online even when the machine is offline.
	The machine is offline.
	Clicking on the "Screenshot" button generates a screenshot of the current window.
	If you click on the "Refresh" icon, you update the opened window.
	If you click on the icon, you can change the actual work state of a past time.
	If you click on the icon, you switch back and forth to and from the full view.

6.1 Performance Monitoring

Parameter/element	Description
	Clicking on the "Export machine status trend as CSV" button generates a CSV export of the machine status data of the selected machine for the selected time interval. For more information, see Exporting machine status (Page 123).
	Clicking on the "Machine Information" button displays the machine information for the selected machine in a new pop-up window. For more information, see Displaying machine information (Page 125).
	The time that the last data was received is displayed in the footer of the "Machine Details" window. It displays when the data is queried from the database and when the calculations on the UI have been done by the application.
Machine status trend window	
	Machine/Operator state
	Manual state

Procedure

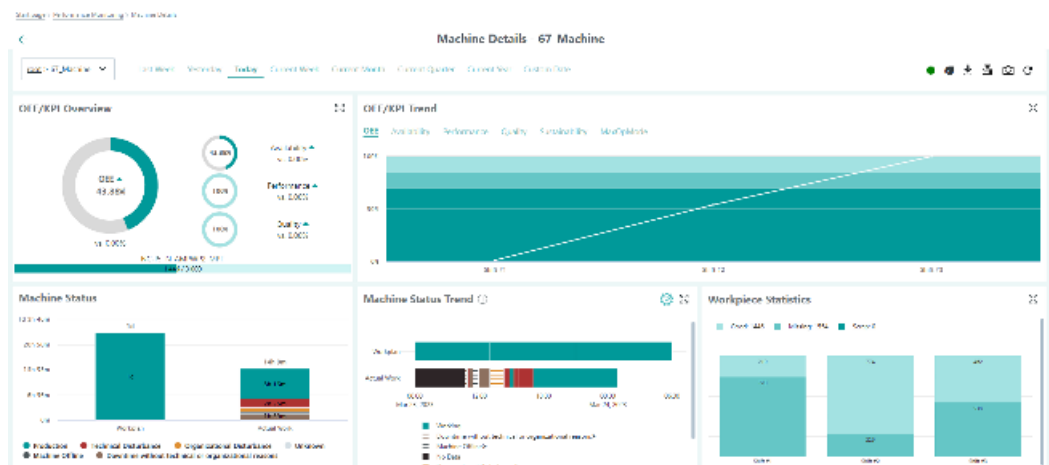
1. Select the required machine.
Click on one of the "OEE/KPI Overview" tiles in the overview of the "Performance Monitoring" window.



- OR -

Open the drop-down list in the upper left window area and select the required machine. The window with the machine details opens.

2. Click on the required time period.
3. The following window opens.



OEE/KPI Overview

In the "OEE/KPI Overview" window area, the OEE value is displayed in percent in the large circle.

The KPI values for the selected time interval are displayed in the three circles on the right:

- Availability
- Performance
- Quality

A progress bar below the circles displays a workpiece summary for the ongoing shifts (good workpieces/target number of workpieces).

6.1 Performance Monitoring

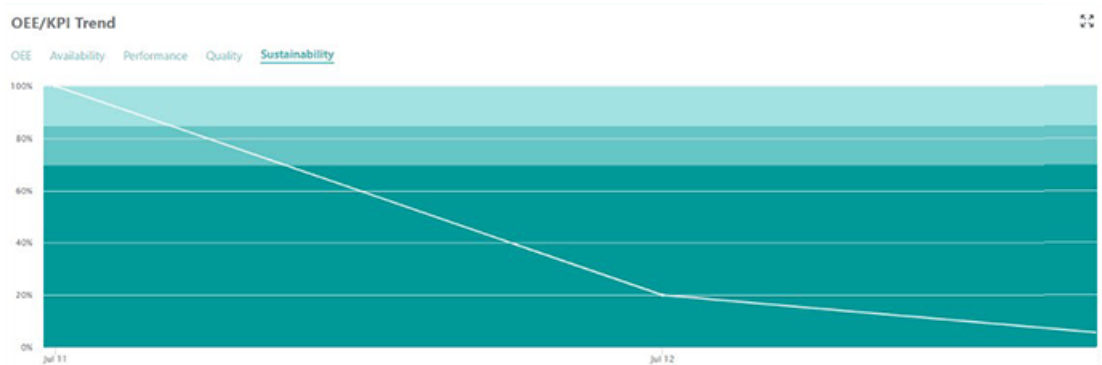
Click on the required period to display the number of good and target workpieces based on the selected period of time.

	Regular tile: - NC program name (NC-P) is displayed. - For long NC program names, a tooltip with the full NC program name is shown when hovering the cursor over it.
	Grouping tile: NC program name is not displayed as the program name is related to an asset.
If there is no planned production, the program is not loaded:	
	For regular tiles, the text "NC-P: not loaded" is displayed and the number of workpieces is 0/0.
	For grouping tiles, the number of workpieces is 0/0.
	If the program name could not be read, "NC-P: unknown" message is displayed.
	If the number of "Good" and target workpieces could not be read, "NaN / NaN" message is displayed.

OEE/KPI Trend

In the "OEE/KPI Trend" window area, the OEE/KPI values are graphically presented. Click on the required monitoring parameter in order to display the OEE/KPI trend:

- OEE
- Availability
- Performance
- Quality
- Sustainability



You can edit the designations of the KPI labels "Availability", "Performance" and "Quality".

Further information on this can be found under: Customizing the KPI calculation (Page 204)

Sustainability

Click on the "Sustainability" tab.

The sustainability is displayed for each shift.

The sustainability level is the usage time compared to the uptime of the machine.

The usage time is the time when the machine status is "Production".

The uptime of the machine is the sum of the time when the machine is in one of the following states:

- Downtime without technical or organizational reasons
- Organizational disturbance
- Technical disturbance
- Production

Machine Status

In the "Machine Status" window area, the duration of the planned machine status (work plan) and the duration of the actual machine states (actual work) are shown side by side. You have the option of displaying and hiding individual states.

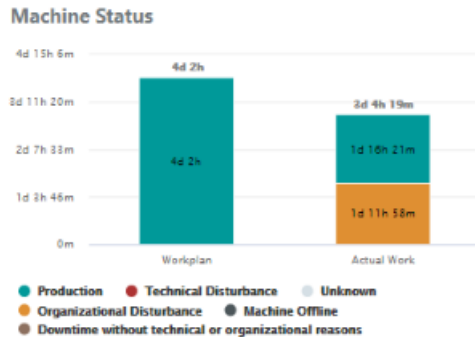
- Production
- Technical disturbance

6.1 Performance Monitoring

- Unknown
- Organizational disturbance
- Machine offline
- Downtime without technical or organizational reasons

You see a comparison of the workplan and the actual work in the "Machine Status" window area. Click on the machine status below the bar chart.

The selected machine status is displayed or hidden in the overview.



Machine Status Trend

In the "Machine Status Trend" window area, "Work Plan" and "Actual Work" are graphically displayed.

The following states are displayed:

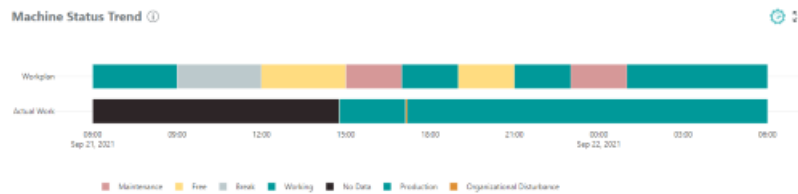
- Maintenance
- Free
- Break
- Working
- Production
- Organizational disturbance
- No data

You can configure the "Actual Work" area via three levels.

- If no machine status data arrived within 15 minutes from the machine, the "No data" state will be displayed on the Machine Status Trend chart.
- If a new state arrives for that interval via machine as buffered data, the "Machine Status Trend" chart will be updated and will display the recently arrived machine status.
- No data status can be editable via the Manual state function.

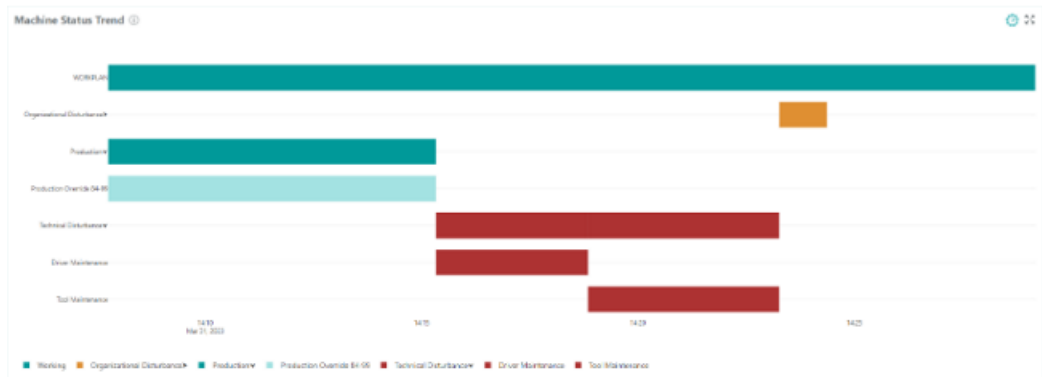
Additional information for editing machine status can be found in chapter: Manual states (Page 118).

You can find additional information in chapter: Editing the production level (Page 222).



- You can display details of the Operator /Machine states in the "Machine Status Trend" window by clicking the "Expand" icon.

- In the "Machine Status Trend" window area, details of state can be visualized by clicking expand button



Workpiece Statistics

In the "Workpiece Statistics" window area, workpiece data is displayed according to the selected time.

The selected time is divided into the following grouping period:

- Today: shifts (x-axis label: shift number)
- Yesterday: shifts (x-axis label: shift number)
- Current week: days (x-axis label: specific date)
- Current month: weeks (x-axis label: week number of the year)
- Current quarter: months (x-axis label: month number)
- Current year: quarters (x-axis label: quarter number)
- Last week: days (x-axis label: specific date)

For custom periods the following way of grouping is implemented:

- Case 1: from 0 to 7 days group by DAY
- Case 2: from 7 to 31 days group by WEEK
- Case 3: from 31 to 210 days group by MONTH
- Case 4: from 210 to 365 days group by QUARTER
- Case 5: from 365 to 2555 days group by YEAR

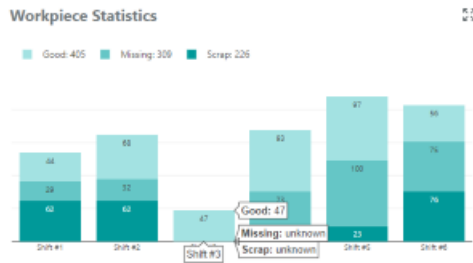
6.1 Performance Monitoring

Workpieces are grouped as:

- Good
- Missing
- Scrap

Click on the legend to filter the selected group of workpieces in the bar chart.

Use the tooltip to increase the readability of the bar chart. Data that could not be retrieved is shown as "unknown" value.



Limitations:

- maximum of 7 groups of data on a single bar chart
- maximum of 7 years as custom period

6.1.3.2 Manual states

With the function "Manual state" you have the possibility to adjust the actual working time manually.

Actual work states are calculated based on the received machine status information. In some cases, actual state and calculated machine state can be different.

Such as:

- In order to show machine in production, feed override must be higher than 70. But for some machines, that assumption must not be true. The machine could be in preparation state, such as cleaning or testing.

Parameter/symbols

The following parameters and elements are available for editing:

Parameter/element	Description
Manual State	
Machine Status	There are different machine status options that can be changed for selected duration: • Downtime without technical or organizational reasons • Machine Offline • No Data • Organizational Disturbance • Production • Technical Disturbance • Unknown
Operator State	Operator State which is mapped with selected machine status.
Start time	Start time of manually changed machine state.
End time	End time of manually changed machine state.
Symbols	
	If you click on the icon, you can choose the start/end time.
	If you click on the icon, you can change the actual work state of a past time.
	If you click on the icon, you switch back and forth to and from the full view.

Procedure

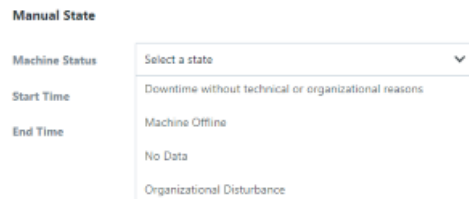
1. Select the required machine from the overview of the "Performance Monitoring" window. In the "Machine Status Trend" window, "Workplan" and "Actual Work" are graphically displayed.

- Click on the icon  in the upper right area to change the actual state.



2. The "Manual State" window opens.

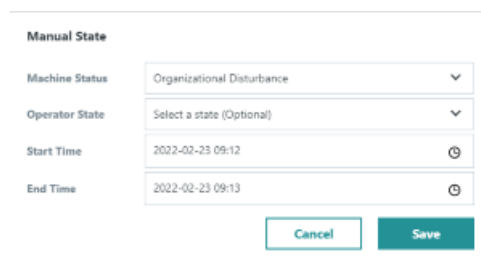
- Open the "Machine Status" drop-down list and select the required machine status.



The figure shows the "Manual State" form. It has a title "Manual State" and three input fields: "Machine Status", "Start Time", and "End Time". The "Machine Status" dropdown menu is open, showing options: "Downtime without technical or organizational reasons", "Machine Offline", "No Data", and "Organizational Disturbance".

- Open the "Operator State" drop-down list and select the desired operator state to map the selected machine status with an operator state.

The drop-down list is only visible if an operator state has been created and mapped with the selected machine status. For more information, see Operator States (Page 223). Click on the clock icon to open the calendar and select the start time and end time. Click on the "Save" button.

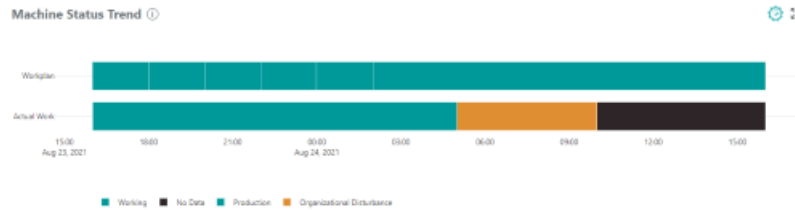


The figure shows the "Manual State" form after the "Machine Status" has been set to "Organizational Disturbance". The "Operator State" dropdown is now visible and set to "Select a state (Optional)". The "Start Time" is set to "2022-02-23 09:12" and the "End Time" is set to "2022-02-23 09:13". There are "Cancel" and "Save" buttons at the bottom.

- If the machine state entering is successful, notification "State has been changed successfully" is displayed in the upper right window area.

State has been changed successfully ✓

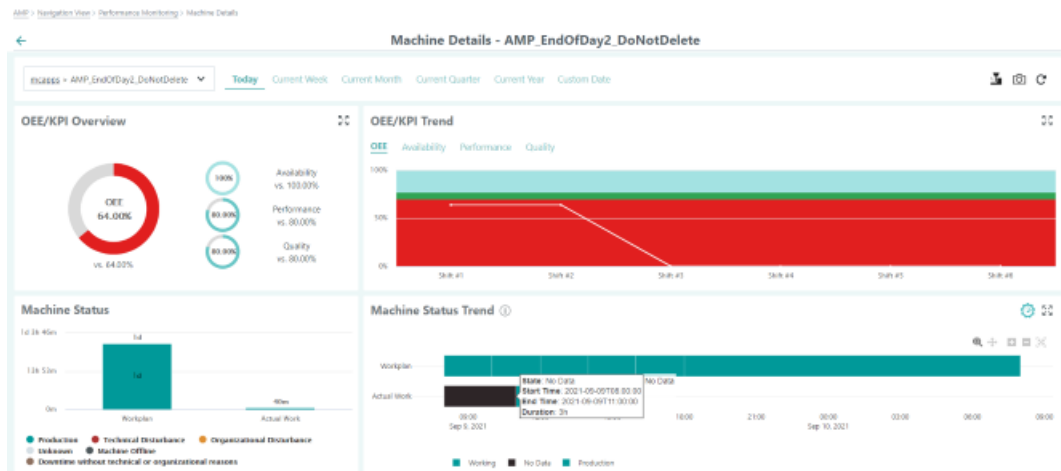
3. When there is "no data" received after the manually changed times, the system shows the remaining time as no data. It is allowed to change no data to a defined state as well. For example: Organizational disturbance was entered for the time between 05:00 to 10:00. The remaining time is shown as no data and can be changed to a defined state as well.



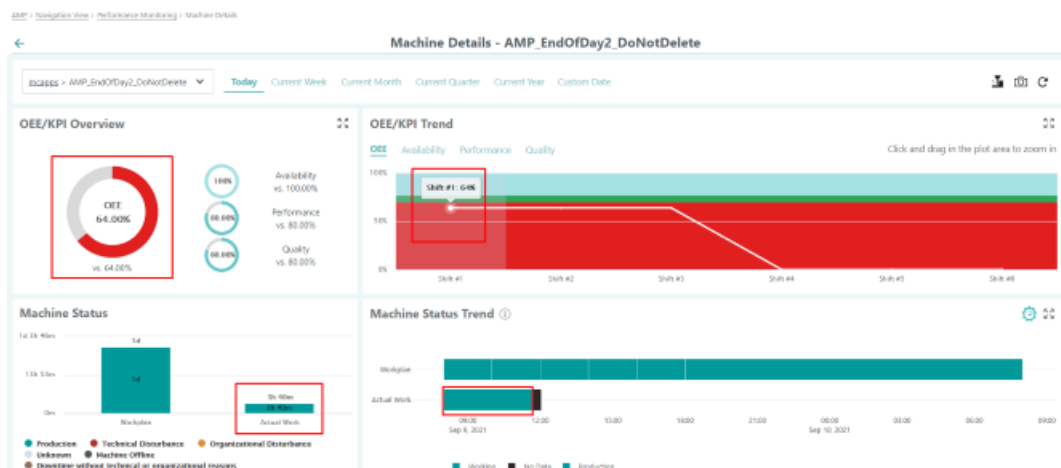
Example

For example, production state entered for 09.09.2021 08:00 - 09.09.2021 11:00 via Manual State feature. 3 hours later production state is entered, OEE/KPIs are recalculated in respect to new states and all charts on the UI are going to be updated as well.

Before entering machine state:



After having manually entered machine state:



6.1 Performance Monitoring

6.1.3.3 Defining the custom date

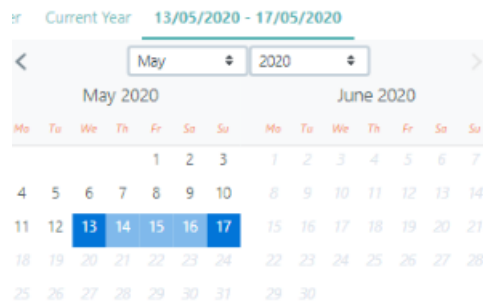
To display the performance results of the resource, in addition to the predefined date, you can also define a user-defined range of dates in the "Performance Monitoring" and "Machine Details" windows.

Button

Button	Function
Custom Date	Clicking on the "Custom Date" button opens the calendar where you can select a date range. After selection, this time interval is displayed on the button.

Procedure

1. Click on "Custom Date".
2. The calendar opens.
Click on the start date followed by the end date.



3. The component is automatically closed.
 - The selected time interval is displayed on the button instead of text "Custom Date".
 - The results are automatically refreshed on the page.



- OR -

If you only select a day, then the date is displayed on the button and the result is refreshed on the page.



Effects

You can see the results (OEE / KPI) for each displayed machine – corresponding to the date selected – in window "Performance Monitoring".

The average OEE result of all subordinate (lower level) values is displayed for the higher-level machines.

You can view the performance (OEE / KPI) and the machine status data of the machine corresponding to the data that you selected in window "Machine Details" of a machine.

If you select "Today" or a specific single day, then the OEE / KPI results for each shift of the selected day are displayed.

If an individual day is not selected, then the KPI trend diagram displays the aggregated OEE / KPI results for each day in the selected time interval.

Note

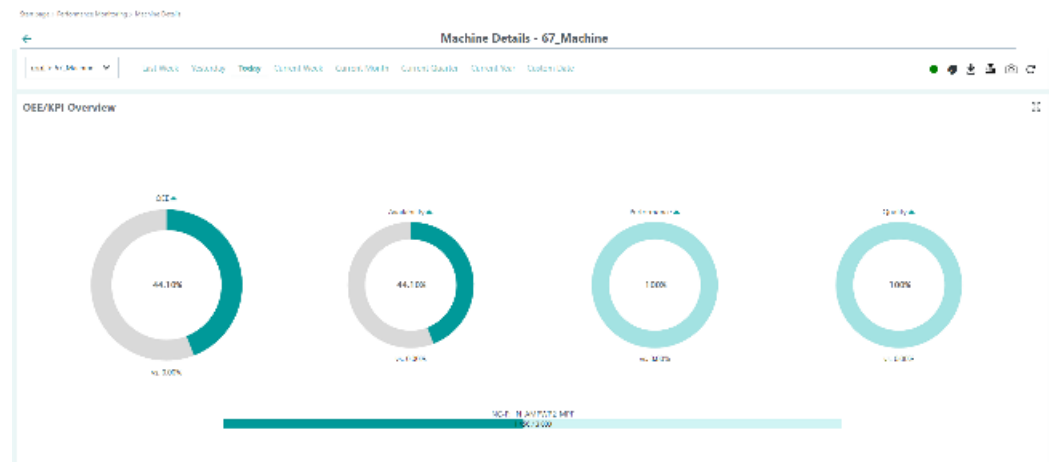
Comparison function is available for OEE / KPI results

The comparison function for the OEE / KPI results is only available for the predefined selected date.

The comparison function is not available if you select a range of custom dates.

Example:

In the following example, you see the comparison function for the currently selected week, which compares the results with the previous week.



6.1.3.4 Exporting machine status

With the function "Export Machine Status", you can get a copy of the raw machine status data for the selected asset in CSV format.

6.1 Performance Monitoring

Parameters

The following parameters are available:

Parameter	Description
Machine List	Open the drop-down list to select the machine. After selecting the machine, the machine name is displayed in the header.
Time selection	
Today	Clicking on "Today" allows you to see the values for the current day, taking into account the time of day.
Current Week	Clicking on "Current Week" allows you to see the values for the current week. Starts on Monday and ends on the current workday.
Current Month	Clicking on "Current Month" allows you to see the values for the current month. Starts on the 1st day of the month and ends on the current workday.
Current Quarter	Clicking on "Current Quarter" allows you to see the values for the current quarter. Starts on the 1st day of the current quarter and ends on the current workday.
Current Year	Clicking on "Current Year" allows you to see the values for the current year. Starts on January 1 and ends on the current workday.
Custom Date	Clicking on "Custom Date" opens the calendar to select a date range. After selection, this time interval is displayed in the line. For more information, see Defining the custom date (Page 122).
Last week	Clicking on "Last Week" allows you to see the values of the previous week. Starts from last Monday and ends on the previous Sunday.
Yesterday	Clicking on "Yesterday" allows you to see the values of the previous day, taking into account the time of day.
Symbol	
	Clicking on the "Export machine status trend as CSV" button generates a CSV export of the Machine Status data of the selected machine for the selected time interval.

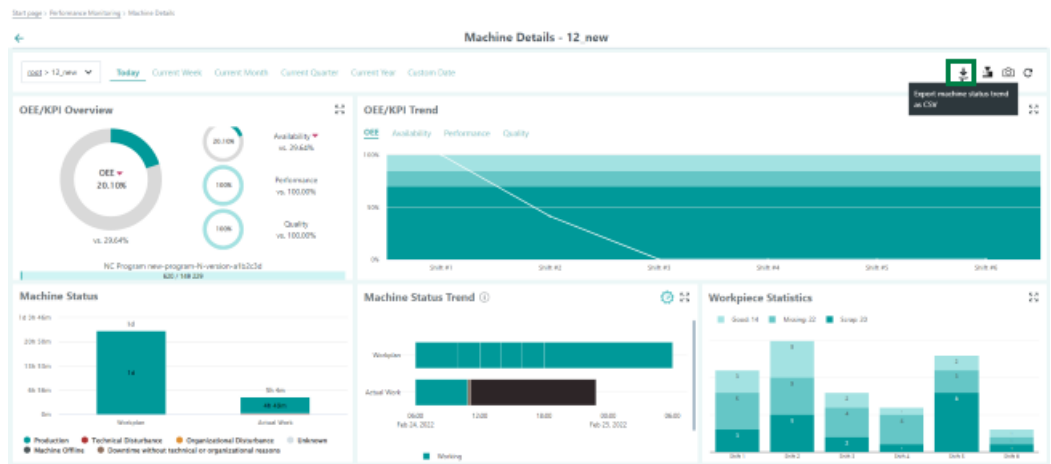
The columns of the exported CSV file contain the following information:

Column	Description
A	Shows the name of the machine.
B	Shows the start period of the exported data.
C	Shows the end period of the exported data.
D	Shows the machine status type.
E	Shows the machine status start time.
F	Shows the machine status end time.
G	Shows the machine status insert time.
H	Shows the machine status type: "TRUE" if it is a manual operator state "FALSE" if the state came from the machine
I	Shows the user name who started the manual and operator state. This column's value will be empty if the machine status came from the machine.

Column	Description
J	Shows the user name who stopped the manual and operator state. This column's value will be empty if the machine status came from the machine.
K	Shows the operator state name. This column's value is only available for operator states.
L	Shows the operator state status type. This column's value is only available for operator states.

Procedure

1. Select the required machine from the overview of the "Performance Monitoring" window.
2. Click the "Export machine status trend as CSV" button.



3. The machine status export file will be downloaded to your computer.
The date range shown in the exported file depends on the time interval selection on the "Machine Details" window.

	A	B	C	D	E	F	G	H	I	J	K	L
1	12_new	2/2/2022	2/24/2022	machine status	from	to	inserted at	manually entered	started by	ended by	operator state name	operator state status type
2				ORGANIZATIONAL_DISTURBANCE	2/24/2022 00:00	2/24/2022 10:54	2/24/2022 10:54	FALSE				
3				PRODUCTION	2/24/2022 00:00	2/24/2022 11:11	2/24/2022 11:11	FALSE				
4				PRODUCTION	2/24/2022 11:11	2/24/2022 11:12	2/24/2022 11:12	TRUE	PRO	PRO	Test	PRODUCTION
5				PRODUCTION	2/24/2022 11:12	2/24/2022 6:00	2/24/2022 6:00	FALSE				
6				PRODUCTION	2/24/2022 6:00	2/24/2022 10:49	2/24/2022 6:00	FALSE				
7				DOWNTIME_WITHOUT_TECHNICAL_OR_ORGANIZATIONAL_REASONS	2/24/2022 10:51	2/24/2022 11:09	2/24/2022 11:09	FALSE				
8				DOWNTIME_WITHOUT_TECHNICAL_OR_ORGANIZATIONAL_REASONS	2/24/2022 11:09	2/24/2022 11:09	2/24/2022 11:11	FALSE				
9												

6.1.3.5 Displaying machine information

Parameter

The following parameters are available:

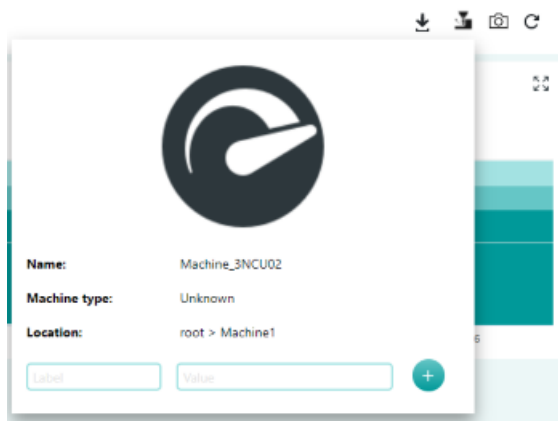
Parameter	Description
Machine List	Open the drop-down list to select the machine. After selecting the machine, the machine name is displayed in the header.
	Clicking on the "Machine Information" button displays the machine information for the selected machine in a new pop-up window.

6.1 Performance Monitoring

Parameter	Description
Machine Information:	
Name	Shows the machine name.
Machine type	Shows the machine type.
Location	Shows the hierarchy path of the machine.
Label and Value	You can enter up to three additional labels and specific values for the machine. Label: A maximum of 50 characters can be entered. Value: A maximum of 100 characters can be entered.
	Adds a new label and value field to the machine information.

Procedure

1. Select the required machine from the overview of the "Performance Monitoring" window.
2. Click the "Machine Information" button.
The machine information window opens.

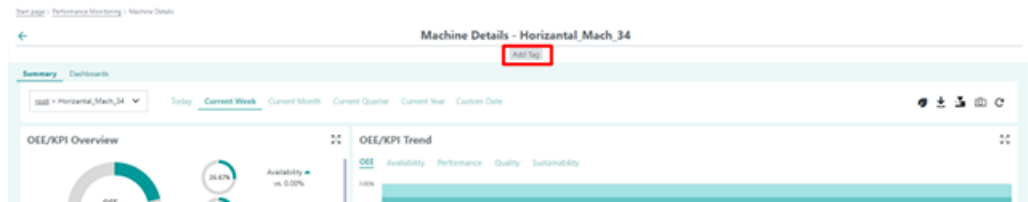


6.1.3.6 Adding tags

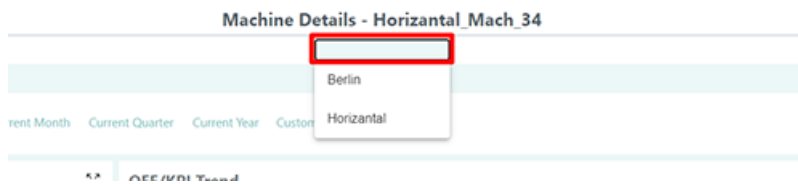
You can add a tag to a machine. This can be done in the "Machine Details" view or in the configuration. For more information on tagging, see Machine tags (Page 232).

Procedure

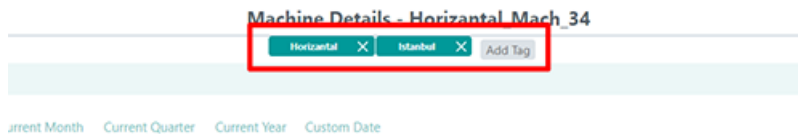
1. Click on the "Add tag" button.



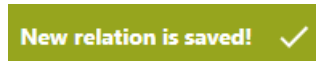
2. Set the tag which is wanted in the text box.



The machine is tagged.



The notification "New relation is saved" is displayed in the upper right window area.



6.1.4 Machine comparison

You can compare machines by selecting predefined intervals or custom dates.

Parameter and elements

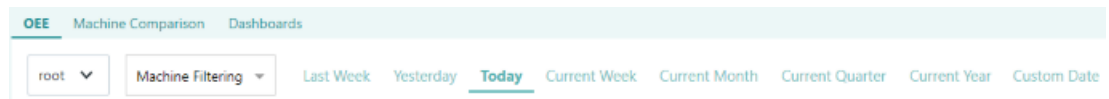
Elements	Function
	Refreshes the page.
	Takes a screenshot of the page.
	Previous or next page
root	Allows the selection of machines by parent machine

6.1 Performance Monitoring

Elements	Function
Machine Filtering	Allows the selection of a machine tag
Interval	Time interval selection: - Last week - Yesterday - Today - Current week - Current month - Current quarter - Current year - Custom date

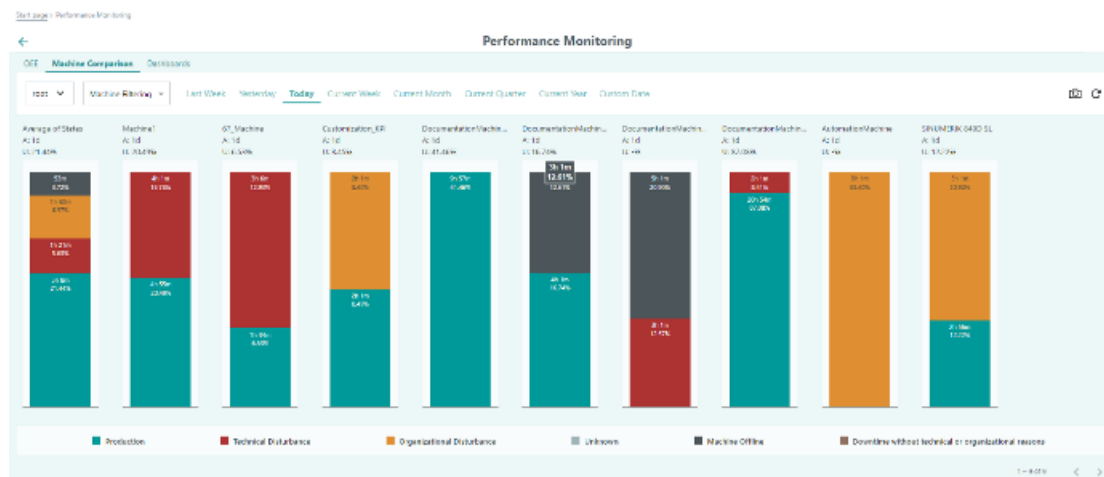
Procedure

1. Click the "Machine Comparison" tab on the "Performance Monitoring" page.

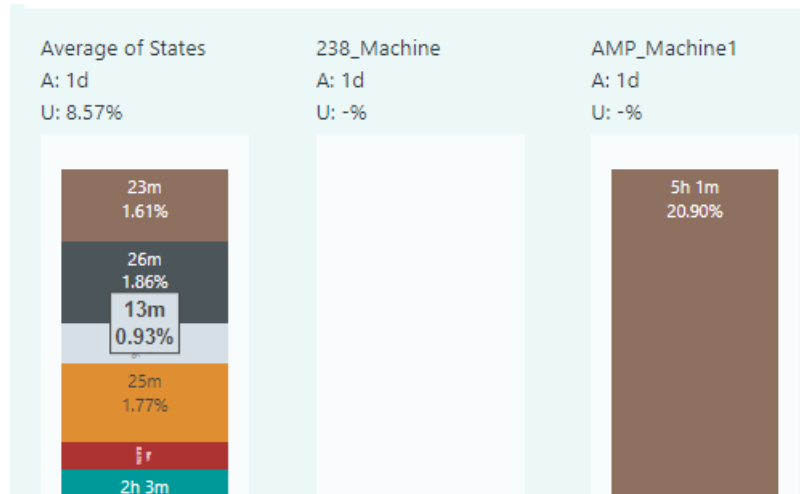


2. The actual machine states are displayed in bar charts for each machine. If the machines have no data, the chart is empty.

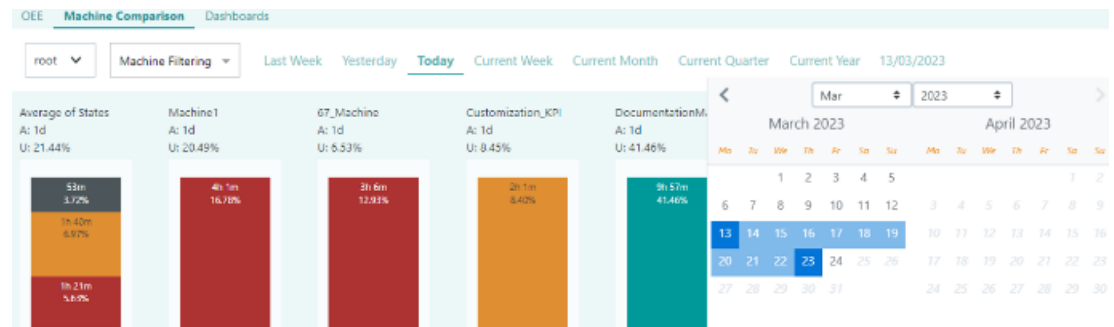
The first bar chart shows the average of machine states. The average result is calculated for all machines. The default interval is "Today".



3. Hover the mouse over the machine state parts to see the duration and percentage values of the machine state.



4. To change the interval
Click on a predefined interval.
- OR -
click on "Custom Date" to open the date picker.

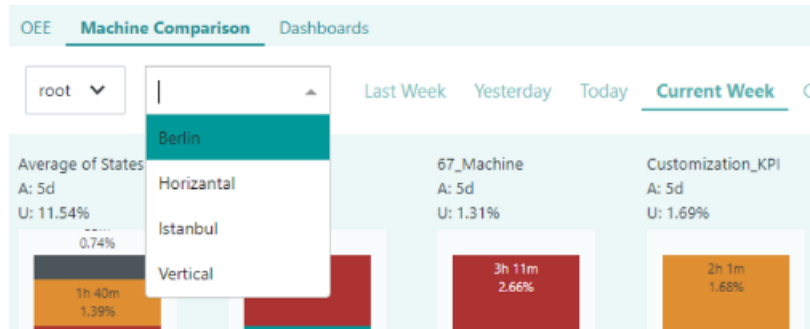


5. Each page shows 10 charts. Use the arrow symbols to navigate to the next page.
6. Click on the machine state legend to remove it from the view.
7. To display child machines, select the parent machine in the machine list.

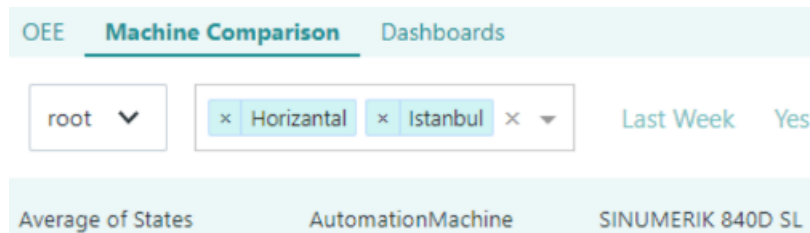
6.1 Performance Monitoring

Machine filtering

1. Click on "Machine Filtering".
The drop-down list with the machine tags opens.



2. Select the filter.



3. Only the machines with this tag are displayed. For more information, see Adding tags (Page 126).

6.1.5 Dashboards**6.1.5.1 Dashboard overview**

Check the performance of the machines in the customizable dashboards. You can create charts and new OEE/KPI. You can select all integrated machines.

Procedure

1. Go to the "Machine Details" window.
2. Click the "Dashboards" tab.
3. The "Dashboards" window opens.

Buttons and elements

Move the mouse over the bar on the left to see the complete buttons.

Element	Function
 Line Charts 	Opens the drop-down list for line charts.
 Line Chart	Opens the window to add a line chart.
 Line Dot Chart	Opens the window to add a line dot chart.
 Scatter Line Chart	Opens the window to add a scatter line chart.
 Filled Line Chart	Opens the window to add a filled line chart.
 Bar Chart	Opens the window to add a bar chart.
 Indicator Charts 	Opens the drop-down list for indicator charts.
 Indicator Chart	Opens the window to add an indicator chart.
 Gauge Chart	Opens the window to add a gauge chart.
 Table View	Opens the window to add a table view.
 Gantt Chart	Opens the window to add a Gantt chart.
 Card	Opens the window to add a card.
 Settings	Opens the window to set the attributes of the dashboard: - Dark Mode - Dashboard Name - Grid Options
 Board 1	Editable board name label
	Click to add a new dashboard. You can create up to 7 dashboards.
	Saves the dashboard as a template respectively opens the saved templates.
	Pins the taskbar.
	Click the "Date picker" symbol to change the date range in the dashboard.
 	The pen icon activates the edit menu. You can edit charts and edit tabs. The symbol changes to the "Save" symbol. Click the "Save" symbol to save the dashboard.

Chart elements

The following elements are available in the charts.

6.1 Performance Monitoring

Some of them are only available in the edit mode. Click on the pen symbol at the lower right. The edit mode is started.

Click on a chart to edit.

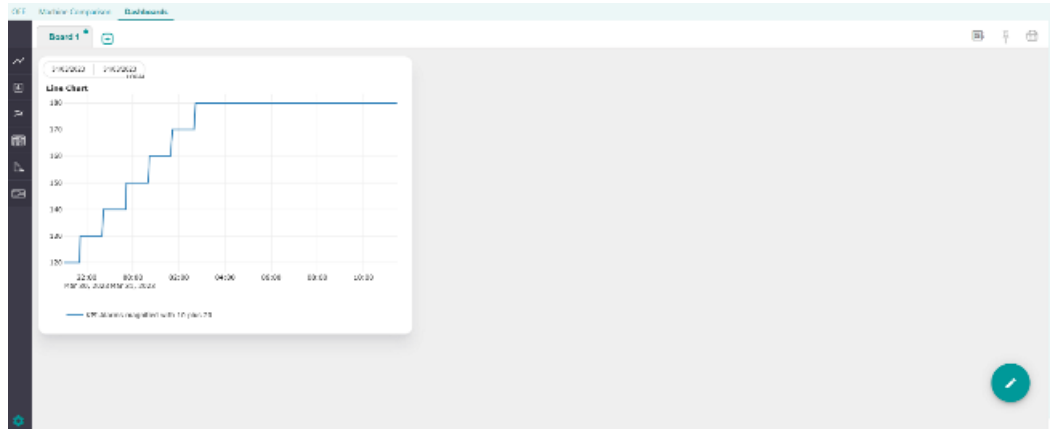
Element	Function
	Displays the time range and the time zone. Opens the calendar function.
	Creates a snapshot in the "png" format.
	Activates the "Zoom" function.
	Activates the "Shift" of the display area function.
	Zooms into the display area.
	Zooms out of the display area.
	Resets the complete display area.
	Resets the axis view.
	Switches over to a dotted line.
	Displays the data when moving the mouse over the selected point in the diagram.
	Compares the data when moving the mouse over the selected point in the diagram.
	Connects to the plotly (http://plotly.com) web page.

6.1.5.2 Configuring the Welcome page

As a new user, you can get guidance on the Welcome page by following the "Tips".

Procedure

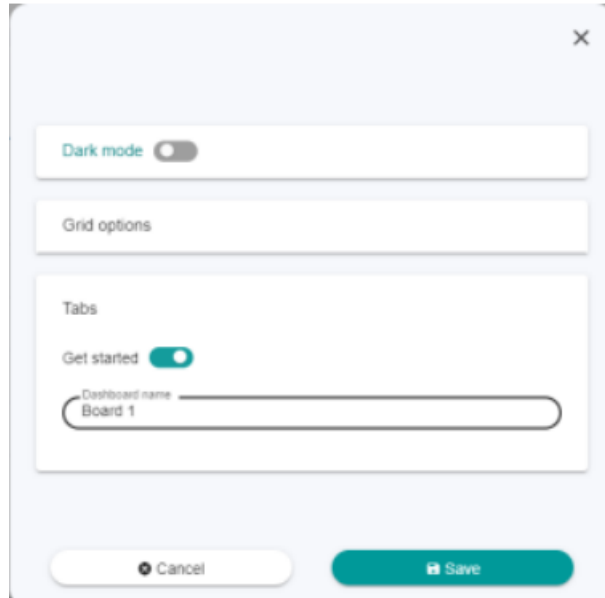
1. Click the "Settings" symbol at the bottom of the toolbar on the left-hand side of the window.



2. Click the tabs.

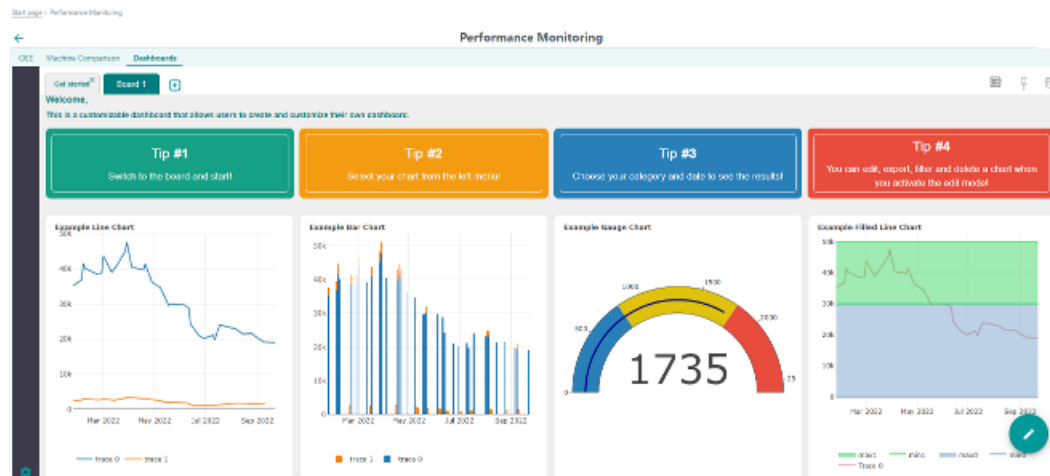
6.1 Performance Monitoring

- Open the toggle and click "Save".



A modal window for configuring the dashboard. It contains a 'Dark mode' toggle switch, a 'Grid options' section, and a 'Tabs' section with a 'Get started' toggle switch. Below these is a text input field labeled 'Dashboard name' with the value 'Board 1'. At the bottom are 'Cancel' and 'Save' buttons.

- The customized Welcome page opens.



6.1.5.3 Generating charts

Elements

Chart type	Appearance	
Line Chart		max. 7 variables/KPIs
Line Dot Chart		max. 7 variables/KPIs
Scatter Line Chart		2 variables are mandatory

6.1 Performance Monitoring

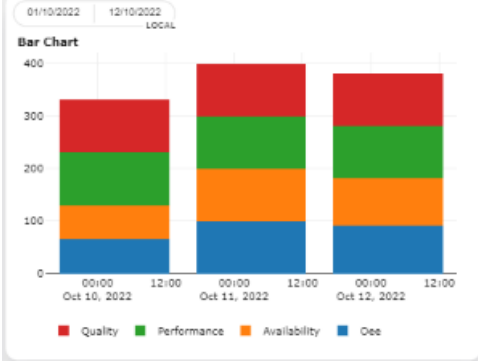
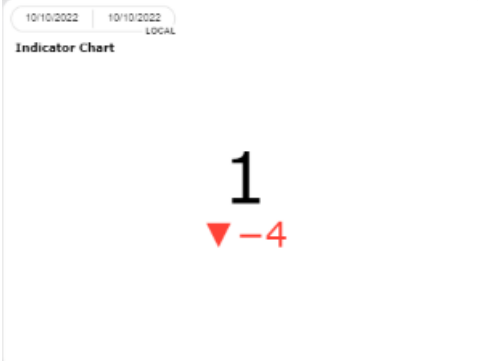
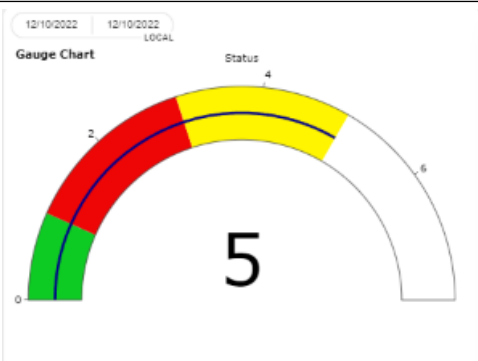
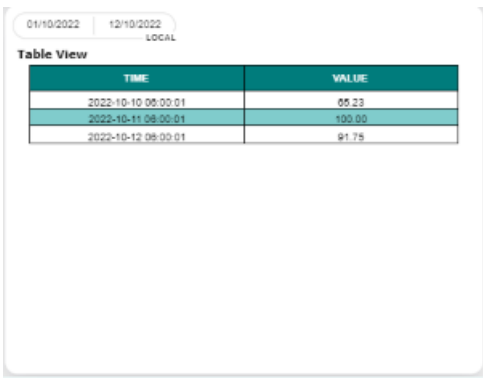
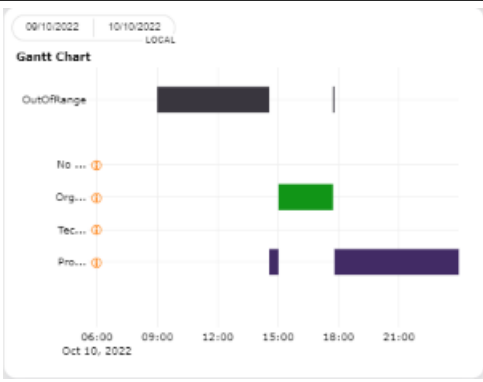
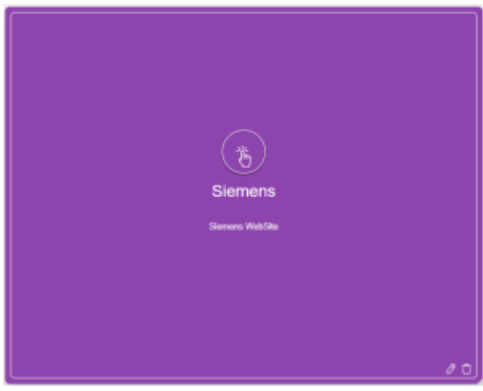
Chart type	Appearance	
Filled Line Chart		max. 1 variable/KPI
Bar Chart		max. 7 variables/KPIs
Indicator Chart		max. 1 variable/KPI
Gauge Chart		max. 1 variable/KPI

Chart type	Appearance	
Table View		max. 1 variable/KPI
Gantt Chart		max. 1 variable/KPI
Card		-
Data source		
OEE/KPIs	- Quality - OEE - Availability - Performance - Sustainability	

6.1 Performance Monitoring

Chart type	Appearance	
Machine Data	Aspects	
Machine State	- Planned Production - Machine Offline - Production - Unknown - Technical Disturbance - Organizational Disturbance - Downtime without technical or organizational disturbance	

Procedure

1. Click on the button of the chart you want to create.
The window "New Chart" opens.

The screenshot shows the 'New Chart' dialog box. At the top left is the title 'New Chart' and a close button 'X'. Below the title is a 'Data source' dropdown menu. The dropdown is open, showing a list of options: 'OEE/KPIs', 'Machine Data', and 'Machine States'. 'Machine Data' is currently selected. To the right of the dropdown is a large empty text input field. Below the dropdown are two buttons: 'Create new KPI' and 'Add'. At the bottom right is a 'Next' button with a right arrow. A progress indicator with two dots is located at the bottom center.

2. Select the data source.

This screenshot is similar to the previous one, but it shows the 'Data source' dropdown menu open. The list of options is visible: 'OEE/KPIs', 'Machine Data', and 'Machine States'. 'Machine Data' is highlighted. The 'Add' button is partially visible behind the dropdown. The 'Next' button and progress indicator are also present at the bottom.

3. Select the Asset, i.e. the machine.

The 'New Chart' dialog box is shown with the 'Data source' set to 'Machine Data'. The 'Asset' field is highlighted with a red border, indicating it is the current selection. The 'Aspect' and 'Variable' fields are empty. The 'Create new KPI' and 'Add' buttons are visible at the bottom. A 'Next >' button is located at the bottom right.

4. Select the Aspect.

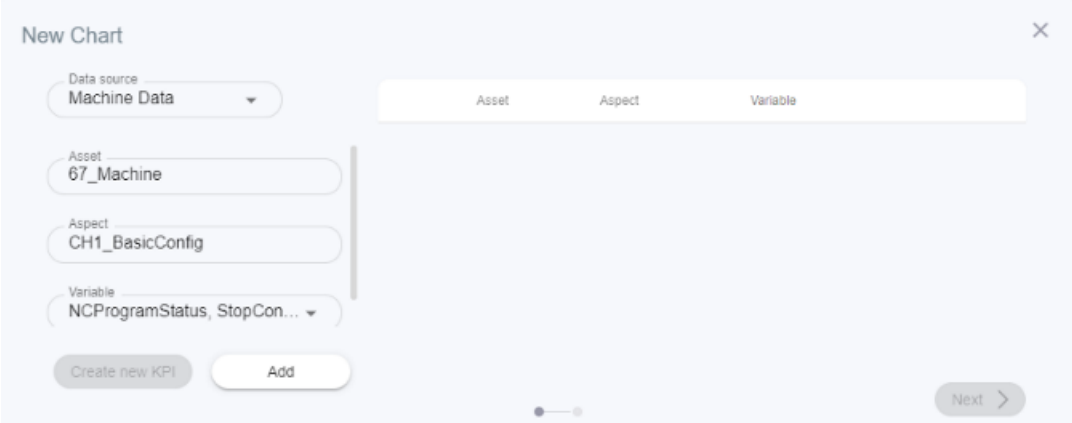
The 'New Chart' dialog box is shown with the 'Data source' set to 'Machine Data'. The 'Asset' field is now filled with '67_Machine'. The 'Aspect' field is highlighted with a red border, indicating it is the current selection. The 'Variable' field is empty. The 'Create new KPI' and 'Add' buttons are visible at the bottom. A 'Next >' button is located at the bottom right.

5. Select the variables. The number of variables depends on the chart type.

The 'New Chart' dialog box is shown with the 'Data source' set to 'Machine Data'. The 'Asset' field is filled with '67_Machine'. The 'Aspect' field is filled with 'CH1_BasicConfig'. The 'Variable' field is highlighted with a red border, indicating it is the current selection. The 'Create new KPI' and 'Add' buttons are visible at the bottom. A 'Next >' button is located at the bottom right.

6.1 Performance Monitoring

6. Click the "Add" button.



New Chart

Data source: Machine Data

Asset: 67_Machine

Aspect: CH1_BasicConfig

Variable: NCPProgramStatus, StopCon...

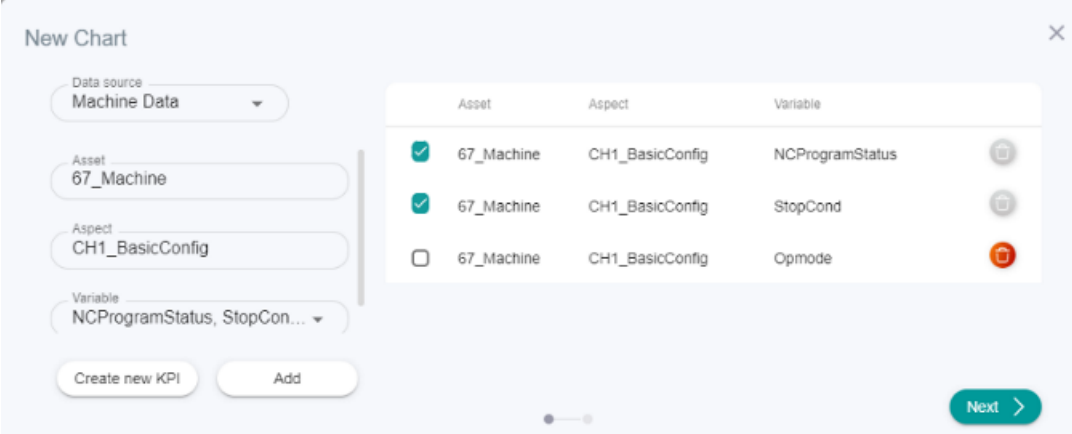
Create new KPI Add

Next >

7. Activate the required checkbox for the variables you want to display.

- The "Next" button is enabled as soon as you have selected the variables.
- The checkboxes are disabled if the maximum number of variables/KPI is reached.

Click on "Next".



New Chart

Data source: Machine Data

Asset: 67_Machine

Aspect: CH1_BasicConfig

Variable: NCPProgramStatus, StopCon...

Create new KPI Add

Asset	Aspect	Variable	
☒	67_Machine	CH1_BasicConfig	NCPProgramStatus
☒	67_Machine	CH1_BasicConfig	StopCond
☐	67_Machine	CH1_BasicConfig	Opmode

Next >

8. Define labels for the chart values.

- For the Gantt chart this field is mandatory.
- For the other charts this field is optional.

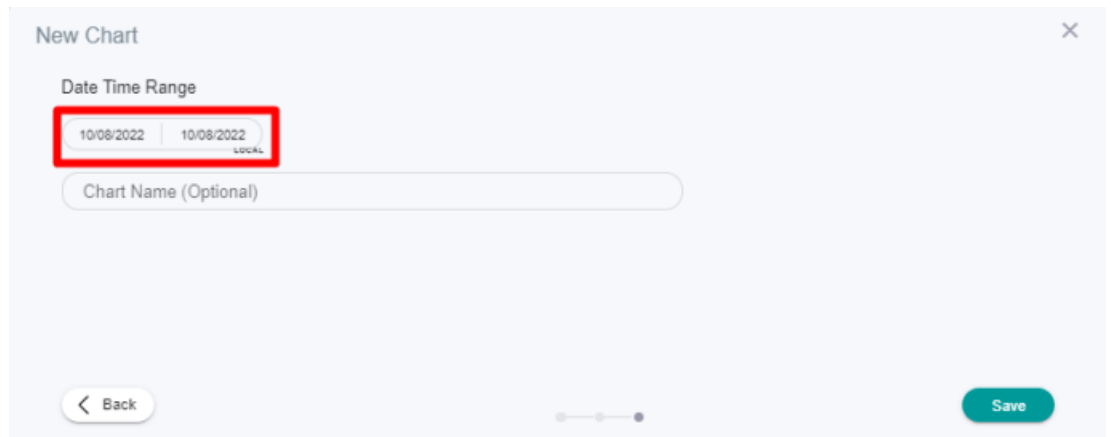
You can add more labels with the "Plus" button.
Click on "Next".



The screenshot shows a 'New Chart' dialog box. At the top, there is a close button (X) and a note: 'You can define aliases for better understanding of chart values. (optional)'. Below this is a green plus button. Under the heading '1.Label', there are two input fields: 'Value *' and 'Name *'. To the right of the 'Name *' field is a trash icon. At the bottom, there is a 'Back' button on the left, a progress indicator in the center, and a 'Next' button on the right.

9. For specific charts, follow the additional steps described below.

10. Click on the "Date Picker".



The screenshot shows the 'New Chart' dialog box at a later stage. The 'Date Time Range' section is visible, featuring a date picker with '10/08/2022' selected. The date picker is highlighted with a red rectangle. Below the date picker is a 'Chart Name (Optional)' input field. At the bottom, there is a 'Back' button on the left, a progress indicator in the center, and a 'Save' button on the right.

11. Select relative time stamps

- OR -

Select custom states.

6.1 Performance Monitoring

12. For custom states

- Select the time zone. local or UTC.
- Select the date of the custom states.
- Click on "24" to change the hours.
- Type the hours

The screenshot displays the 'Custom' configuration interface for performance monitoring. The left sidebar shows various time range options, with 'Custom' selected. Below the sidebar, the 'Local' time zone is selected. The main area shows a date range from '1 August 2022 11:00' to '10 August 2022 11:00', with a '24' icon indicating a 24-hour period. Below the date range, two calendar views for July and August are shown. The August calendar has the 1st and 10th highlighted with teal circles.

13. Click on the "OK" button.

14. Enter the name of the chart. This entry is optional.
Click on "Save".
The chart is created.

Additional steps for specific charts

These steps are necessary as step 7.

For filled line chart

1. Select "Time Series Values Color" for every desired range



- Click the "Plus" symbol to add a colored value range.
- Enter the range.
- Select the color.

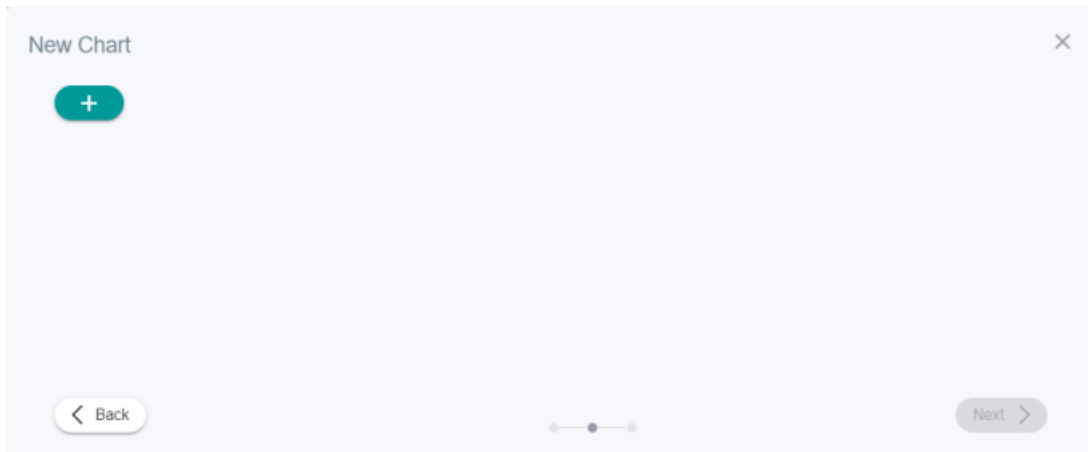
2. Click "Next".
For filled line chart you can select only one variable.



6.1 Performance Monitoring

For Gauge chart

1. Click on the "Plus" symbol to add the value range which is colored.

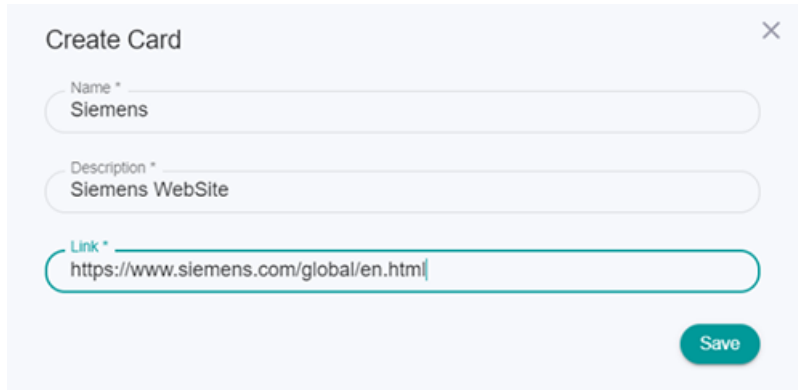


2. Enter the range.
 3. Select the color.
 4. Click on "Next".
- For Gauge charts you can select only one variable.



Creating Card

1. Click on the "Card" button.
2. Fill in
 - the name of the card
 - The description
 - the URL



The screenshot shows a 'Create Card' dialog box. It has a title bar with a close button (X). The dialog contains three input fields: 'Name *' with the value 'Siemens', 'Description *' with the value 'Siemens WebSite', and 'Link *' with the value 'https://www.siemens.com/global/en.html'. A green 'Save' button is at the bottom right.

3. Click on "Save".
The card is created.
4. Click on the card to be directed to the link.

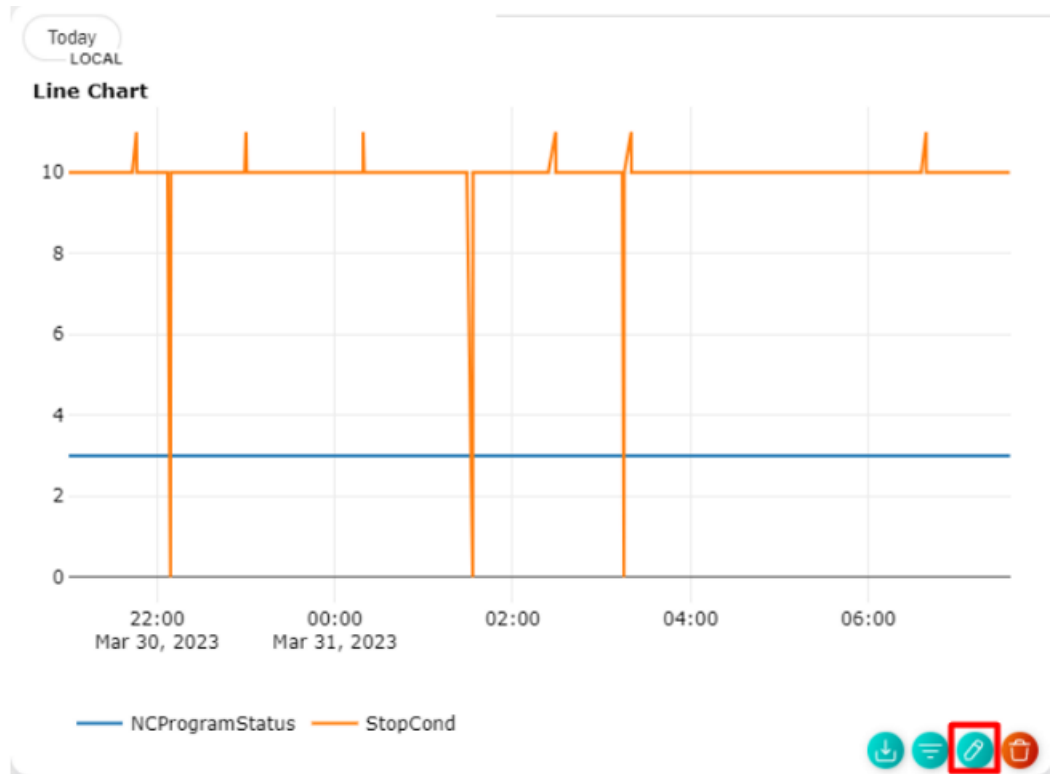
6.1.5.4 Editing charts

Click on the pen in the lower right edge of the "Dashboard" window to switch to the Edit mode.
You can edit the individual charts.

6.1 Performance Monitoring

Procedure

1. Click the edit button in the chart window.
The "Edit Chart" window opens.



2. Add the new variable or KPI.
Click on "Next >".

The "Edit Chart" dialog box shows the configuration for the chart. The "Data source" is set to "Machine Data". The "Asset" is "67_Machine", the "Aspect" is "CH1_BasicConfig", and the "Variable" is "NrOfAlarms". There are buttons for "Create new KPI" and "Add". A table lists the selected variables:

Asset	Aspect	Variable
67_Machine	CH1_BasicConfig	NCProgramStatus
67_Machine	CH1_BasicConfig	StopCond
67_Machine	CH1_BasicConfig	Opmode
67_Machine	CH1_BasicConfig	NrOfAlarms

A "Next >" button is located at the bottom right of the dialog box.

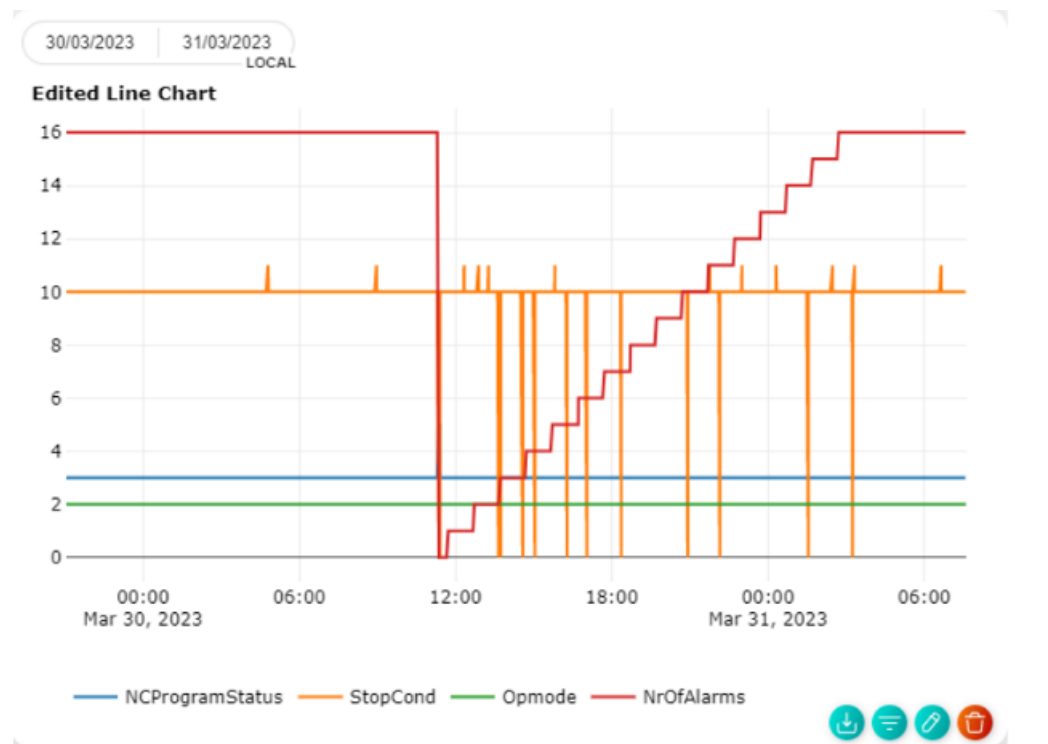
3. Click on the "Add" symbol to add a new label.
Click on the dashboard symbol next to the name to delete it.
Click on "Next >".

The screenshot shows the 'Edit Chart' dialog box. At the top, there is a title bar with 'Edit Chart' and a close button (X). Below the title bar, there is a hint: 'You can define aliases for better understanding of chart values. (optional)'. A green circular button with a white plus sign is labeled '1. Label'. Below this, there are two input fields: 'Value *' and 'Name *'. To the right of the 'Name *' field is a trash can icon. At the bottom left, there is a 'Back' button with a left arrow. At the bottom right, there is a 'Next >' button with a right arrow. In the center of the bottom, there is a progress indicator with three dots, the second of which is filled.

6.1 Performance Monitoring

4. Click on the date to edit the date range.
Change the chart name.

5. Click on "Save".
The chart is edited.



6.1.5.5 Creating KPIs

You can create KPIs from a combination of added variables and numerical values.

Procedure

1. Click on the button of the chart you want to create.
Select parameters as described in Generating charts (Page 135).

New Chart

Data source: Machine Data

Asset: 67_Machine

Aspect: CH1_BasicConfig

Variable: Opmode, ProtectionLevel, N...

Create new KPI Add

	Asset	Aspect	Variable	
☐	67_Machine	CH1_BasicConfig	Opmode	
☐	67_Machine	CH1_BasicConfig	ProtectionLevel	
☐	67_Machine	CH1_BasicConfig	NrOfAlarms	

Next >

2. Click on "Create New KPI".
3. Type the KPI name.

Create a New KPI

KPI Name * Mach Status magnified with 10

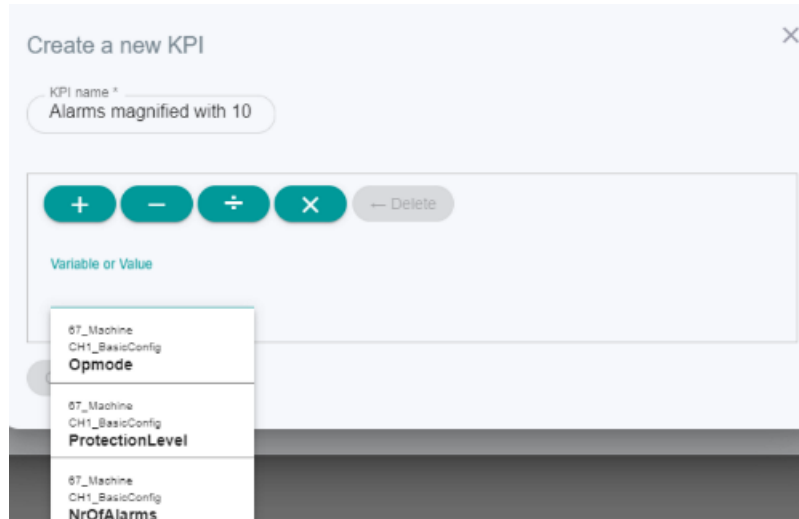
+ - ÷ × Delete

Variable or Value

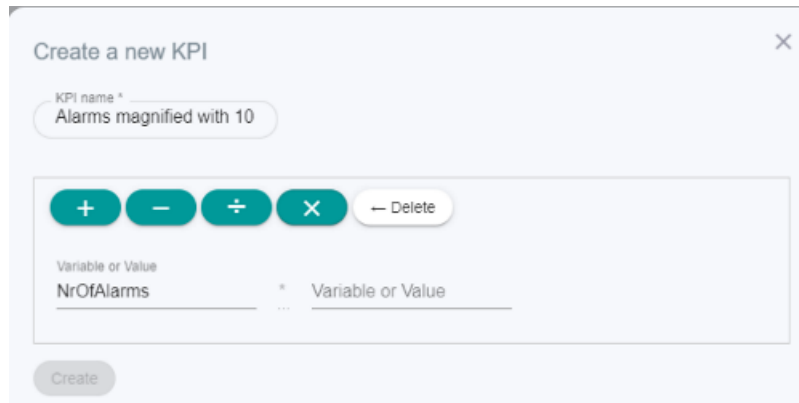
Create

6.1 Performance Monitoring

4. To add a variable, click on "Variable or Value".
A list with the added variables appears.
Select the desired variable.



5. Click on the desired operator.



6. Select another variable
- OR -
Type a numerical value.
At least one of the parameters should be a variable.

7. You can repeat step 5 and 6.
Click on "Delete" if you want to remove a variable.
Click on the "Create" button.

Create a new KPI

KPI name *
magnified with 10 plus 20

+ - ÷ × ← Delete

Variable or Value	...	Variable or Value	...	Variable or Value
NrOfAlarms	*	10	+	20

Create

6.1 Performance Monitoring

8. To see the KPI in the chart, click the checkbox.
Click on "Next >".

New Chart

Data source
Machine Data

Asset
67_Machine

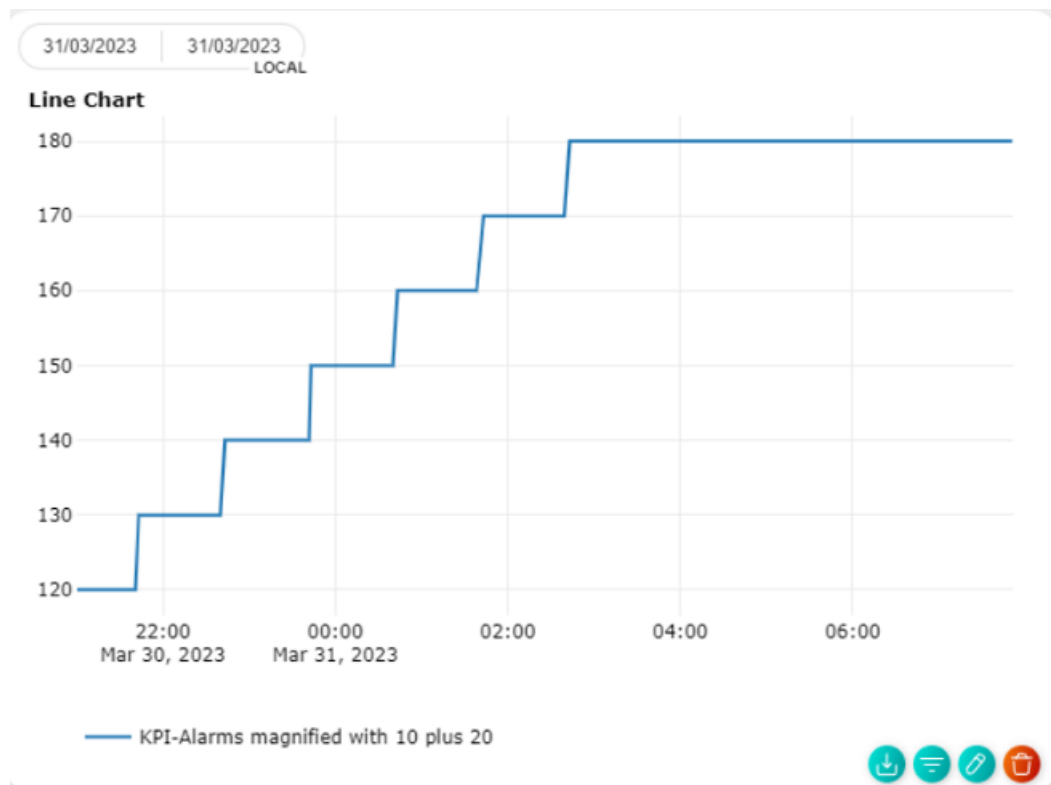
Aspect
CH1_BasicConfig

Variable
Opmode, ProtectionLevel, N...

Create new KPI Add

Asset	Aspect	Variable
☐ 67_Machine	CH1_BasicConfig	Opmode
☐ 67_Machine	CH1_BasicConfig	ProtectionLevel
☐ 67_Machine	CH1_BasicConfig	NrOfAlarms
☒		KPI-Alarms magnified v

9. Complete the other parameters as described in Generating charts (Page 135).
The KPI is shown in the chart.



6.1.5.6 Editing KPIs

You can change the definition of a KPI.

Switch to the "Edit" mode. Click on the pen in the lower right edge of the "Dashboard" window.

You can edit the individual charts.

Procedure

1. Click on the "Edit" button in the chart window.
The "Edit Chart" window opens.

2. Click on the "KPI Edit button" next to the KPI that you want to edit.
3. Edit on the desired formulation.
Click on the "Confirm" button.

4. Complete the other chart parameters. For more information see Generating charts (Page 135).

6.1 Performance Monitoring

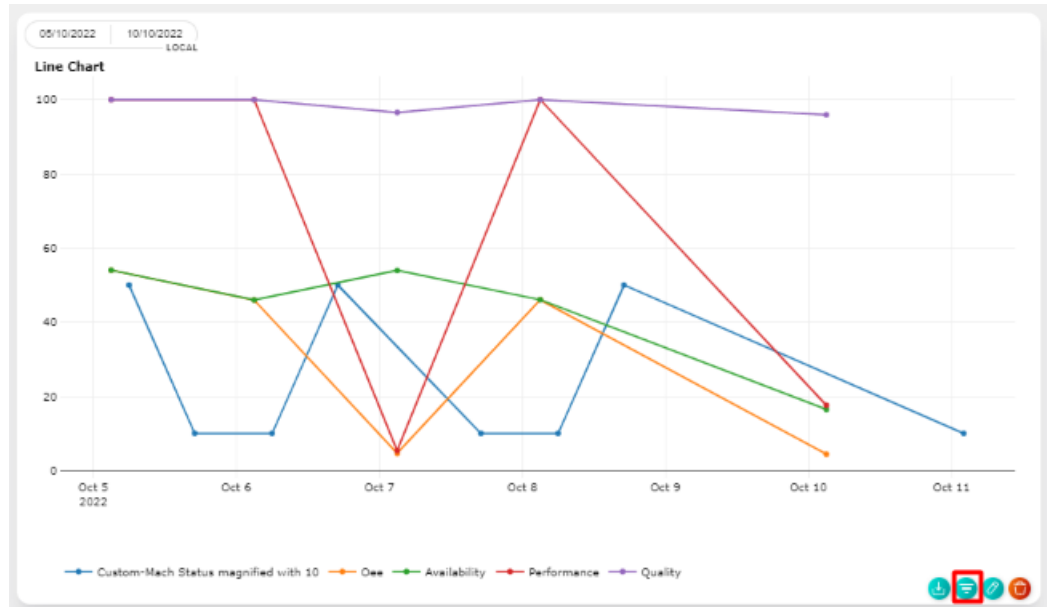
6.1.5.7 Filtering charts

You can filter the charts to display a defined value range.

Procedure

Adding filter

1. To add a filter click on the "Filter" button in the chart.



2. Click on the "Plus" button to add a new filter.
The maximum number of filters is equal to the number of variables and KPIs.

3. Define the filter.

- Select the variable.
- Select the condition.
- Set the value.
- You can select AND or OR to define a range for this variable.

Click on "OK".

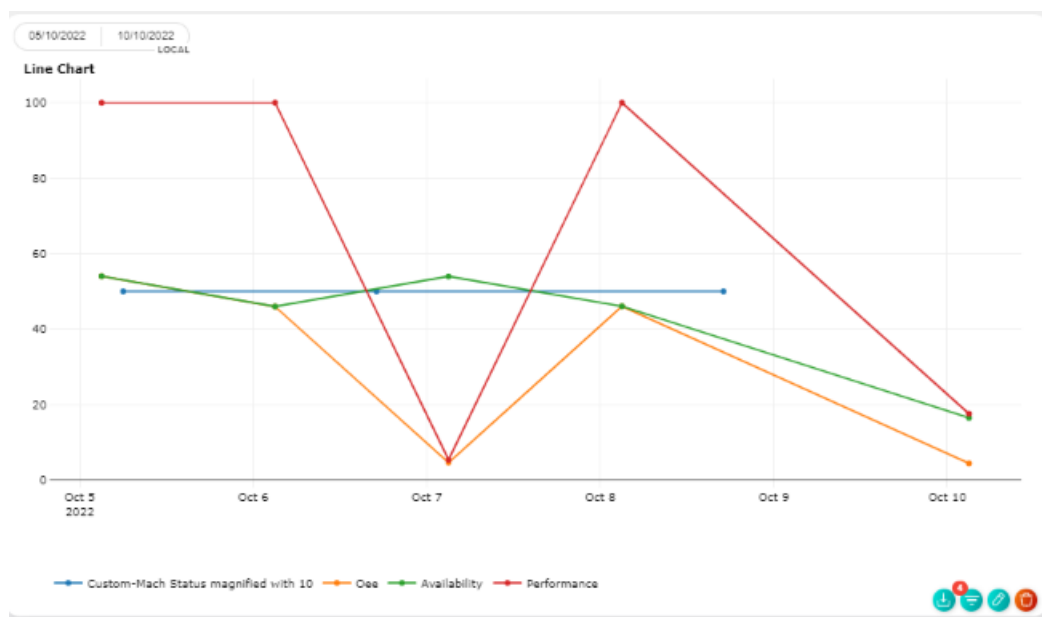
The screenshot shows a 'Filter Chart' dialog box with a close button (X) in the top right corner. It contains four filter rules, each with a 'Filter' section, a 'Condition' dropdown, and a 'Value' input field. The first three rules have a trash icon to their right, while the fourth rule has an 'And' dropdown in the 'And/Or' section. At the bottom, there are 'Clear filters' and 'Ok' buttons.

Filter	Condition	Value	And/Or
1. Filter Variables: Quality Documentati...	Greater than	90	
2. Filter Variables: Availability Docume...	Less than	80	
3. Filter Variables: Oee Documentation...	Equal to	0	
4. Filter Variables: Custom-Mach Statu...	Less than	30	And
	Greater than	0	

4. The chart is filtered.

The number of applied filters is shown next to the "Filter" symbol.

6.1 Performance Monitoring



Clearing filter

1. Click on the "Filter" button in the chart.
The "Filter Charts" window opens.
2. To remove one filter, click on the "Remove" button next to the filter.
To remove all filters, click "Clear filters".

The screenshot shows the 'Filter Chart' window with a close button (X) in the top right corner. Below a green '+' button, there are four filter entries, each with a 'Variables' dropdown, a 'Condition' dropdown, and a 'Value' input field. Between the first and second filters, and between the second and third, there is an 'And/Or' dropdown. The fourth filter has a trash icon to its right. At the bottom left, there is a 'Clear filters' button, and at the bottom right, there is a green 'Ok' button. Red boxes highlight the 'Clear filters' button and the trash icon next to the fourth filter.

Filter	Variables	Condition	Value *	Remove
1.Filter	Quality Documentati...	Greater than	90	
	And/Or			
2.Filter	Availability Docume...	Less than	80	
	And/Or			
3.Filter	Oee Documentation...	Equal to	0	
	And/Or			
4.Filter	Custom-Mach Statu...	Less than	30	
	And	Greater than	0	

6.1.5.8 Exporting data

You can export filtered data or data that is not displayed in the chart. The data is exported as "csv" format.

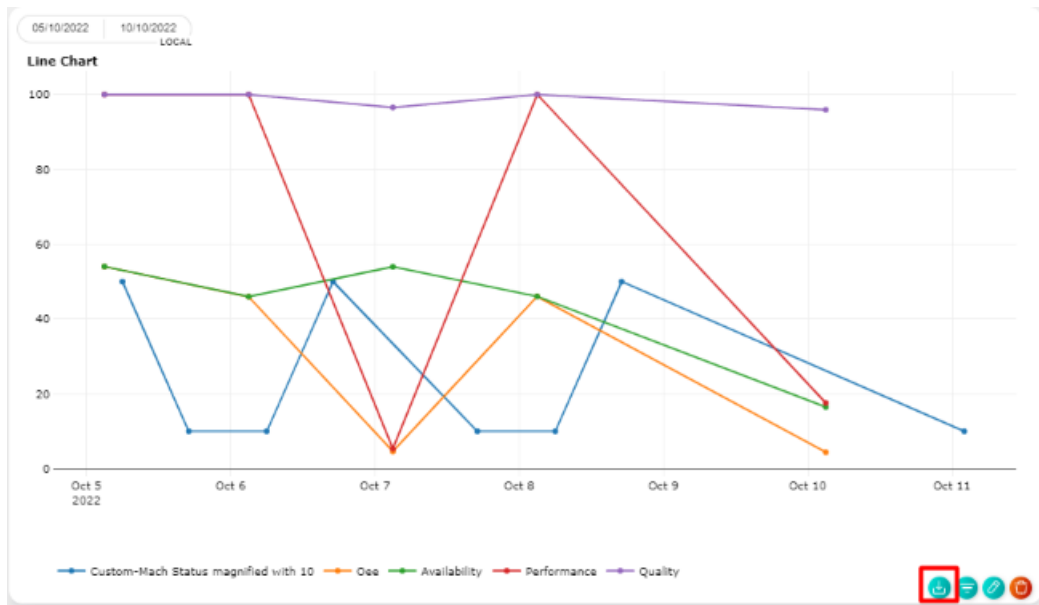
Procedure

Click on the "Export" button.

The data is exported.

The csv file can be imported with any tool that is able to handle the CSV format. The separator of the columns is ",".

6.1 Performance Monitoring

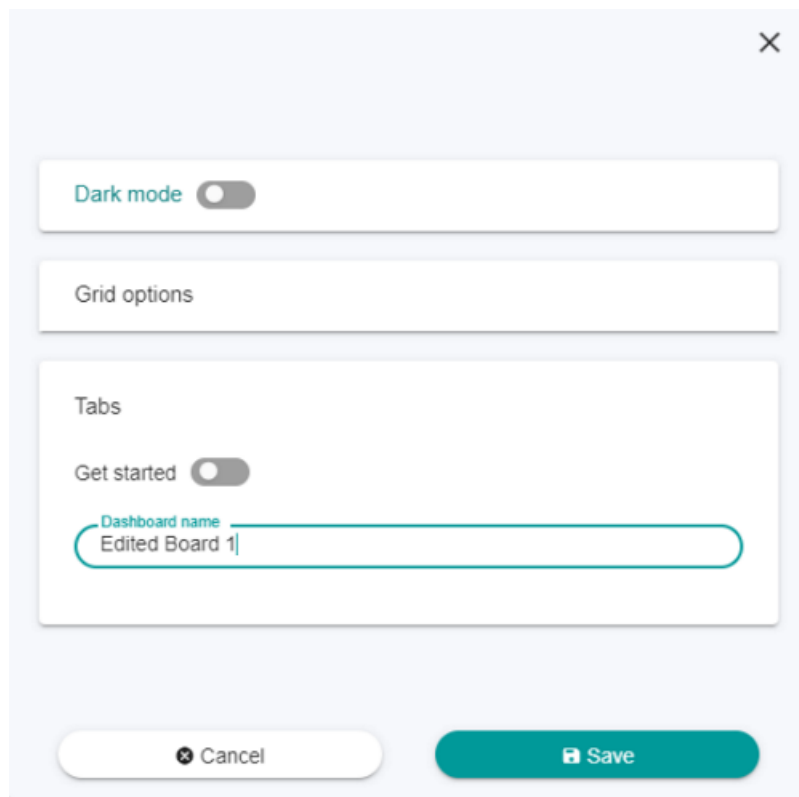


6.1.5.9 Dashboard settings

You can add a new dashboard. The maximum number of dashboards is seven.

Edit dashboard name

1. Click the "Settings" button in the tool bar on the left.
The window for the dashboard option appears.
2. Click "Tabs".
3. Set the tab name.
4. Click "Save".



The screenshot shows a settings dialog box with a close button (X) in the top right corner. It contains three main sections: 1. 'Dark mode' with a toggle switch currently turned off. 2. 'Grid options' which is currently empty. 3. 'Tabs' section containing a 'Get started' toggle switch (turned off) and a text input field labeled 'Dashboard name' with the text 'Edited Board 1' inside. At the bottom, there are two buttons: 'Cancel' with a close icon and 'Save' with a save icon.

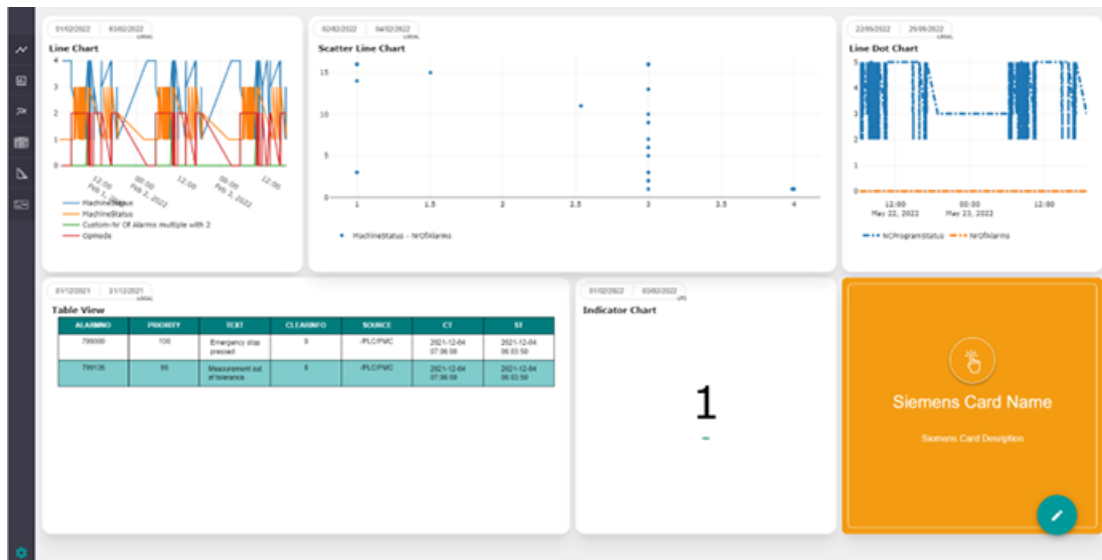
Edit dashboard grid options

1. Click the "Settings" button in the tool bar on the left.
The window for the dashboard option appears.
2. Click "Grid Options".
3. Set the grid options:
 - grid type
 - number of rows
 - number of columns
4. Click "Save"

6.1 Performance Monitoring

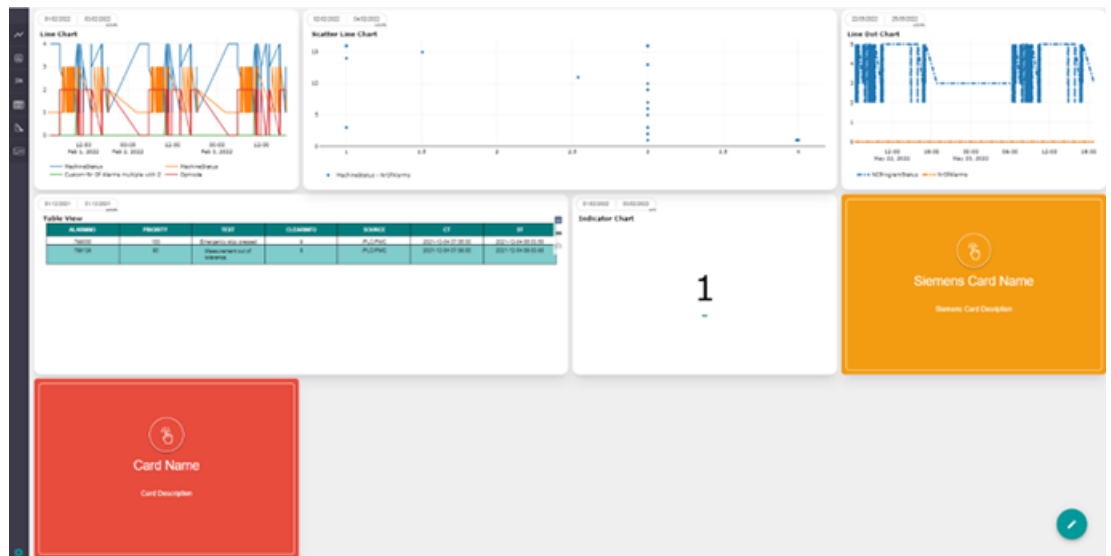
Grid options

This option describes how the charts are displayed after adding a new chart. All charts are arranged in a way to fill the screen.

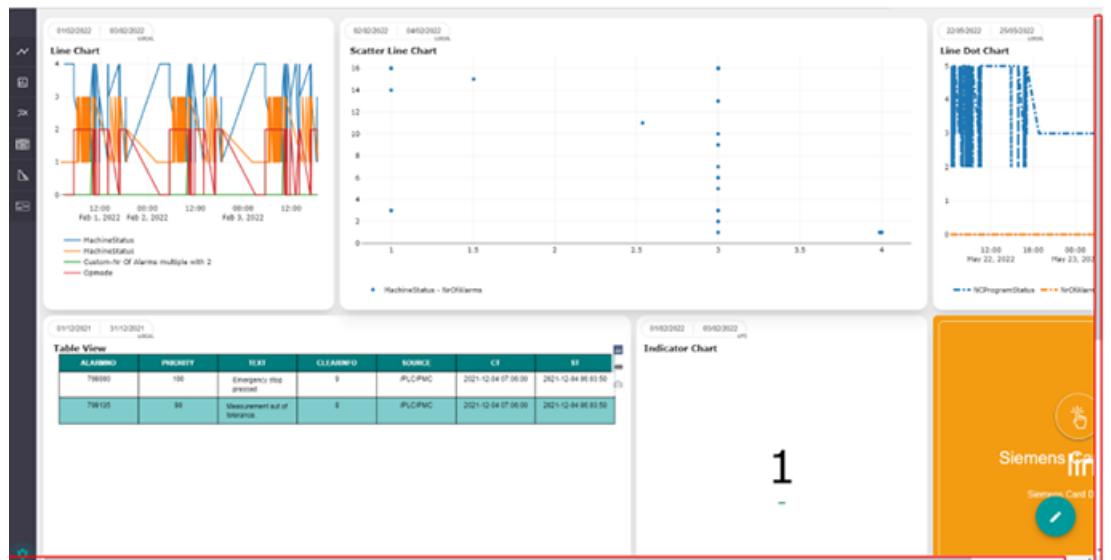


The following grid options are possible:

- Fit
The newly-added charts fill the window.



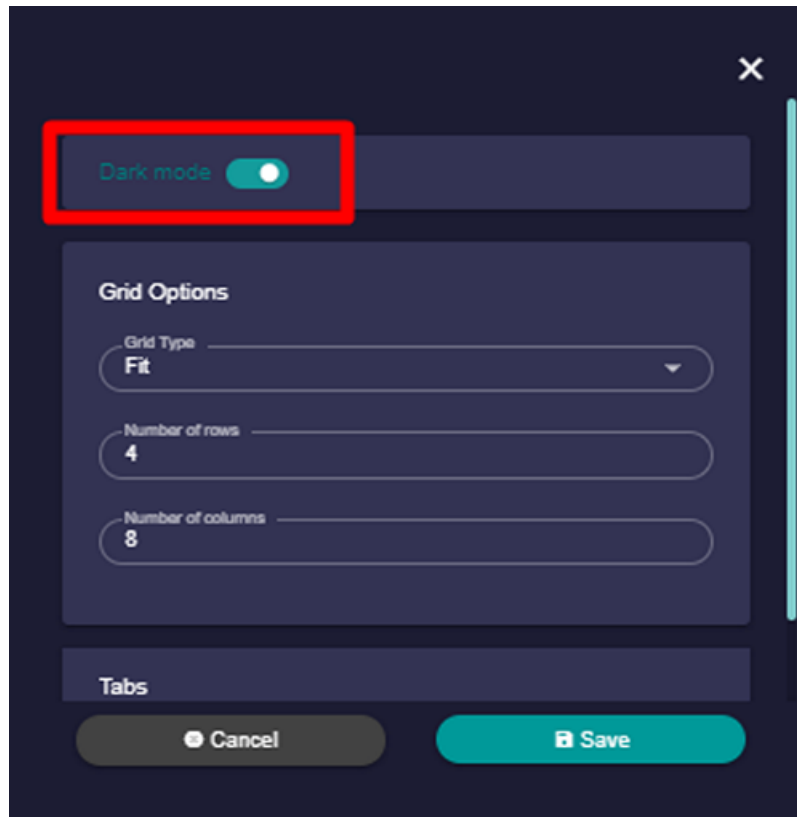
- Scrollable
The window expands in x and y directions. A vertical and a horizontal scrollbar appear.



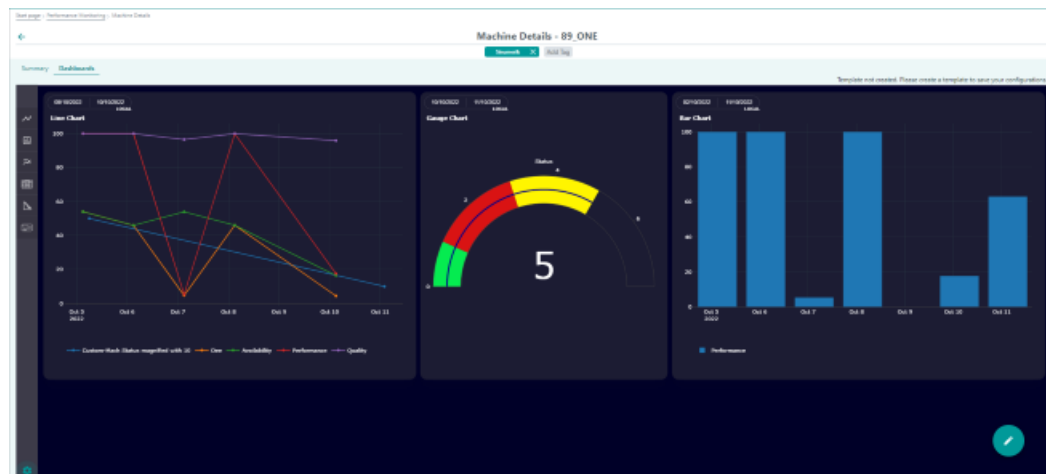
- Scroll horizontal
The window expands in the x-direction. You can scroll the page in a horizontal dimension.
- Scroll vertical
The window expands in the y-direction. You can scroll the page in a vertical dimension.

Dark mode

1. Click the "Settings" button in the tool bar on the left.
The window for the dashboard option appears.
2. Switch to "Dark mode".



3. The dashboard is shown in the dark mode.

**6.1.5.10 Dashboard templates**

You can save prepared dashboards as a template to use the template another time.

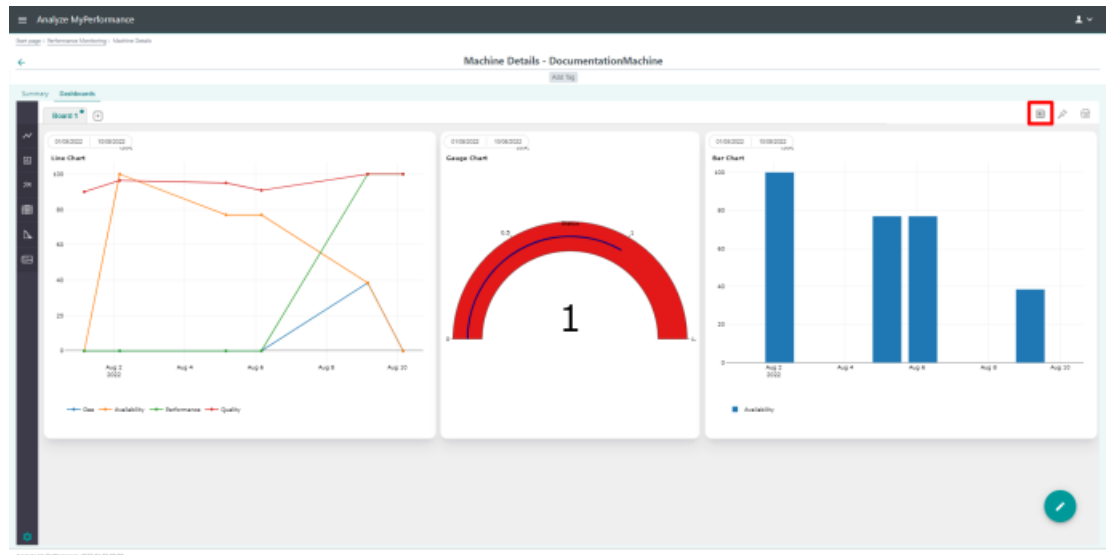
Buttons

The following buttons are available for template functions.

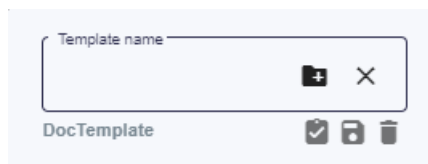
Buttons	Function
	Adds a new template
	Sets this template as the default template
	Saves the changes
	Deletes the template

Procedure

1. Click the "Template" icon.

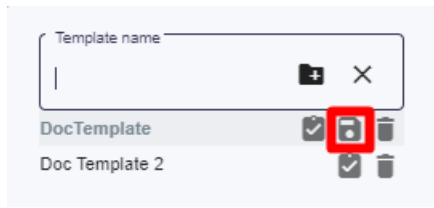


2. The template dialog appears.
3. Fill the Template name



4. Click the "Add" button.

5. The template is added to the list.



6. Click the "Save" button next to the template name.
The template is saved.

6.2 Utilization Planning

6.2.1 Overview

You have the option of defining the utilization plans for the individual control systems in the "Utilization Planning" window.

The following tabs are available in the "Utilization Planning" window:

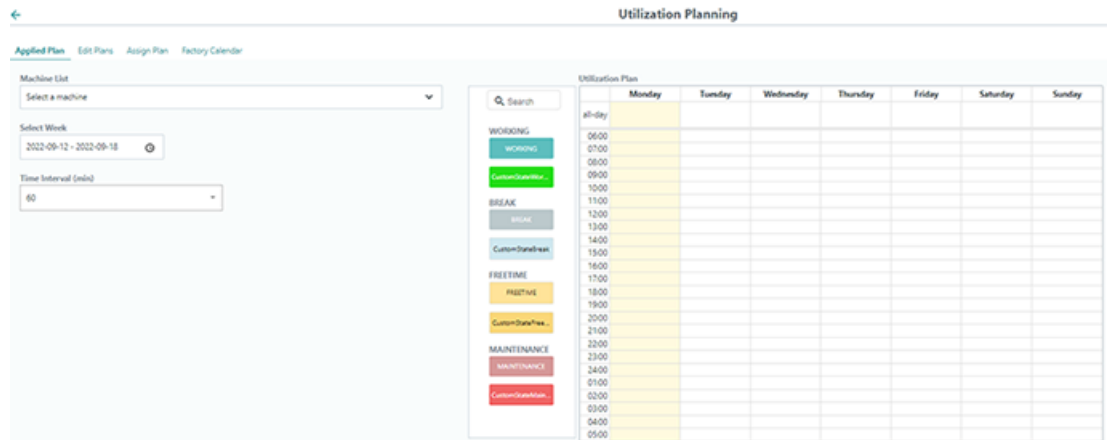
- Applied plan (Page 165).
Under this tab you can see the assigned utilization plans for the control systems.
- Edit plans (Page 167).
Under this tab you can create, edit and delete utilization plans.
- Assign plan (Page 175).
Under this tab you can assign the required assets to the machine utilization plans that have been created.
- Factory calendar (Page 179)
Under this tab you can apply weekend, public holidays and days when the factory is offline.

Procedure

1. On the start page of Analyze MyPerformance /OEE, click "Utilization Planning".



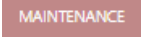
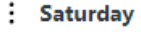
2. The "Utilization Planning" window is opened with the "Applied Plan" tab.



6.2.2 Applied plan

Parameters and elements

The following parameters and elements are available for editing:

Parameter/element	Description
Utilization plan buttons	
You can create other utilization states. For more information see Customize utilization states (Page 244) .	
	Identifies the corresponding times as working times.
	Identifies the corresponding times as break times.
	Identifies the corresponding times as free time.
	Identifies the corresponding times as maintenance time.
	Opens the "Workday details" view. For more information see Workday details (Page 177) .
Applied Plan	
Machine List	Clicking on the small arrow opens the drop-down list for selecting a machine.

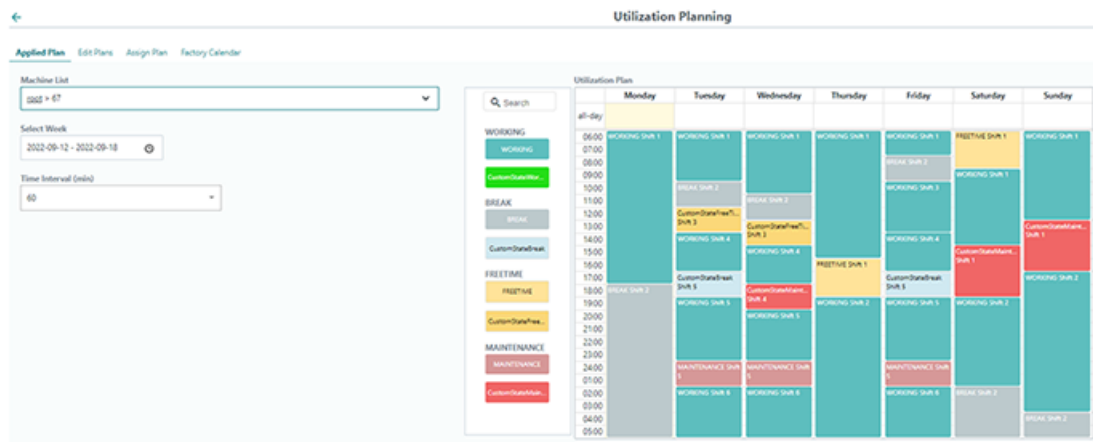
6.2 Utilization Planning

Parameter/element	Description
Select Week	Clicking on the clock icon opens the calendar for defining the time period.
Time Interval (min)	Clicking on the small arrow opens the drop-down list to select the available time interval in minutes: • 60 • 30 • 15 • 5 The utilization plan is displayed with the selected time intervals.

The "Utilization Planning" window is opened with the "Applied Plan" tab.

You see the utilization plan and the settings for the applied plan.

Deleted utilization states are also listed in the shift status list if they are used in a templated assigned to the machine.



Procedure

1. Open the drop-down "Machine List".
The list of available machines is displayed.
Select the required control system (machine) using the mouse.
2. Click on the clock icon in the "Select Week" selection box.
The "Select Week" calendar is opened.
Click to select the required week.
3. In the drop-down list "Time Interval (min)", select the required interval.
The machine utilization plan is displayed for the selected time period.

The screenshot shows the 'Applied Plan' tab in the Utilization Planning interface. It features three main sections: 'Machine List' with a dropdown menu currently showing 'root > DocumentationMachine'; 'Select Week' with a date range of '2022-08-15 - 2022-08-21' and a clock icon for calendar selection; and 'Time Interval (min)' with a dropdown menu set to '60'.

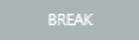
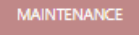
6.2.3 Edit plans

6.2.3.1 Creating machine utilization plans

Under this tab you can create, edit and delete machine utilization plans.

Parameters and elements

The following parameters and elements are available for editing:

Parameter/element	Description
Utilization plan buttons You can create other utilization states. For more information see Customize utilization states (Page 244).	
	Identifies the corresponding times as working times.
	Identifies the corresponding times as break times.
	Identifies the corresponding times as free time.
	Identifies the corresponding times as maintenance time.
	Click "Copy-Paste" to copy and paste a schedule from a day to another day(s).

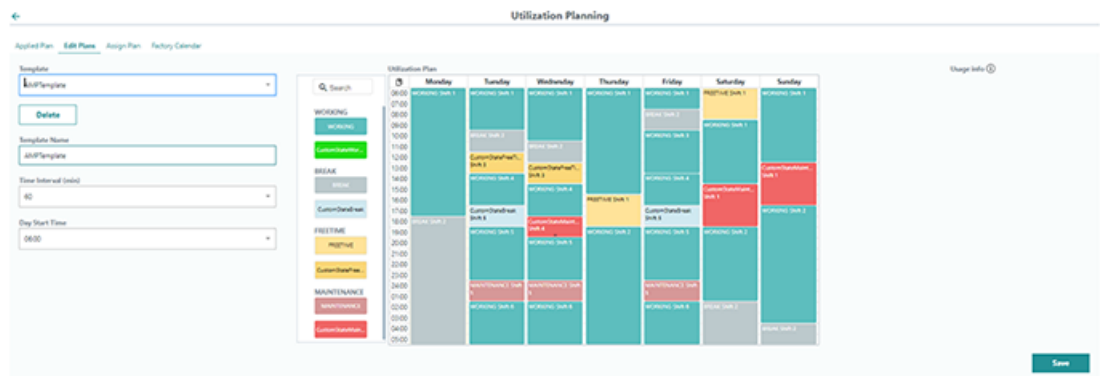
6.2 Utilization Planning

Parameter/element	Description
 Saturday	Opens the "Workday details" view. For more information see Workday details (Page 177).
"Edit Plans" tab	
Template	Clicking on the small arrow opens the drop-down list to select an existing template.
Template Name	Enter the required name for the new template.
Time Interval (min)	Clicking on the small arrow opens the drop-down list to select the available time interval in minutes: • 60 • 30 • 15 • 5 The utilization plan is displayed with the selected time intervals.
Day Start Time	Clicking on the small arrow opens the drop-down list for selecting the available start times of the day.
 Usage info ⓘ	Click on "Usage info" to see or hide the usage information.
	Click on "Delete" to delete the selected utilization plan template.
	Click on "Save" to save the selected utilization plan template.

Procedure

Open the "Edit Plans" tab.

You see the utilization plan and the tab for creating and deleting the plan.



Creating machine utilization plans

You have the option of creating a utilization plan.

1. Open the "Edit Plans" tab.

The screenshot shows the 'Edit Plans' tab selected. The interface includes a 'Template' dropdown menu with 'AMPTemplate' selected, a 'Delete' button, a 'Template Name' text input field with 'AMPTemplate', a 'Time Interval (min)' dropdown menu with '60', and a 'Day Start Time' dropdown menu with '06:00'.

2. Open the drop-down list "Template".
You can select the following:
 - Click on "New Template" if you want to create a new utilization plan.
 - Click on a previously created template that you want to edit and save as the new machine utilization plan.
3. Enter the name of the new machine utilization plan in the "Template name" input field.
4. Open the "Time interval (min.)" drop-down list.
Choose the required time interval by clicking on it.
5. Open the drop-down list "Day start time".
Select the desired start time for the day with a mouse click.
6. Enter the desired times in the machine utilization plan as follows:
 - Click one of the buttons above the weekly plan (for example BREAK), and drag the button to the required position in the machine utilization plan.
 - Then position the cursor at the lower edge of the button in such a way that the cursor becomes a double arrow. Drag the button to the required start or end time.
 - You can also edit the times in the "Edit status" window, see Edit status (Page 171).
7. Edit the calendar events:
 - Click on the event in the machine utilization plan.
 - The "Edit status" window opens. For more information, see Edit status (Page 171).
 - Edit the data of the status.

6.2 Utilization Planning

- 8. Click on "Save" to save the machine utilization plan.
- 9. The "Save template as..." window opens.
To save the new template, click on the "Save" button.
- OR -
To cancel the operation, click on "Cancel".

Save template as...

Are you sure you want to save the template?

Cancel

Save

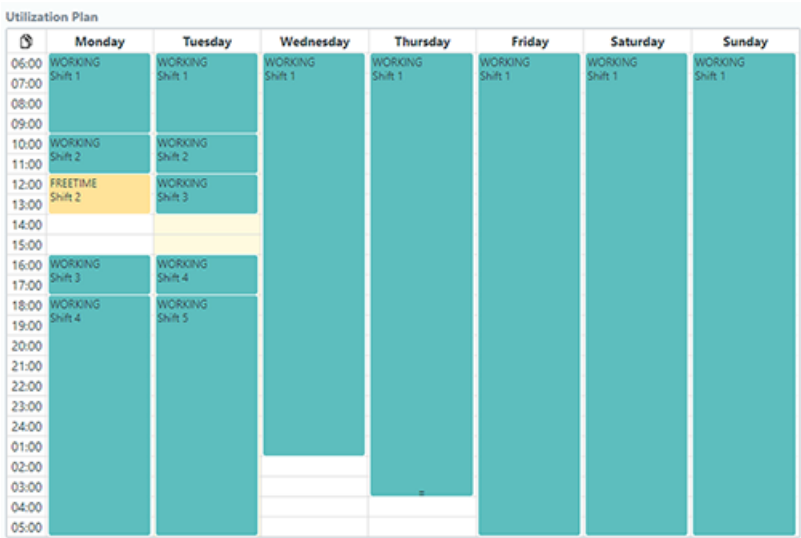
Gaps in the utilization plan

You can create a utilization plan with gaps between two status parts. The gap is included in the previous shift.The gap is considered as free time on the "Machine details" view and the "Performance monitoring" view.

Note

Gaps are included with the correct shift in the OEE and KPI calculation.

The OEE value is not increased during the gap, because it is supposed to be non-productive time.



Deleting machine utilization plans

You have the option of deleting a utilization plan.

1. Clicking on the small arrow opens the drop-down list "Templates".
Select the template that you want to delete using the mouse.
2. Click "Delete".
The "Warning" window opens.
To delete the template, click "Delete".
- OR -
To cancel the operation, click "Cancel".

Warning

Are you sure you want to delete the template?

Cancel

Delete

6.2.3.2 Edit status

Click on an event in the shift calendar to edit the event in the "Edit status" window.

Parameter and elements

Parameter/element	Description
Start time	Time at which the event starts
End time	Time at which the event ends
Target Pieces	• The number of parts • Optional value in the range from 1 to 9999 • Only available for status "Working"
Cycle Time	• Needed time to produce 1 target piece • Mandatory if target pieces are provided • Only available for status "Working" • Cannot be larger than the duration of the shift
Cycle Unit	• Time unit for cycle time • Mandatory if cycle time is provided • Seconds, minutes or hours
Custom label	• Optional • Up to 256 characters • All type of characters
Part Program	Only available for status "Working"
Revision	Only available for status "Working" 4 characters, of ".", ",", "A" to "Z" or "0" to "9"

6.2 Utilization Planning

Parameter/element	Description
Shift	- Each day, the shift numbering starts with "1" - The shift number may only be incremented by "1" for each entry. - The maximum number of shifts is 24.
Status	Select: - Working - Break - Freetime - Maintenance
	Reject the changes.
	Delete this status from the utilization plan.
	Save this event. You must save the template on the "Edit Plans" tab to save the event permanently.

Procedure

The "Edit Status" window opens when you click into the utilization calendar.

- Set the start and the end time of the event. Change it in one of the 3 ways:
 - Resize the event on the "Edit Plans" tab. Click on the edge of an event and drag it.
 - Click the up or down button (arrows) next to the hour or minute values.
 - Click on the hour or minute value. Press and hold the up or down arrow key.

Events must not overlap.

The event must start and end in the same calendar column.

- Select the desired shift number from the "Shift" drop-down list.
You can assign several calendar entries to the same shift.
- If necessary, select a new status from the "Status" drop-down list.
- Set the other information on the event.
 - Cycle unit
 - Cycle time
 - Target pieces
 - Production time $\geq$ target cycle time $\times$ Target pieces
 - Custom label
 - Part program
 - Revision
- Click "Save" to save the status.
 - OR -
 - Click "Delete" to delete this status from the machine utilization plan.
 - OR -
 - Click "Cancel" to reject the changes.

Edit status

Start Time		End Time	
06	:	00	08
Target Pieces		Cycle Time	Cycle Unit
200	20	Sec	▼
Custom label			
Screw 40			
Part Program		Revision	
Screw		1000	
Shift			
Shift 1			
Status			
Working			

Cancel Delete Save

6.2.3.3 Copy daily plan

You can copy a daily plan and paste it to other days.

Procedure

1. Click "Copy-Paste" in the utilization calendar.
2. Select the source. This is the daily plan which you want to copy.

3. Select the target. You can select several targets.

Copy

Source

Wednesday ▼

Target

Friday × Saturday × ▼

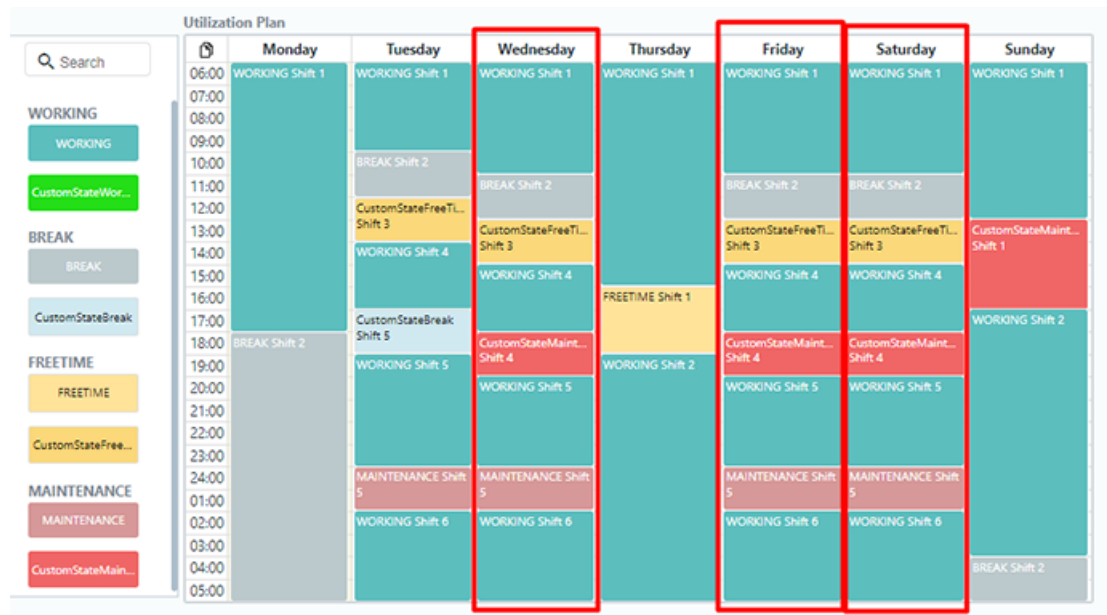
Cancel OK

4. Click "OK"
5. Select the copy option
 - Select "Copy only no conflicts" if you want to copy only the shift components if there is no conflict in the target.
 - Select "Copy and replace all" if you want to paste the source to the target without control.

How copy should work?

Cancel Copy only no conflicts Copy and replace all

6. Click "OK" to complete the process.



6.2.4 Assign plan

Under this tab you can assign the required machine to the machine utilization plans that have been created.

Parameters and elements

The following parameters and elements are available for editing:

Parameter/element	Description
Utilization plan buttons	
You can create other utilization states. For more information see Customize utilization states (Page 244) .	
	Identifies the corresponding times as working times.
	Identifies the corresponding times as break times.
	Identifies the corresponding times as free time.
	Identifies the corresponding times as maintenance time.
	Click on "Save" to save the selected utilization plan template.
Saturday	Opens the "Workday details" view. For more information see Workday details (Page 177) .
"Assignment" tab	
Machine List	Clicking on the small arrow opens the drop-down list for selecting a machine.
Machine Timezone	Displays the time zone that is assigned to the machine.

6.2 Utilization Planning

Parameter/element	Description
Template	Clicking on the small arrow opens the list of the available utilization plan templates.
Assignment Start Date	Clicking on the clock icon opens the calendar to assign the start date.
Assign	Click on "Assign" to assign the created utilization plan template to the required machine.

Procedure

1. In the "Utilization Planning" window, open the "Assign Plan" tab.

Applied Plan Edit Plans **Assign Plan** Factory Calendar

Machine List

root > DocumentationMachine ▼

Machine timezone

Africa/Cairo

Template

AMPTemplate ▼

Assignment Start Date

2022-08-15 🕒

2. Open the drop-down "Machine List".
The list of available machines is displayed.
Use the cursor to select the required control system.
3. Open the drop-down list "Template".
Select the required template.
The machine utilization plan of the template is displayed.

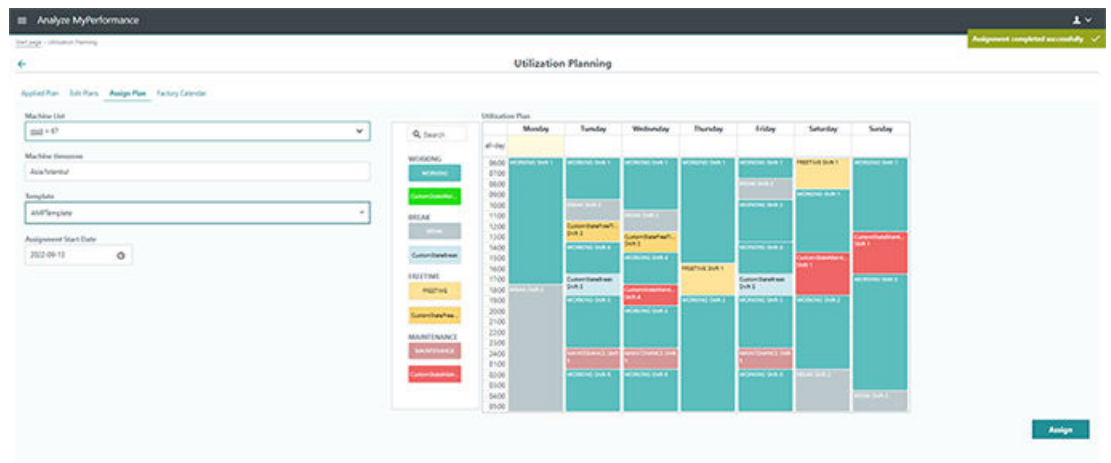
- Open the "Assignment Start Date" calendar by clicking on the clock icon.
Select the required start date. The next day is the earliest start date.
If you have not selected the correct date or the day, an error message is displayed.

Assignment Start Date

2019-03-01 

Assignment date cannot be today or in the past

- Click "Assign".
You receive the success message "Assignment completed successfully".



Note

Assignment takes place from the next day

You cannot assign the utilization plan until the next day or one of the next days.

6.2.5 Workday details

You can see detailed information about specific days in the shift calendar.

Parameters and elements

Parameter/element	
OK	Closes the window.
Day shifts details	
Shift #	Shift number
Start Time	Start time of the shift
End Time	End time of the shift
Total Pieces	Number of produced parts

6.2 Utilization Planning

Parameter/element	
« 1 2 3 »	Previous or next page, select page
Shift details	
Start Time	start time of the event
End Time	end time of the event
Status	event status
Part program	part program for this event
Target pieces	number of pieces
Cycle Time	cycle time
Custom label	custom label
Revision	Revision

Procedure

- Click on the day in the shift calendar or on the three-dot icon next to the day label.
The window with the day details opens.
- In the upper table you see the shifts of the selected day. Use the arrows and numbers to scroll through the pages.
For every shift you see
 - Shift number
 - Start time
 - End time
 - Total pieces
- Select a shift.
The second table shows details about the selected shift. You see for all calendar events:
 - Start time
 - End time
 - Status
 - Part program
 - Target pieces
 - Cycle time
 - Custom label
 - Revision

Use the vertical scrollbar to scroll through the events.
- The 2 columns "part program" and "custom label" can become very long. You can see the full text when hovering them.

Sec	Dodge Challenger Cylinders	D
Sec	Dodge Challenger Cylinders for SRT Hemi, for Jailbr...	D
	Dodge Challenger Cylinders for SRT Hemi, for Jailbreak version	

X

Monday Shifts Details			
Shift #	Start Time	End Time	Total Pieces
1	08:00	09:00	5
2	09:00	10:00	80
3	10:00	11:00	80
4	11:00	12:00	80
5	12:00	13:00	80
6	13:00	14:00	80
7	14:00	15:00	80
8	15:00	16:00	80

« 1 2 3 »

Shift #4 Details (11:00 - 12:00)							
Start Time	End Time	Status	Part Program	Target Pieces	Cycle Time	Custom label	Revision
11:15	11:20	WORKING	Charger	10	30 Sec	Dodge Charger Spoilers	DC03
11:20	11:30	BREAK					
11:30	11:35	WORKING	Charger	10	30 Sec	Dodge Charger Spoilers	DC03
11:35	11:40	WORKING	Dodge Charger 2018 Hemi SRT HellCat Redeye Widebody...	10	30 Sec	Dodge Charger Spoilers for SRT HellCat Redeye, for ...	DC03
11:40	11:45	WORKING	Challenger	10	30 Sec	Dodge Challenger Cylinders	DH03
11:45	11:50	WORKING	Dodge Challenger 2016 Hemi SRT Jailbreak, 5.7L V8 e...	10	30 Sec	Dodge Challenger Cylinders for SRT Hemi, for Jailbr...	DH03
11:50	12:00	MAINTENANCE					

OK

6.2.6 Factory calendar

Under this tab you can enter holidays.

Parameters and elements

The following parameters and elements are available for editing:

Parameter/element	Description
Search Holiday d	Enter a name to search for a holiday.
	Refreshes the list.
	Adds a new holiday.

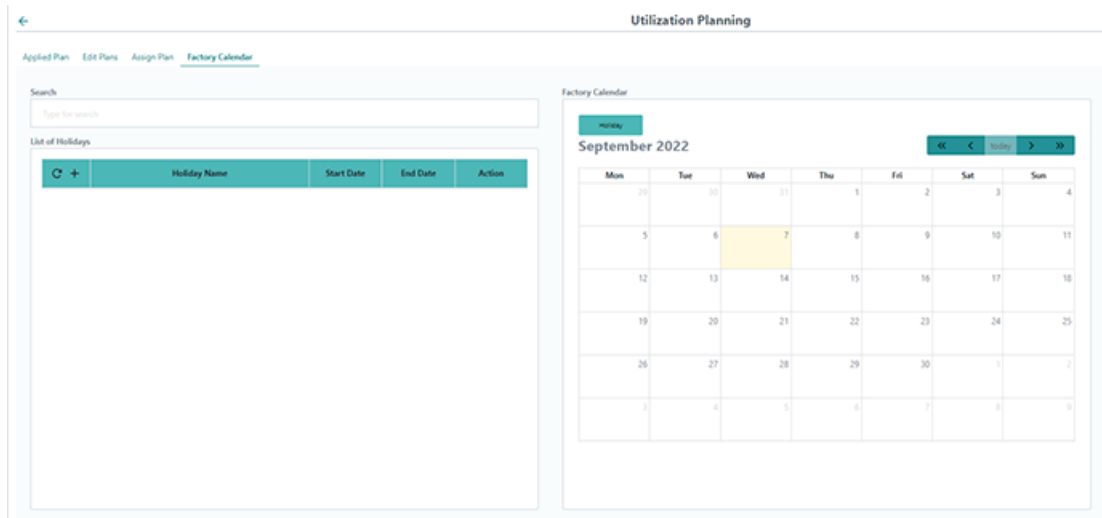
6.2 Utilization Planning

Parameter/element	Description
	Duplicates the holiday.
	Edits the holiday.
	Deletes the holiday.
	Drag and drop this button to add a new holiday in the calendar.
	Click to go back for a year.
	Click to go back for a month.
	Click to go forward for a year.
	Click to go forward for a month.

Procedure

Open the "Factory calendar" tab.

You see a list of holidays and the factory calendar with the holidays.



In the "List of holidays" you can add, edit or delete holidays.

Search

List of Holidays

 	Holiday Name	Start Date	End Date	Action
Holiday 1 Edited		2022-09-01	2022-09-03	  
Holiday 2		2022-09-20	2022-09-21	  

Add a new holiday

1. Click "Plus" in the list of holidays
- OR -
Drag and drop the "Holiday" button into the calendar.
2. The "Add new holiday" window opens.
3. Enter the following data in the "Add new holiday" window.
 - holiday name
 - start date
 - end date
 - optional comment
4. To add the comment, click "Add".
- OR -
To reject the changes, click "Cancel".
5. Added holidays are shown in the list and in the calendar.

Add new holiday

Holiday Name

Holiday 2

Start Date

2022-09-20



End Date

2022-09-21



Comment

Enter Comment

Cancel

Add

Edit a holiday

1. Click the "Edit" symbol in the list of holidays.
2. The "Edit holiday" window opens.
3. Enter the new data.
4. To commit the changes click "Update".
 - OR -
 - To delete the holiday click "Delete".
 - OR -
 - To reject the changes click "Cancel".

Edit holiday**Holiday Name**

Holiday 1 Edited

Start Date

2022-09-01

**End Date**

2022-09-03

**Comment**

New Comment

Cancel

Delete

Update

Delete a holiday

Click the "Delete" symbol in the list of holidays.

- OR -

Click the "Edit" symbol on the list of holidays. Click "Delete" in the "Edit holiday" window.

6.3 Production Quality

6.3.1 Opening the Production Quality

Check the quality of your production in the "Production Quality" window.

The following tabs are available in the "Production Quality" window:

- Workpieces
For more information, see Checking the workpieces (Page 184).
- Action required
For more information, see Finding missing workpieces (Page 185).

6.3 Production Quality

Procedure

1. On the start page of the Mcenter, click "Production Quality".



2. The "Production Quality" window opens.

Start page > Production Quality

Production Quality

Workpieces Action required

Machine List Date

Shift	Start Time	End Time	Total Pieces	Scrap Pieces	Target Pieces	Target Cycle Time	Cycle Time Unit
1	06:00	08:00	0	0			min
2	08:00	10:00	0	0			min
3	10:00	12:00	0	0			min
4	12:00	14:00	0	0			min
5	14:00	16:00	0	0			min
6	16:00	06:00	0	0			min
6 Total							

Save

6.3.2 Checking the workpieces

To check the production quality of a machine, proceed as follows.

Parameters and elements

The following parameters and elements are available for editing:

Parameter/element	Description
Machine List	Clicking on the arrow opens the drop-down list "Machine List" for selecting the control system (machine).
Date	Clicking on the clock icon opens the calendar to select the date.
Save	Click the "Save" button to save the current events.
Columns in the "Workpieces" table	
Shift	Displays the number of the work shift.
Start time	Displays the start time of the shift.
End time	Displays the end time of the shift.
Total pieces	Displays the number of produced parts. The number is automatically updated. If a shift is in progress, the field cannot be edited.
Scrap pieces	Displays the number of parts produced with error.
Target pieces	Shows the number of workpiece parts to be produced in one shift.

Parameter/element	Description
Target cycle time	Displays the targeted cycle time for a piece to be produced.
Cycle Time unit	Drop-down list to select the following time unit: • sec = seconds • min = minutes • h = hours

Procedure

1. In the "Production Quality" window, open the "Workpieces" tab.
2. Clicking on the small arrow opens the drop-down "Machine List".
The list of available machines is displayed.
Select the required control system (machine) using the mouse.
3. Click on the clock icon to open the "Date" calendar.
Select the required day.
You can see the required production data in the "Workpieces" table.

Start page > Production Quality

← Production Quality

Workpieces Action required

Machine List: 0001 > 67

Date: 2021-09-22

Shift	Start Time	End Time	Total Pieces	Scrap Pieces	Target Pieces	Target Cycle Time	Cycle Time Unit
1	06:00	08:00	0	0			sec
2	08:00	10:00	0	0			sec
3	10:00	12:00	0	0			sec
4	12:00	14:00	0	0			sec
5	14:00	16:00	0	0			sec
6	16:00	06:00	0	0			sec
6 Total							

Save

Note

Enter target values

Note that the target values can be entered for all shifts of the previous days and the current day.

4. Click "Save" to save the data.
"Workpieces are saved successfully" is displayed in the upper right section of the window to show that the operation was successfully completed.

Workpieces are saved successfully ✓

6.3.3 Finding missing workpieces

To find out the missing workpiece of a machine, proceed as follows.

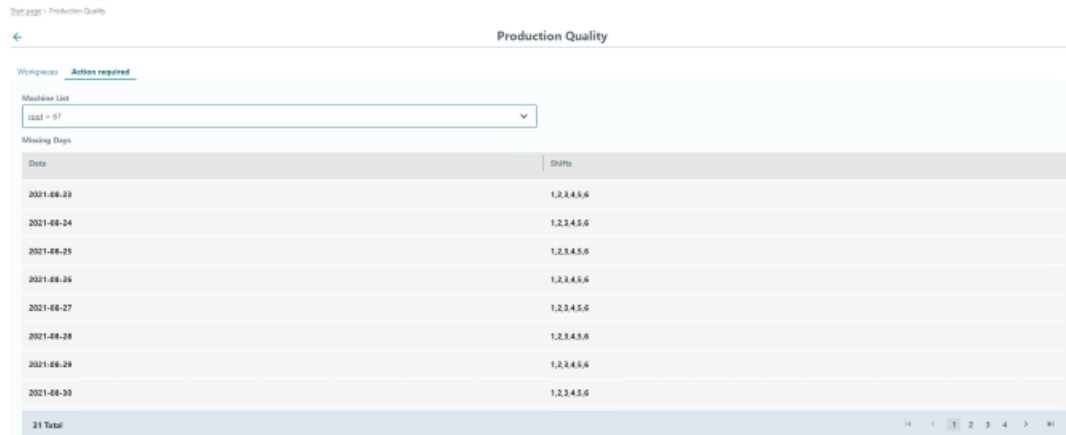
Parameters and elements

The following parameters and elements are available for editing:

Parameter/element	Description
Machine List	Clicking on the arrow opens the drop-down list "Machine List" for selecting the control system (machine).
Columns in the "Missing Days" table	
Date	Displays the date of the work shift.
Shifts	Displays the number of the work shift.

Procedure

1. Open the "Action required" tab in the "Production Quality" window.
2. Clicking on the small arrow opens the drop-down "Machine List".
The list of available machines is displayed.
Select the required control system (machine) using the mouse.
3. The "Missing days" table shows the corresponding data.
You can use this information to enter the missing input data for the corresponding shifts and days in the "Workpieces" tab.
Up to 8 data items are displayed to you on one page. If there is more data, scroll forward or backward to the next page in the footer.



4. For more information on entering workpieces, see Checking the workpieces (Page 184).

6.3.4 Activating workpiece counters

- The SINUMERIK control system can be configured such that the number of workpieces produced is automatically counted. Analyze MyPerformance /OEE uses these numbers.
- This data is evaluated and further processed in the "Production Quality" window. SINUMERIK produces and counts the workpieces, and this is then accepted as a data input in Analyze MyPerformance /OEE.
- The system variable "\$AC_TOTAL_PARTS" in the SINUMERIK control system is used to count the number of workpieces produced.

Parameter

System variable	Description
\$AC_TOTAL_PARTS	Total number of workpieces produced (actual workpiece total) as from start time. The value is only automatically reset to "0" when the control system runs up with default values.

Note

Counter is not reset

The counter is neither reset by a RESET nor by an HMI restart of the SINUMERIK control system.

The default procedure is that the value of the "\$AC_TOTAL_PARTS" counter is incremented by 1 as soon as the end of the NC program has reached M02 or M30 command. Other M commands can be configured as count pulses with the machine data.

Settings

Set the following bits of the machine data to activate and configure the workpiece counters for Analyze MyPerformance /OEE.

MD27880 \$MC_PART_COUNTER	Activation of the workpiece counters
Bit 4 = 1	The counter \$AC_TOTAL_PARTS is active.
Bit 5 = 0	M02/M30 increments the \$AC_TOTAL_PARTS counter by 1.
Bit 5 = 1	The M command defined in MD27882[0] increments the \$AC_TOTAL_PARTS counter by 1.
Bit 6 = 0	\$AC_TOTAL_PARTS is also active for program test / block search.
Bit 7 = 1	A return with GOTOS increments the \$AC_TOTAL_PARTS counter by 1.

User-defined M commands for the count pulse are stored in MD27882[0].

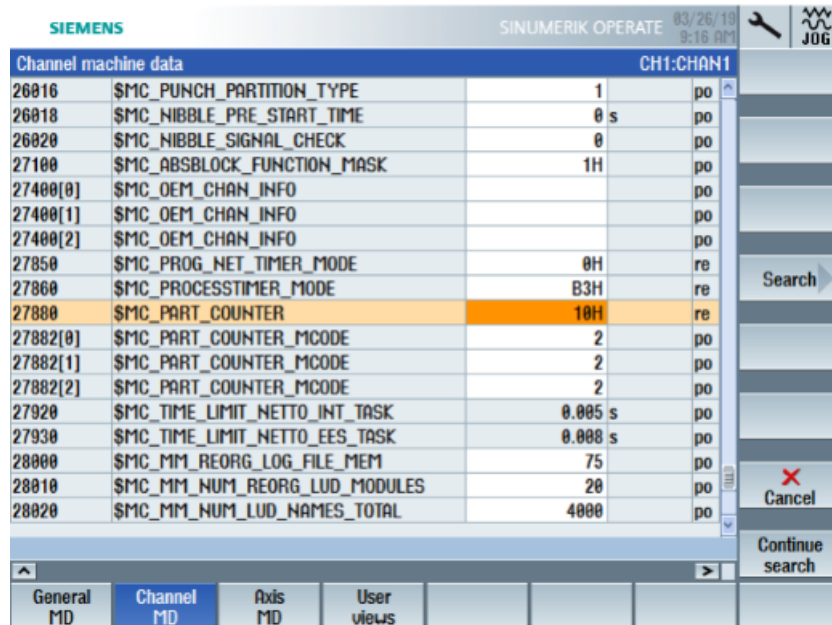
MD27882[0] \$MC_PART_COUNTER_MCODE	Workpiece counting with user-defined M command
---------------------------------------	--

Procedure

1. Start the SINUMERIK Operate operating software on the controller.
2. Press the "Setup", "Mach.data" and "Channel MD" softkeys.

6.4 Operator States

3. Set the machine data MD27880 to the desired value.
 - Value for activating the counter: MD27880 \$MC_PART_COUNTER = "10H"



Channel machine data		CH1:CHAN1
26016	\$MC_PUNCH_PARTITION_TYPE	1 po
26018	\$MC_NIBBLE_PRE_START_TIME	0 s po
26020	\$MC_NIBBLE_SIGNAL_CHECK	0 po
27100	\$MC_ABSBLOCK_FUNCTION_MASK	1H po
27400[0]	\$MC_OEM_CHAN_INFO	po
27400[1]	\$MC_OEM_CHAN_INFO	po
27400[2]	\$MC_OEM_CHAN_INFO	po
27850	\$MC_PROG_NET_TIMER_MODE	0H re
27860	\$MC_PROCESSTIMER_MODE	83H re
27880	\$MC_PART_COUNTER	10H re
27882[0]	\$MC_PART_COUNTER_MCODE	2 po
27882[1]	\$MC_PART_COUNTER_MCODE	2 po
27882[2]	\$MC_PART_COUNTER_MCODE	2 po
27920	\$MC_TIME_LIMIT_NETTO_INT_TASK	0.005 s po
27930	\$MC_TIME_LIMIT_NETTO_EES_TASK	0.008 s po
28000	\$MC_MM_REORG_LOG_FILE_MEM	75 po
28010	\$MC_MM_NUM_REORG_LUD_MODULES	20 po
28020	\$MC_MM_NUM_LUD_NAMES_TOTAL	4000 po

4. If necessary, set the machine data MD27882[0] to the desired value.
5. Restart SINUMERIK Operate to activate the changes.

6.4 Operator States

6.4.1 Opening the Operator States

With the function "Operator States", you can start a machine state manually for the next 24 hours. You can also edit produced workpiece information such as "Good piece" and "Scrap piece" values for ongoing shifts.

Analyze MyPerformance /OEE Operator States provides functionality to handle operator actions such as cleaning, testing, preparing the machine, heating, producing. All operator actions can be harmonized with machine status data and visualized within Analyze MyPerformance /OEE charts.

All OEE & KPI calculations will be done according to the started operator state for the selected machine for the next 24 hours unless it is stopped manually.

For more information, see Operator States (Page 223).

Note

Stopped auto workpiece count

If you enter any "Good piece" or "Scrap piece" information for a machine, auto workpiece count will be stopped for this shift. Auto workpiece count will start counting again on the next shift.

Prerequisite

- You need the rights of the administrator or machine operator role to view and edit the "Operator States" window. To create a new user with machine operator role, see Manage users (Page 38).

Parameters

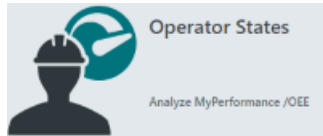
The following parameters and elements are available for editing:

Parameter/element	Description
Machine List	Open the drop-down list for selecting the machine. The last three used machines are shown as buttons next to the machine drop-down list.
Good workpieces	Workpieces that are successfully produced.
Scrap workpieces	Workpieces that are produced with error.
	Reduces the number of workpieces.
	Increases the number of workpieces.
Operator States	The following machine states are available: - Downtime State - Machine Offline State - No data state - Organizational Disturbance State - Production state - Technical Disturbance state - Unknown State

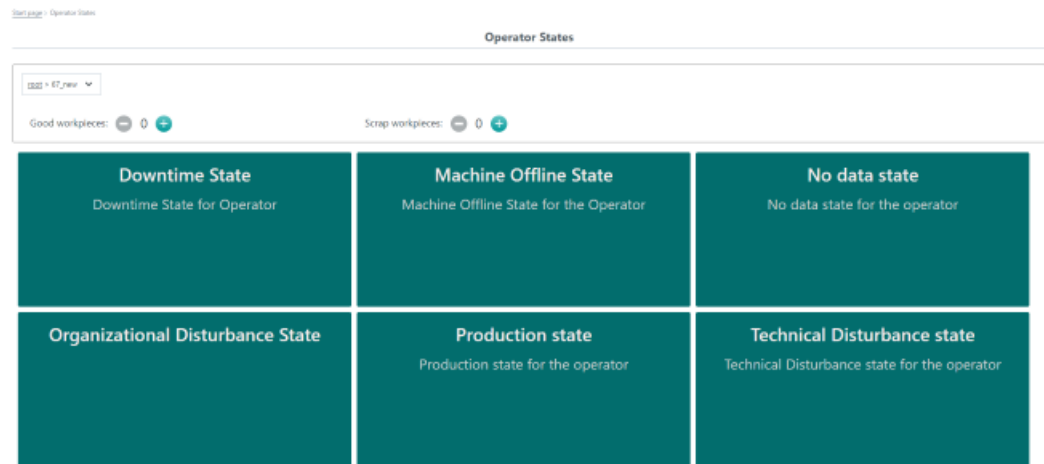
6.4 Operator States

Procedure

1. On the start page of Analyze MyPerformance /OEE, click "Operator States".



2. The "Operator States" window opens.



6.4.2 Starting an operator state

Procedure

1. On the "Operator States" window, select a machine from the drop-down list.

Note

Last used machines

The last three used machines are shown as buttons next to the machine drop-down list and can be selected by clicking on the buttons.

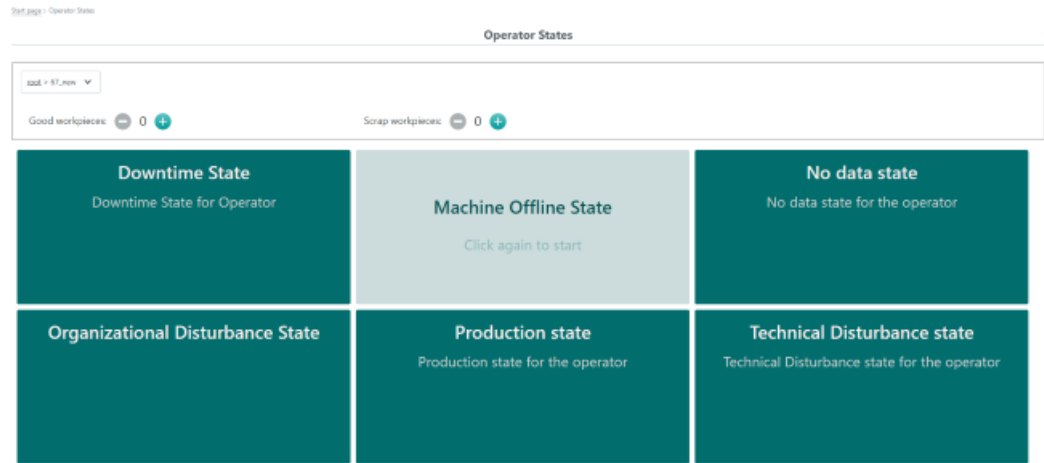
Note

No machine selection

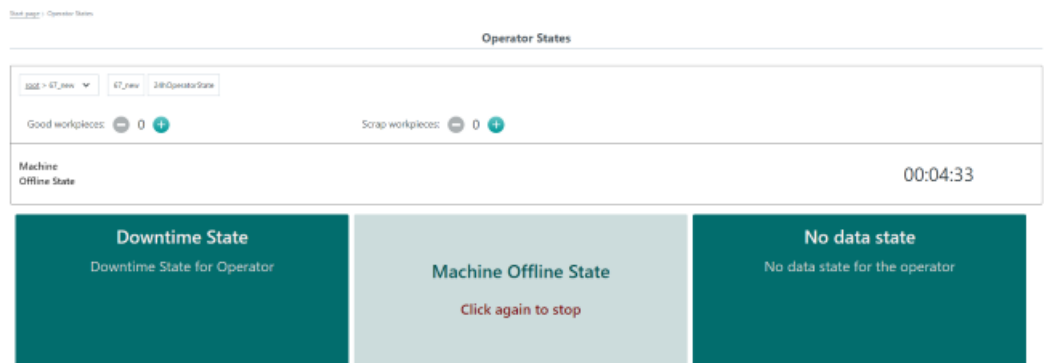
If no machine is selected, workpiece entering and ongoing operator state actions cannot be used.

2. If needed, click the "+" or "-" icons to set a workpiece number for good and scrap workpieces.
3. Click on an operator state tile to select the desired operator state.

- Click again on selected operator state tile to start the operator state.



- The started operator state is now active for the selected machine for the next 24 hours. OEE & KPI calculations are done according to the started operator state.
- The ongoing state name and the timer are shown on the window. The timer shows the duration between the start time of the ongoing operator state and the current time.

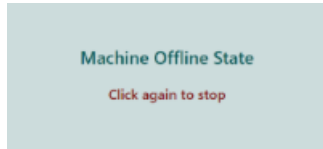


- After 24 hours, the started operator state is stopped automatically. If a machine is connected to Mcenter, Analyze MyPerformance /OEE continues to calculate OEE & KPIs with the data sent by the machine.

6.4.3 Stopping an operator state

Procedure

1. On the "Operator States" window, select the machine that has the ongoing operator state from the drop-down list.
2. Click on the ongoing operator state tile.



3. The ongoing operator state is stopped and the notification "Ongoing state is stopped successfully" is displayed in the upper right section of the window.

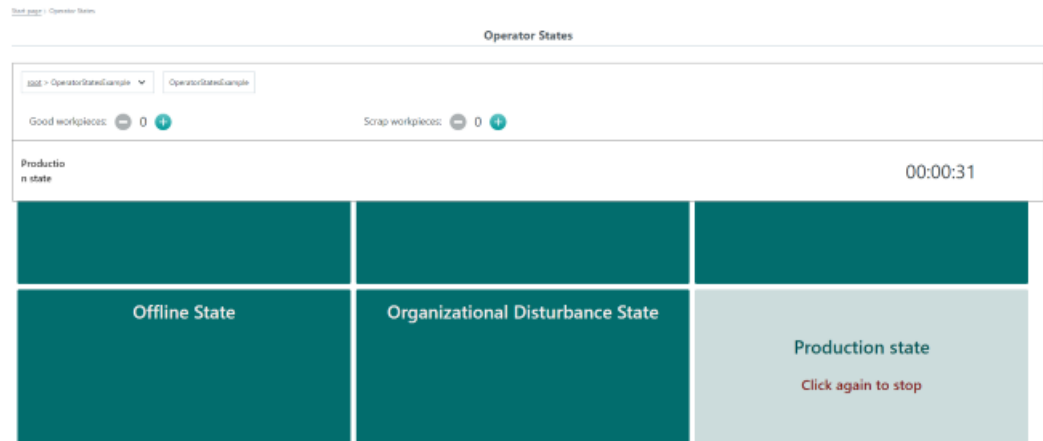


6.4.4 Example of working with Operator States

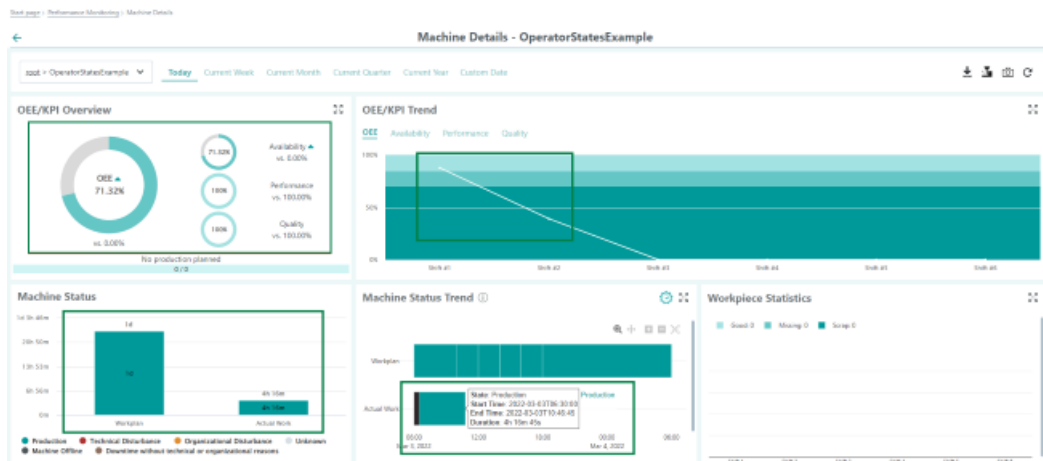
When an operator state is started for a machine, Analyze MyPerformance /OEE will calculate OEE & KPIs according to the selected operator state.

Example:

- The operator state named "Production state" is started by the machine operator user.

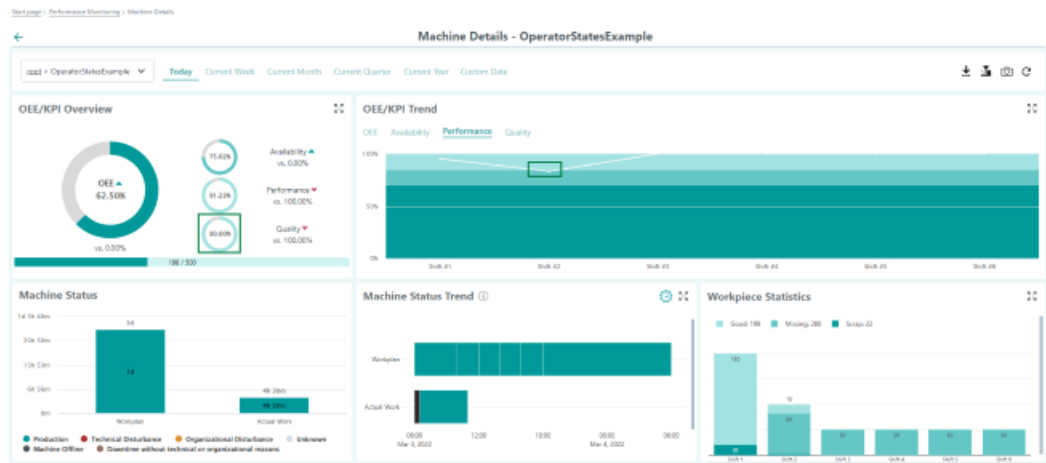


- When opening the "Performance Monitoring" window and the machine details for "OperatorStateExample", the selected operator state is active on the charts.



6.5 Operator States in HMI

- 24 hours after the start time of the operator state, the ongoing state will be stopped automatically and Analyze MyPerformance /OEE will consider actual machine data. All OEE & KPI calculations will be done according to the actual machine data.
- Performance and quality KPIs will be calculated when a machine operator user sets a workpiece information on the "Operator States" window.
For example, the supervisor entered the target piece value as 100 and target cycle time value as 300 for the second shift of the machine.
If the machine operator enters 18 good workpieces and two scrap workpieces for the second shift, the quality will be calculated as 90% for the second shift and performance will be calculated as 83.33% at the end of the shift (This example is calculated with default formulas.).



6.5 Operator States in HMI

6.5.1 Operator States in HMI

Operator States in HMI

With Analyze MyPerformance /OEE 1.3.0.0 or higher versions, the Operator States screen is available on HMI client screens.

After assigning the Analyze MyPerformance /OEE application from "Manage applications on machines" page to the client, the new page is automatically created on the HMI screens.

Note

HMI-Advanced clients

HMI-Advanced clients are not supported for this feature.

Note**Machine Agent-connected devices**

This function is not available for Machine Agent-connected devices

6.5.2 Opening Operator States in HMI

Procedure

1. On the HMI screen, press the "Menu" softkey
- OR -
Press the "M" softkey to open the menu.



1. Press the "Menu" softkey
- OR -
Press the "M" softkey to open the menu.
The menu opens.



2. Press the AMP softkey.
The "Initializing" window opens, displaying the progress bar.



6.5 Operator States in HMI

After the connection between the client and the server is established, the main page opens.

The created "Operator States", the "Machines Connection Status" and the "Active State" are displayed.

If you have not created any "Operator States" on Mcenter, the HMI screen only displays the "Machine Connection Status" and the "Active State" fields.



Note

Operator States

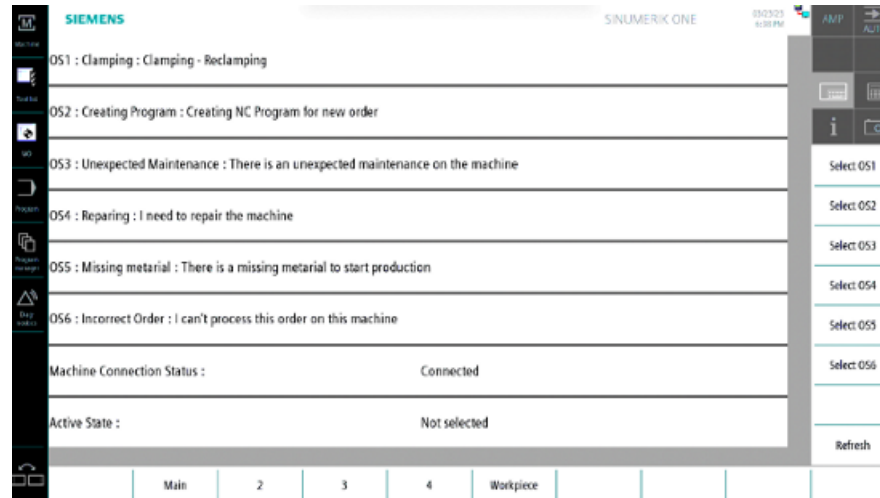
You must create the Operator States on the "Configure AMP /OEE" page in Mcenter.

For further information, see Configuring operator states (Page 223)

6.5.3 Using Operator States in the HMI

Using Operator States in the HMI

The available Operator States as well as the Machine Connection Status and the Active State information are displayed on the main pages.



Functions on the Workpiece page

Function	Description
Good Workpiece Count +	Increases produced good workpiece as 1
Good Workpiece Count -	Decreases produced good workpiece as 1
Scrap Workpiece Count +	Increases produced scrap workpiece as 1
Scrap Workpiece Count -	Decreases scrap workpiece count as 1
Good/Target Parts Count	Displays produced good pieces and target pieces as defined on Analyze MyPerformance /OEE.
Scrap Parts Count	Displays the produced scrap parts count.
Current Order	Displays the NC Program loaded on the machine.
Machine Connection Status	Displays the connection status between the machine and Mcenter.
Active State	Displays the ongoing Operator State.

Note

Acquiring the newest data

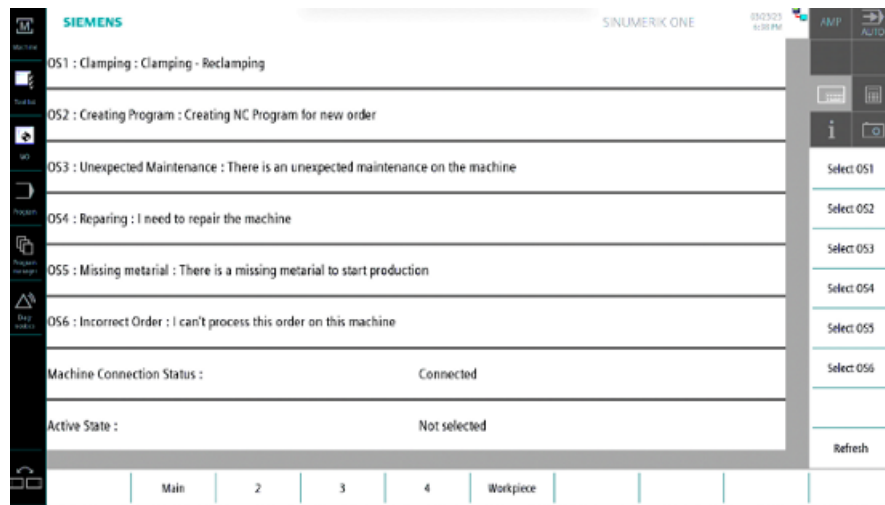
Clicking the "Refresh" softkey fetches the newest data from the server. Click this softkey if there are Operator States missing.

6.5.4 Starting an Operator State in HMI

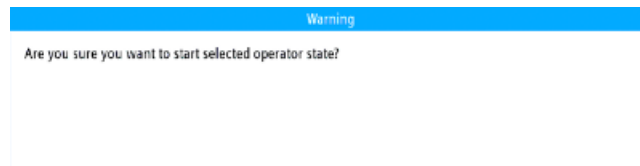
Procedure

Select OS1

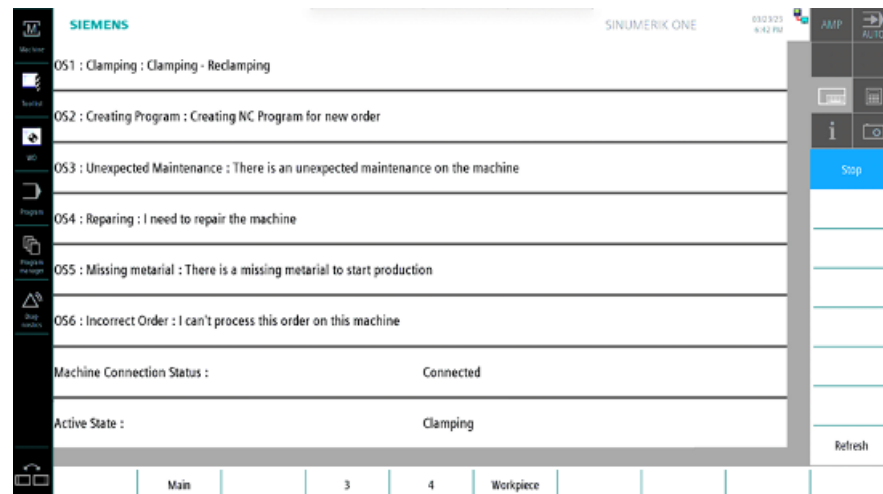
1. Press the corresponding state's softkey to start an Operator State.
Example:
If you press the "Select OS1" softkey, you start the Clamping state.



2. The following warning message appears: "Are you sure you want to start selected operator state?"
Press "OK"- OR -Press "Cancel" to cancel the operation.



The "Operator" state is activated, and the Analyze MyPerformance /OEE application does not take into account the actual machine details. The "Active State" displays the ongoing Operator State on the screen.



Note

Stopping an Operator State

The ongoing state is active for the next 24 hours, unless you stop it. You must stop the state when it is done.

For more information, see Stopping an Operator State in HMI (Page 199).

6.5.5 Stopping an Operator State in HMI

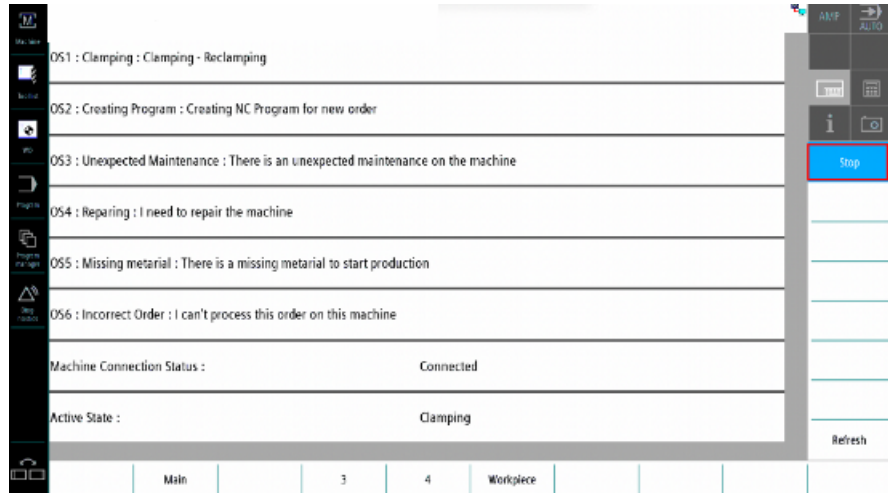
You can stop an "Operator State" in the HMI.

During an ongoing "Operator State", the "Stop" softkey is displayed.

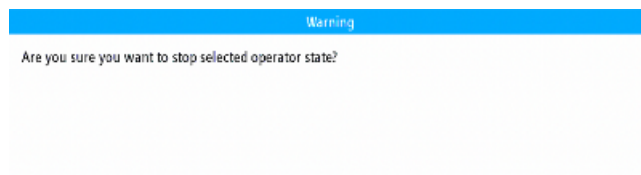
Procedure



1. Press the "Stop" softkey to stop the ongoing Operator State.



2. The following warning message appears: "Are you sure you want to stop selected operator state?"
Press "OK" to confirm
- OR -
Press "Cancel" to cancel the operation.



After stopping the ongoing state, Analyze MyPerformance /OEE continues to calculate the necessary data with the actual machine status, generated by the machine.

6.5.6 Using workpiece functions in HMI

Analyze MyPerformance /OEE can automatically calculate and gather the produced workpiece count from the machine.

You can also enter workpiece information manually.

You can

- increase and decrease good and scrap workpiece counts
- display the good workpieces produced
- the target workpiece count you have defined

- display the loaded NC program name
- display the Machine Connection Status and the Active State.

Softkeys

Softkey	Description
+ Good WP	Increases the produced Good Workpiece Count.
- Good WP	Decreases the produced Good Workpiece Count.
+ Scrap WP	Increase the produced Scrap Workpiece Count.
- Scrap WP	Decreases the produced Scrap Workpiece Count.

Note

Automatical override

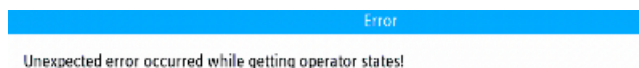
When an information comes from the HMI screen, Analyze MyPerformance /OEE automatically overrides the gathered workpiece count from the machine. It stops auto-counting the workpieces until the next shift.

6.5.7 Error message

Error message

The error message "Unexpected error occurred while getting operator states!" is displayed in the following cases:

- The connection between the machine and the server is not available
In this case, the AMP screen cannot list the created Operator States: The operator can neither start nor stop the Operator State, nor enter any workpiece information.
If the connection is lost while an Operator State is running, it continues in the background. If it needs to be stopped, wait until the connection is reestablished.
To correct these states for the offline period, see Manual states (Page 118)
As soon as the connection is available again, the AMP screen works as usual.
However, if the problem persists, report it to your supervisor and contact the Hotline.
- No Operator State has been created. AMP cannot get the Operator State list.
In this case, contact your supervisor to create an Operator State.



6.6 Connecting Fanuc machines to Analyze MyPerformance /OEE

Analyze MyPerformance /OEE is supporting Fanuc devices from version 1.2.0.0. You can connect your Fanuc devices to Mcenter. Additional information is available in the following manual:

- Operating Manual Mcenter, Manage MyResources

When your device is connected to Mcenter successfully, you can start to use all Analyze MyPerformance /OEE calculations.

6.7 Configure AMP /OEE

Configuring AMP /OEE

7.1 Overview

On this site, you can configure KPI Calculation Formula, Display settings, Production levels, Operator States, Machine tags, Sustainability level, Production logic and Customize Utilization States for Analyze MyPerformance /OEE enabled machines.

The selected configurations of this site are valid for all Analyze MyPerformance /OEE enabled machines on the Mcenter platform.

Prerequisite

- To edit this site, you need the rights of the administrator role.

Overview

The "Configuration" window contains the following tabs:

- KPI Calculation
Adapting customized formulas for "Availability", "Performance" and "Quality" or the KPI names defined in the "Display" tab:
For more information, see Customizing KPIs (Page 210).
- Display
Adapting the display of KPI colors, KPI ranges and KPI names:
For more information, see Editing the Display (Page 219).
- Production Levels
Adapting the Feed Override area, displaying various production levels of the Machine Status Trend:
For more information, see Editing the production level (Page 222).
- Operator States
The "Operator States" tab contains the following subtabs:
 - "Machine/Operator states" for creating, editing and deleting an operator state and prioritizing a machine/operator state
 - "Configuration History" for displaying the history of an operator state
 - "Manual/Operator State History" for displaying the history of a manual/operator state
 For more information, see Operator States (Page 223).
- Machine tags
For more information, see Machine tags (Page 232).
- Sustainability
Adapting the sustainability threshold.
For more information, see Sustainability level (Page 237).

- Production logic
For more information, see Production logic (Page 238).
- Customize Utilization States
Defining Utilization states:
For more information, see Customize utilization states (Page 244).

7.2 Customizing the KPI calculation

7.2.1 Overview

Overview

In a production environment, various KPIs are used to measure the quality, availability or performance of the live system. To support the various KPIs, which can be dynamically calculated at production level, AMP provides the Custom KPI feature. KPI parameters have their own algorithms. You can customize them according to the required KPI. If you need a new KPI, such as "Time ratio of spindle override greater than 100", "Feedoverride greater than 100" or "Reaching the target of produced parts", you can configure the KPIs.

You can create new KPIs with the existing logical AMP System parameters, or newly created KPI parameters. They can consist of any available system machine data. After the Custom KPIs are set, they are calculated and monitored on the Performance Monitoring page, together with the default KPIs.

Only the default KPI "OEE" can be edited, and include custom KPIs or constant values.

You cannot customize other default KPIs.

7.2.2 Customizing KPI parameters

7.2.2.1 Working with KPI parameters

Parameters

Parameter	Description
Machine/Operator state	Shows the Machine/Operator state name
Select a machine	Open the drop-down list to select a machine.
	Saves the changes.
	Goes back to the default KPI Parameter status.
	Cancels the saving or resetting process.

Parameter	Description
	Inserts a new KPI parameter row.
	Deletes the KPI parameter row.
	Opens the pop-up window to define the KPI parameter algorithm.
Choose function	Shows the KPI parameter functions: • avg: used to take the average of the algorithm result. • when: used to get the sum of the times the algorithm result is true or false. • min: used to get the lowest value of the algorithm result. • max: used to get the highest value of the algorithm result. • sum: used to get the highest values sent by the machine.
	Informs about KPI parameter functions.
Select Aspect 	Opens the drop-down list to select aspects in the system.
Select Variable 	Opens the dropdown list to select variables of the selected aspect.
	Assigns the selected algorithm to the corresponding KPI parameter.
Mathematical expressions - Operators	
Arithmetic	
	Plus
	Minus
	Divided by
	Multiplied by
Comparison	
	Equal to
	Not equal to
	Greater than
	Greater than or equal to
	Smaller than
	Smaller than or equal to
Logical	
	And
	Or
Contains	
	Included

Parameter	Description
>	Not included
Parenthesis	
(	Opens the round bracket
)	Closes the round bracket
[	Opens the square bracket
]	Closes the square bracket

7.2.2.2 Creating KPI parameters

You can create KPI parameters.

Procedure

1. Click "KPI Parameter Calculation" in the "KPI" tab.
2. Select a machine in the machine drop-down list.



3. Click the "+" button to add a KPI parameter row.



Note

KPI parameters

You can add at most 25 KPI parameters. If the maximum KPI parameter number is reached, the "+" button disappears.

- Click the "Add" button.

The "Define algorithm" window opens.

Select an appropriate KPI parameter function.

Example: If a machine variable is measured based on time, select the "when" function.

Select an aspect and a variable of the selected aspect.

Click the "Info" button next to the function to display the tooltip with information about the respective function.

The screenshot shows the "Define Algorithm" window. At the top, there is a "Choose Function" section with a dropdown menu set to "when" and an information icon (i). Below this is the "Define Algorithm" section. It features two dropdown menus: "Select Aspect" and "Select Variable". Underneath these are several categories of operators: Arithmetic (+, -, /, *), Comparison (==, !=, >, >=, <, <=), Logical (&, |), Contains (>>, !>), and Parentheses ((), [], []). At the bottom of the window is a text field labeled "Algorithm" and a "Complete" button.

The selected variable is written in the algorithm bar.

This screenshot shows the same "Define Algorithm" window, but now the "Algorithm" text field contains the text "Feedoverride". The "Complete" button remains at the bottom right.

5. Select a mathematical expression to be written in the KPI parameter algorithm.

Variable	Select Aspect				Select Variable	
Arithmetic	+	-	/	*		
Comparison	==	!=	>	>=	<	<=
Logical	&					
Contains	>>	!>				
Parentheses	(	)	[	]		

Algorithm
Feedoverride > 100

Note

Using a constant value

In addition to machine variables and mathematical expressions, you can use a constant value in the KPI parameter algorithm, for example "100".

Click the "Complete" button.

If the KPI parameter algorithm you have entered is invalid, the warning message "Please provide a valid algorithm!" is displayed.

KPI Parameter Calculation	KPI Calculation
Select a machine to define KPI parameters:	
root > Customization_KPI	
Parameter Name *	Algorithm * when(Feedoverride > 100)

6. Enter a unique KPI parameter name.

KPI Parameter Calculation KPI Calculation

Select a machine to define KPI parameters:

root > Customization_KPI

Parameter Name *

Feedoverride_Over_100

Algorithm *

when(Feedoverride > 100)

Note

KPI parameter names

Entering a unique KPI parameter name is mandatory.

7. Click on the "Save" button to confirm.
The following confirmation message is displayed: "Parameter algorithms are saved successfully!".

Parameter algorithms are saved successfully! ✓

Note

Editing KPI parameters

To edit KPI parameters, use the same procedure as for their creation.

The KPI parameters are now available in the KPI algorithms.

7.2.2.3 Deleting KPI parameters

You can delete KPI parameters.

Procedure

1. To delete a KPI parameter, click on the "Delete" icon.
The KPI parameter row disappears from the screen.
2. Click the "Save" button to confirm the Operation.
You can no longer use the corresponding KPI parameter and the deleted KPI parameter in KPI algorithms.

Note

Deleting impossible

You cannot delete KPI parameters if they have been used in KPI algorithms.

7.2.2.4 Resetting KPI parameters

You can reset KPI parameters by clicking on the "Reset" button.

Procedure

Click on the ""Reset" button.to confirm the reset process.
The KPI parameters go back to default.
In the default state, there is no KPI parameter

Note

Resetting impossible

You cannot reset KPI parameters if they have been used in KPI algorithms.

7.2.3 Customizing KPIs

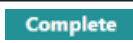
7.2.3.1 Working with KPI parameters

You can customize KPIs.

You can create and delete KPIs.

Only "OEE" from the default KPIs can be edited. The other four default KPIs are constant.

Parameters

Parameter	Description
Machine/Operator state	Shows the Machine/Operator state name
Select a machine	Open the drop-down list to select a machine.
	Saves the changes.
	Goes back to the default KPI status.
	Cancels the saving or resetting process.
	Inserts a new KPI row.
	Deletes the KPI row.
	Opens the pop-up window to define the KPI algorithm.
Select Variable ▼	Enables user to select default and custom KPIs.
	Assigns the selected algorithm to the corresponding KPI.

Parameter	Description
	Informs about default and custom KPI parameters.
Default KPIs	• OEE • Availability • Performance • Quality • Sustainability
Mathematical expressions - Operators	
Arithmetic	
	Plus
	Minus
	Divided by
	Multiplied by
Parentheses	
	Opens the round bracket
	Closes the round bracket
	Opens the square bracket
	Closes the square bracket

7.2.3.2 Creating KPIs

You can create KPIs.

KPI algorithms can contain - all together - your custom KPI parameters, default KPI parameters and constant values.

Parameters

Default parameter Information	Description
Planned Working Time	Total duration of the production time configured in the utilization plan.
Productive Time	Total duration of machine production while, at the same time, the planned production time has been configured in the utilization plan.
Target Piece Count	Number of the expected workpieces to be produced in the shift.
Good Piece Count	Number of the good workpieces produced in the shift.
Bad Piece Count	Number of the scrap workpieces produced in the shift
Total Piece Count	Total number of the workpieces produced in the shift.

7.2 Customizing the KPI calculation

Default parameter Information	Description
Target Cycle Time	Targeted duration to execute one cycle of the loaded NC-Program.
Machine Off	Total time of the machine in the "Offline" status.
Machine Unknown	Total time of the machine in the "Unknown" status.
Machine Production	Total time of the machine in the "Production" status.
Machine Technical Disturbance	Total time of the machine in the 'technical disturbance' status.
Machine Organizational Disturbance	Total time of the machine in the "Organizational disturbance" status.
Machine Downtime Without Technical or Organizational Reasons	Total time of the machine in the "Downtime without technical or organizational reasons" status.
Machine No Data	Total time of the machine during which it has not sent any data/has sent unhealthy data

Procedure

1. Click "KPI Calculation" in the "KPI" tab.
2. Select a machine in the drop-down list.
The five default KPIs are displayed.

- Click the "+" button to add a KPI row.

Note

Maximum

You can add at most 10 KPIs. If the maximum KPI number is reached, the "+" button disappears.

- Click on the "Add" button.
The "Define KPI algorithm" window opens.
- Select an appropriate KPI parameter according to the KPI you need.
The KPI parameter list contains the custom KPI parameters you have created and the default KPI parameters.
Click the "Info" button next to the KPI parameter dropdown list to display the tooltip with the default KPI parameter information.

6. Select a mathematical expression to be written in the KPI algorithm.

Define Algorithm

KPI Parameter

Select Variable

Arithmetic

+

-

/

*

Parentheses

(

)

[

]

Algorithm

Spindleoverride_Over_100 / Feedoverride_Over_100

Complete

Click the "Complete" button.

If the KPI parameter algorithm you have entered is invalid, the warning message "Please provide a valid algorithm!" is displayed:

tsf > Customization_SFI

Aggr: Name *

Aggr: Name *

Aggr: Name *

Aggr: Name *

Aggr: Name *

Aggr: Name *

Aggr: Q155/MOVED, CMT, 103 / FWD/MOVED, CMT, 103

Aggr: Availability/Performance/Quality

Aggr: Production Time / Planned Working Time

Aggr: Total Piece Count * Target Cycle Time / Production Time

Aggr: Good Piece Count / Total Piece Count

Aggr: Machine Production Status Time / Machine Production Status Time * Machine Technical Data Base Status Time / Machine Organization's Operational Status Time / Machine Condition

Aggr: Q155

Aggr: Q155

Aggr: Availability

Aggr: Performance

Aggr: Quality

Aggr: Sustainability

Reset

Save

7. Enter a unique KPI name, for example "Override_ratio".
The KPI names cannot be the same as the default KPI names.

Note

KPI names

Entering a unique KPI name is mandatory.

8. Click on the "Save" button to confirm.
The following confirmation message is displayed: "Parameter algorithms are saved successfully!".

Kpi algorithms are saved successfully! ✓

The KPIs are now available in the OEE algorithms.

Once the data for the created custom KPIs has been acquired by AMP, they are displayed as tabs on the Performance Monitoring "OEE/KPI Trend" chart.

The created custom KPIs are calculated according to the new custom KPI algorithms.



Note

Editing KPIs

To edit KPIs, use the same procedure as for their creation.

7.2.3.3 Deleting KPIs

You can delete created custom KPIs.

There is no delete option for the default KPIs:

- OEE
- Availability
- Performance
- Quality

Procedure

1. To delete a custom KPI, click on the "Delete" icon.
The KPI row disappears from the screen.
2. Click the "Save" button to confirm the Operation.
The corresponding custom KPI and the deleted custom KPI can no longer be used in the OEE algorithms.
The deleted KPIs are no longer displayed on the Performance Monitoring page.

Note

Deleting impossible

You cannot delete KPIs if they have been used in OEE algorithms.

7.2.3.4 Resetting KPIs

You can reset KPIs.

Procedure

Click on the "Reset" button.

Click on the "Reset" button to confirm the reset process.
In the default state, there is no custom KPI.

Note

Resetting impossible

You cannot reset KPIs if they have been used in OEE algorithms.

7.2.3.5 Editing the OEE algorithm

You can edit OEE algorithms.

Procedure

1. Click the OEE "Add" button to open the "Define Algorithm" window.
The OEE algorithm is equal to the multiplication of three default KPIs:
 - Availability
 - Performance
 - Quality

The screenshot shows the 'Define Algorithm' window. It has a 'KPI' dropdown menu set to 'Select Variable'. Below it are buttons for Arithmetic (+, -, /, *) and Parentheses ((), [], {},). The 'Algorithm' text box contains 'Availability*Performance*Quality'. A 'Complete' button is at the bottom right.

2. Open the KPI drop-down list and select a KPI according to the OEE you need.
The KPI list contains the created custom KPIs and default KPIs.
OEE algorithms can have created custom KPIs, the default KPIs and constant values, all together.

The screenshot shows the 'Define Algorithm' window with the 'KPI' dropdown menu open. The list includes 'Availability', 'Performance', 'Quality', 'Sustainability', and 'Override_Ratio'. The 'Algorithm' text box now contains 'Availability*Performance'. The 'Complete' button is still visible at the bottom right.

3. Select a mathematical expression to be written in the OEE algorithm.
All selected mathematical expressions, custom KPIs and default KPIs are written in the KPI algorithm.

4. Click the "Complete" button.

The new algorithm is displayed in the "Algorithm" field.

If the KPI parameter algorithm you have entered is invalid, the warning message "Please provide a valid algorithm!" is displayed.



5. Click on the "Save" button to confirm.

The following confirmation message is displayed: "Kpi algorithms are saved successfully!".

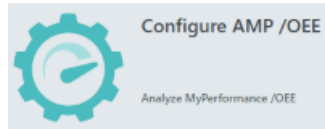


The edited OEE is calculated according to the new OEE algorithm, and monitored on the "OEE/KPI Trend" chart on the Performance Monitoring page.

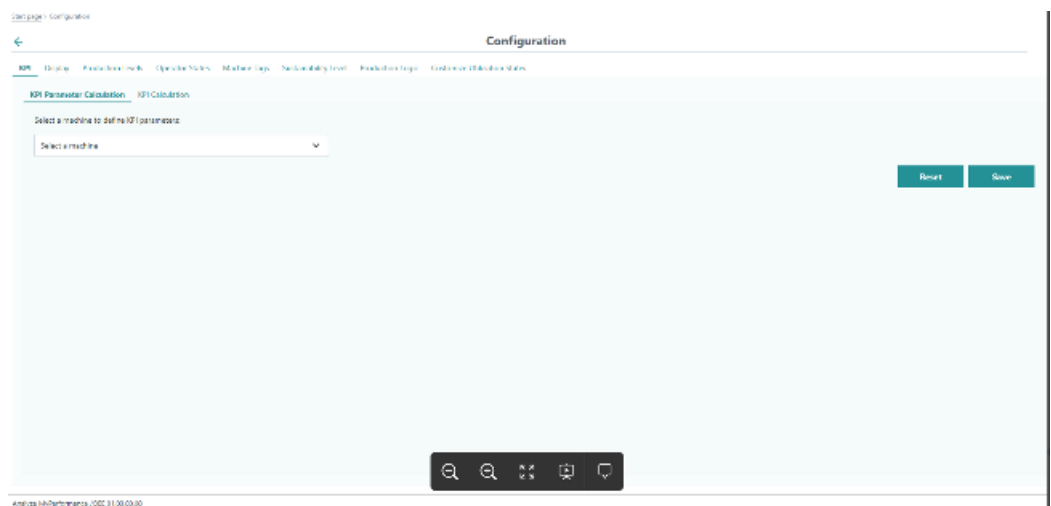
7.3 Opening the Configuration

Procedure

1. On the start page of Analyze MyPerformance /OEE, click "Configure AMP /OEE".



2. The "Configuration" window with the "KPI" tab opens. Click on the "KPI" tab to display the two subtabs "KPI Parameter Calculation" and "KPI Calculation".



7.4 Editing the Display

In the "Display" tab, you can change the names and ranges of the KPIs and the color in which they are displayed.

You can select a maximum of 3 different colors to display the KPI values.

The selected color is applied to:

- The circular display
- The graphic representation

Icons/buttons

The following icons and buttons are available.

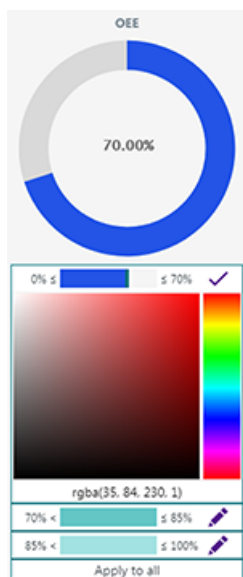
Icon/button	Description
	The "Edit" icon opens the color selection of the display.
Save	The "Save" button saves the processed KPI configuration.
Reset	The "Reset" button resets all KPIs to their default settings.

Procedure

1. Click the "Display" tab.
In this tab, you can change the names of the KPI, the ranges of the KPI and the color in which they are displayed.



2. Click the "Edit" icon in the line you want to edit.
 - Select the desired color from the color column on the left.
 - Click the desired color intensity in the color selection.
 - Click the check mark above the color selection.



3. Clicking the "Apply to all" button sets the settings for all KPIs.

- Click the "Save" button.
You see the note: "The new display settings are now active for all OEE machines."

The new display settings are now active for all OEE machines. ✓

Changing KPI names

1. Click the "Edit" button alongside the name of the KPI.
The name is opened for editing.

Availability ✓

2. Enter a new name.
3. Click the check mark next to the name.
The change is accepted.
4. Click the "Save" button.
You see the note that the change is applied to all OEE machines

Reset settings

1. Click the "Reset" button.
You see the warning notice that the color settings and KPI names are reset for all OEE machines.

Warning

Please note that the color settings and the KPI names will be reset to default for all OEE-Tuning assets. Do you want to continue?

Cancel Reset

2. Click the "Reset" button.
The color settings and KPI names are reset to their default settings.

7.5 Editing the production level

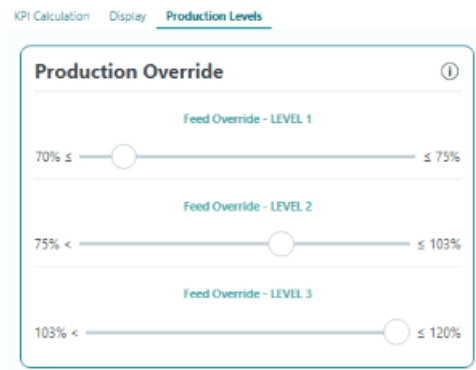
The production status of a machine can be displayed on 1 to a maximum of 3 levels in the "Machine Status Trend" graphic in the Machine Details window.

You can adjust the range of feed override values for each production override level.

Procedure

1. Open the "Production Levels" tab.
2. Click on the slider under "Feed Override - LEVEL 1" and move it to the desired values.
 - Machines are displayed in the organizational fault condition if the feed override value is less than 70%.
The lower limit value in this configuration is 70%. The maximum value is 120%.
 - If you edit the "Feed Override - LEVEL 2", the value of LEVEL 1 must be below 120%.

3. Click on the slider under "Feed Override - LEVEL 2" and move it to the desired values.
 - If you edit the "Feed Override - LEVEL 3", the value of LEVEL 2 must be below 120%.
4. Click on the slider under "Feed Override - LEVEL 3" and move it to the desired values.
 Example:
 The configuration has 3 levels, but the machine only has a feed override value of 85%, therefore LEVEL 2 is displayed in the window area.
 - To save the settings, click the "Save" button.
 - OR -
 - To discard the settings, click the "Reset" button.



5. You can see the set range in the "Machine Status Trend" window section.
 Instead of "Actual Work", "Production Override 75-103" is displayed, for example.

7.6 Operator States

7.6.1 Configuring operator states

With the function "Operator States", you can start an operator state for the next 24 hours and prioritize operator states and machine states.

OEE & KPI calculations will be done according to the started operator state for the selected machine for the next 24 hours unless it is stopped manually or stopped by a prioritized machine status. Actual machine status data received from the machine will be ignored for the operator state enabled period if the operator state is prioritized over the actual machine status.

For more information, see Operator States (Page 188).

Prerequisites

- You need the rights of the administrator role to create an operator state and activate the operator state for the corresponding machine.

Parameters

The following parameters are available:

Parameter	Description
Operator State	Shows the operator state name.
Description	Shows a description of the machine/operator state. You can leave the "Description" field empty while creating a machine/operator state.
State	Shows the state of the machine/operator state.
Priority	Shows the priority of the machine/operator state. 1: high priority 100: low priority
	The "Sorting" button sorts a column alphabetically, either in ascending or descending order.
	The "+ Add" button opens the "Define New Operator State" window to create a new operator state.
Action	
	The "Edit" icon opens the "Edit Operator State" window to edit the selected machine/operator state.
	Deletes the selected operator state.

Creating an operator state

Note

Maximum of 20 operator states

A maximum of 20 operator states can be created in Analyze MyPerformance /OEE. You will be notified in the "Operator State" tab when the maximum number is reached (" + Add" button will be disabled).

1. Open the "Operator States" tab and the "Machine/Operator states" subtab. Click the "+ Add" button to create an operator state.

Start page > Configuration

Configuration

KPI Display Production Levels **Operator States** Machine Tags Sustainability Level Production Logic Customize Utilization States

Machine/Operator states Configuration History Manual/Operator State History

[+ Add](#)

Operator State	Description	State	Priority	Action
Production		Production	00	✎
Technical Disturbance		Technical Disturbance	01	✎
Organizational Disturbance		Organizational Disturbance	02	✎
Downtime Without Technical or Organizational Reasons		Downtime without technical or organizational reasons	03	✎
Machine Off		Machine Offline	04	✎
Unknown		Unknown	05	✎
6 Total				

2. The "Define New Operator State" window opens. Enter an operator state name, priority and an optional description. Select a machine state from the drop-down menu.

Note

Mapping of machine state and operator state

The selected machine state in the "Define New Operator State" window will be mapped to the created operator state and may affect your OEE & KPI calculations.

Define New Operator State

✕

State Name

Priority

Machine State

Please select a machine state

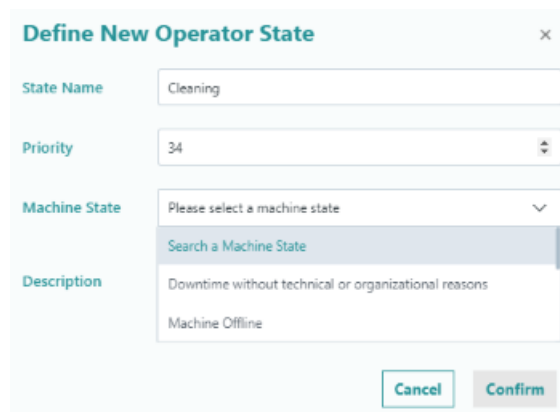
▼

Description

Cancel

Confirm

3. Click "Confirm".
The operator state will be created and displayed on the operator states list.
- OR -
Click "Cancel" to cancel the creation process.



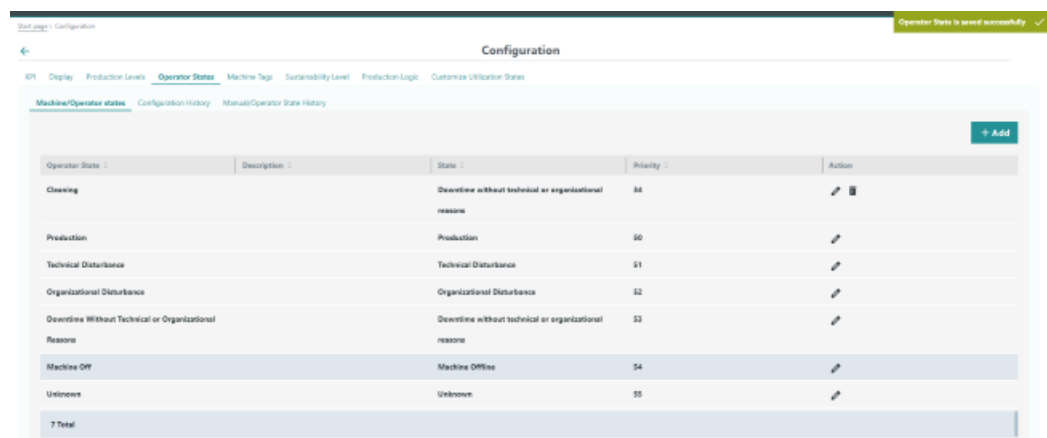
Define New Operator State

State Name:

Priority:

Machine State:

Description:
Machine Offline



Configuration

Operator States

Operator State	Description	State	Priority	Action
Cleaning	Downtime without technical or organizational reasons	84	34	
Production	Production	80	30	
Technical Disturbance	Technical Disturbance	81	31	
Organizational Disturbance	Organizational Disturbance	82	32	
Downtime Without Technical or Organizational Reasons	Downtime without technical or organizational reasons	83	33	
Machine Off	Machine Offline	84	34	
Unknown	Unknown	85	35	
7 Total				

Editing an operator state

Note

OEE & KPI calculations of used operator states

When the "Machine State" mapping of the operator state is changed, historical OEE & KPI calculations will not be affected if the operator state is used in a machine.

New machine state mapping will be active when the state is used in a machine after editing.

Note

Ongoing operator states

Ongoing machine/operator states cannot be edited.

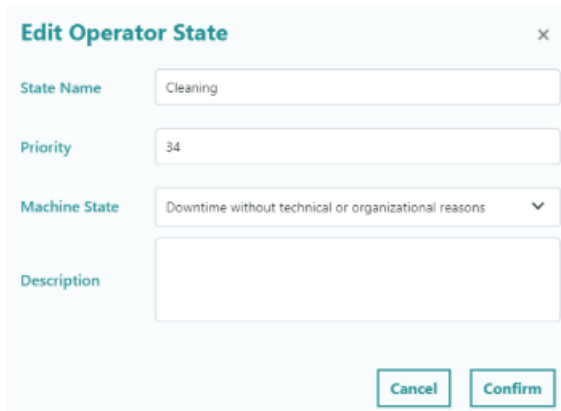
Note

Priority of machine states

The priority of machine states is unique. Different machine states cannot have the same priority.

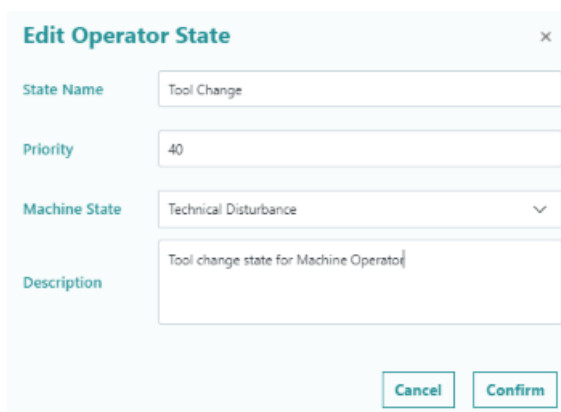
The priority of machine states will be active after changing the machine state.

1. In the "Machine/Operator states" subtab, click the "Edit" icon in the "Action" column. The "Edit Operator State" window opens.



2. Change one of the fields:

- State Name
- Priority
- Machine State
- Description



3. Click "Confirm".
The changes will be saved and displayed on the operator states list.
- OR -
Click "Cancel" to cancel the editing process.

Start page > Configuration

Configuration

KPI Display Production Levels **Operator States** Machine Tags Sustainability Level Production Logs Customizer Utilization States

Machine/Operator states Configuration History Manual/Operator State History

+ Add

Operator State	Description	State	Priority	Action
Tool Change	Tool change state for Machine Operator	Technical Disturbance	40	
Production		Production	50	
Technical Disturbance		Technical Disturbance	51	
Organizational Disturbance		Organizational Disturbance	52	
Downtime Without Technical or Organizational Reasons		Downtime without technical or organizational reasons	53	
Machine OFF		Machine Offline	54	
Unknown		Unknown	55	
7 Total				

Operator State is added successfully.

Deleting an operator state

Note

OEE & KPI calculations of deleted operator states

When a created operator state is deleted, historical OEE & KPI calculations will not be affected if the operator state is used in a machine.

Note

Ongoing operator states

Ongoing operator states cannot be deleted.

1. In the "Machine/Operator states" subtab, click the trash can icon in the "Action" column.

Start page > Configuration

Configuration

KPI Display Production Levels **Operator States** Machine Tags Sustainability Level Production Logs Customizer Utilization States

Machine/Operator states Configuration History Manual/Operator State History

+ Add

Operator State	Description	State	Priority	Action
Tool Change	Tool change state for Machine Operator	Technical Disturbance	40	
Production		Production	50	
Technical Disturbance		Technical Disturbance	51	
Organizational Disturbance		Organizational Disturbance	52	
Downtime Without Technical or Organizational Reasons		Downtime without technical or organizational reasons	53	
Machine OFF		Machine Offline	54	
Unknown		Unknown	55	
7 Total				

2. A "Warning" window opens.
Click "Confirm" to delete the operator state.
- OR -
Click "Cancel" to cancel the deleting process.

Warning

Are you sure you want to remove operator state?

Cancel

Confirm

Sorting operator states

1. In the "Operator states" subtab, click the "Sorting" button in the desired column.
2. The column will be sorted alphabetically (A to Z). When clicking the "Sorting" button again, the column will be sorted in reverse (Z to A).

7.6.2 Displaying the configuration history

With the function "Configuration History", you can display the history of the created, edited and deleted operator states.

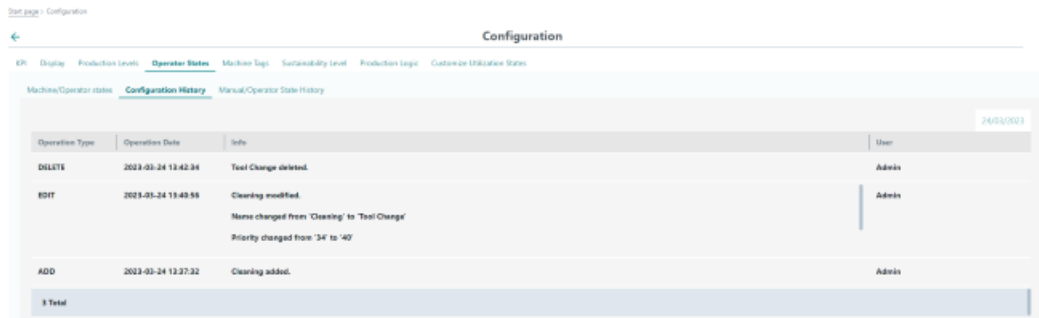
Parameters

The following parameters are available:

Parameter	Description
Operation Type	Shows the action done in the "Operation states" subtab: • ADD • EDIT • DELETE
Operation Date	Shows the action date in local time zone.
Info	Shows specific information depending on the operation type: • ADD: operator state name • EDIT: old and new operator state name, priority, description and status type • DELETE: deleted operator state name
User	Displays the user name of the user who performed the action.
Select Date	Opens a calendar to select a date. A maximum period of two month in the last two years from the current date can be selected.

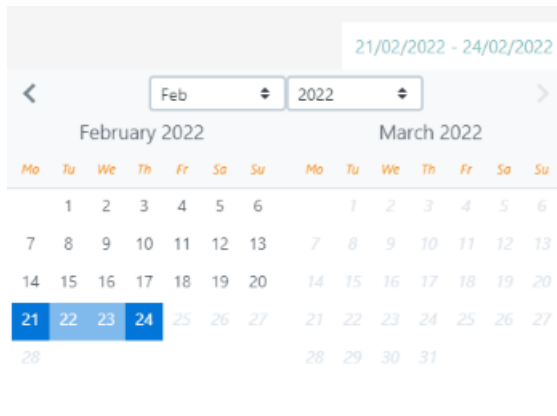
Procedure

1. Open the "Operator States" tab and the "Configuration History" subtab.



Operation Type	Operation Date	Info	User
DELETE	2023-03-24 13:42:34	Tool Change deleted.	Admin
EDIT	2023-03-24 13:49:55	Cleaning modified. Name changed from 'Cleaning' to 'Tool Change' Priority changed from '34' to '40'	Admin
ADD	2023-03-24 12:27:32	Cleaning added.	Admin
3 Total			

2. Click the "Select Date" button to filter the history by date. Select a single date or a time period in the calendar.



3. The configuration history will be displayed according to the set date filter.

7.6.3 Displaying the manual/operator state history

With the function "Manual/Operator state history", you can review the history of the entered manual states including operator states.

Parameters

The following parameters are available:

Parameter	Description
Machine	Shows the entered machine name for the manual and operator state. If the previously used machine is deleted, "--- Machine was removed ---" message will be shown.
Machine Status	Shows the type of the entered manual and operator state.
Operator State Name	Shows the name of the entered operator state. If the entered manual state is not mapped with an operator state, "—" will be displayed for this field.
Start Time	Shows the start time of the entered manual and operator state in the local time zone in YYYY-MM-DD HH:MM:SS format.

Parameter	Description
End Time	Shows the end time of the entered manual and operator state in the local time zone in YYYY-MM-DD HH:MM:SS format.
Insert Time	Shows the operation date and time of the manual and operator state.
Started By	Shows the name of the user who started the manual and operator state.
Ended By	Shows the name of the user who ended the manual and operator state. "Ended By" data will not be available if the entered state is a manual state.
State	Shows the state of the operator state: • Not Started • Started • Completed • Canceled
Description	Shows the explanation of the operation for the operator state.
	The "Sorting" button sorts a column alphabetically/numerically, either in ascending or descending order.
	Opens the "Manual/Operator State History Filter" window to filter the history by the following parameters: • Machine • Machine Status • Operator State Name • Start Time • End Time • Insert Time • Started By • Ended By
	Clears the "Start Time", "End Time" or "Insert Time" field in the "Manual/Operator State History Filter" window.

Procedure

1. Open the "Operator States" tab and the "Manual/Operator State History" subtab.

Start page > Configuration

Configuration

KPI Display Production Levels **Operator States** Machine Tags Sustainability Level Production Logic Customize Utilization States

Machine/Operator states Configuration History **Manual/Operator State History** Filter

Machine	Machine Status	Operator State Name	Start Time	End Time	Insert Time	Started By	Ended By	State	Description
67_Machine	Downtime without technical or organizational reasons	Clearing	2023-03-24 13:47:41	2023-03-24 13:49:29	2023-03-24 13:48:28	Admin	Admin	Cancelled	Operator State was cancelled.
67_Machine	Downtime without technical or organizational reasons	Clearing	2023-03-24 18:47:41	2023-03-25 18:47:41	2023-03-24 18:47:41	Admin		Not Started	Operator State was added to the queue.
67_Machine	Technical Disturbance	Tool Change	2023-03-24 13:45:48	2023-03-24 13:47:49	2023-03-24 13:47:48	Admin	Admin	Completed	Operator State was ended.
67_Machine	Technical Disturbance	Tool Change	2023-03-24 13:45:48	2023-03-25 13:45:48	2023-03-24 13:45:48	Admin		Started	Operator state was started.

4 Total

2. Click the "Filter" button.
The "Manual/Operator State History Filter" window opens.
 - Select the desired filters.
 - Click "Clear" to clear all the filters.
 - Click the trash can icon to clear the "Start Time", "End Time" or "Insert Time" field.
 - Click "Apply" to filter the manual/operator state history by the selected parameters.
 - OR -
 - Click "Cancel" to cancel the filter process.

Manual/Operator State History Filter

Machine
root

Machine Status
Machine Offline

Operator State Name

Start Time
24/03/2023

End Time
Select Date

Insert Time
Select Date

Started By
Admin

Ended By

Cancel Clear Apply

3. The manual/operator state history will be displayed according to the set filters.

7.7 Machine tags

You can tag machines with multiple tags. You can filter the machines using this tags.

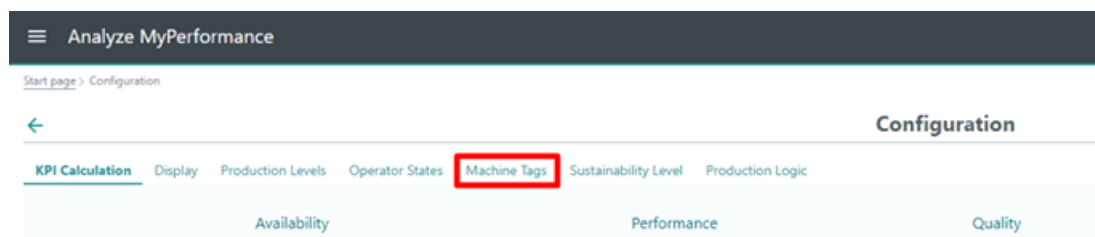
You can also add a single tag to a machine on the "Machine Detail" view. For more information , see Adding tags (Page 126).

Buttons and elements

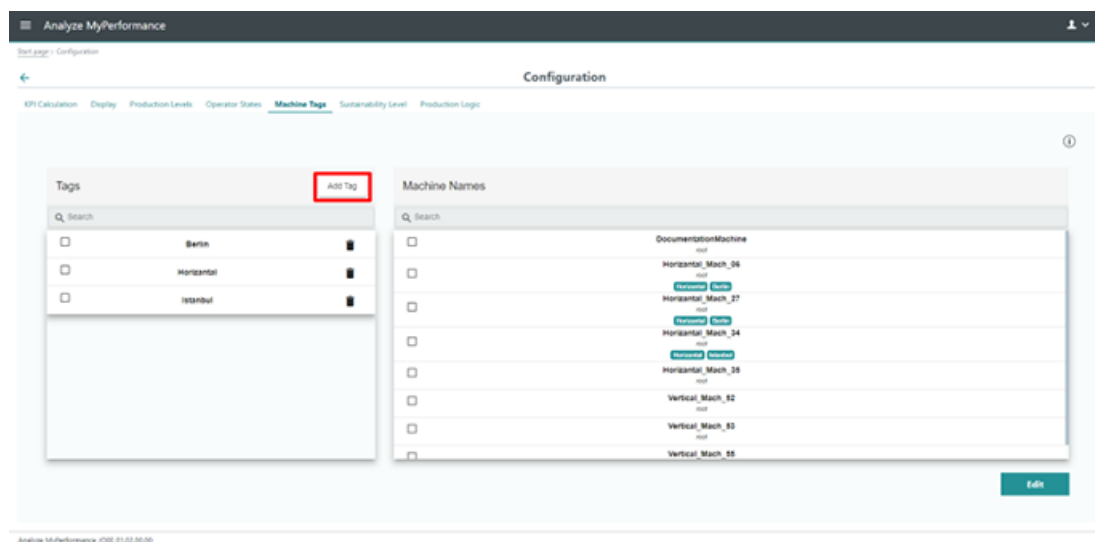
Button	
	Page info
Add Tag	Adds new tags.
	Allows to assign and unassign tags.
Save	Saves the tag.

Create a tag

1. Click on the "Machine Tags" tab in the configuration view.



2. You see the tags and the machines with their tags.
3. Click on the "Add tag" button



4. Set the name of the tag in the text box.

Tags

Tag Name

Vertical

Save

- ### Warning

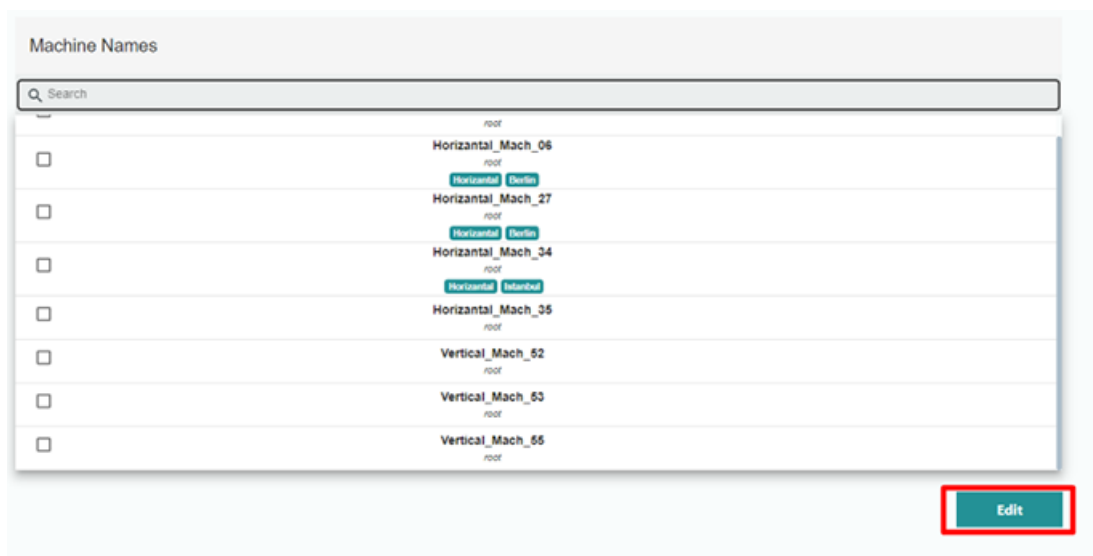
Are you sure you want to add a new tag?

Confirm

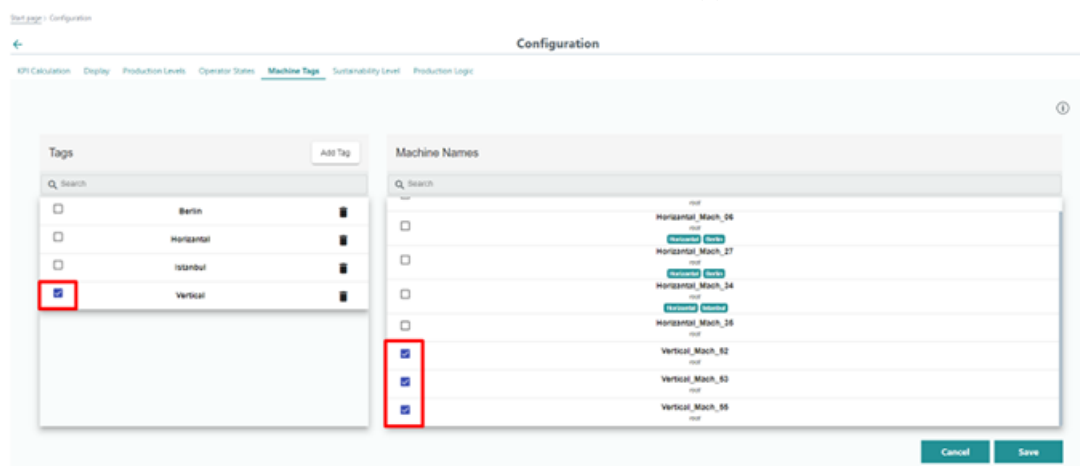
The tag is added to the list.
You can add maximal 10 tags.

Assign the tag to machines

1. Click on "Edit"



2. Select the checkboxes of the machines that should be tagged.



7.7 Machine tags

3. Click on "Save"
4. Click on "Confirm".

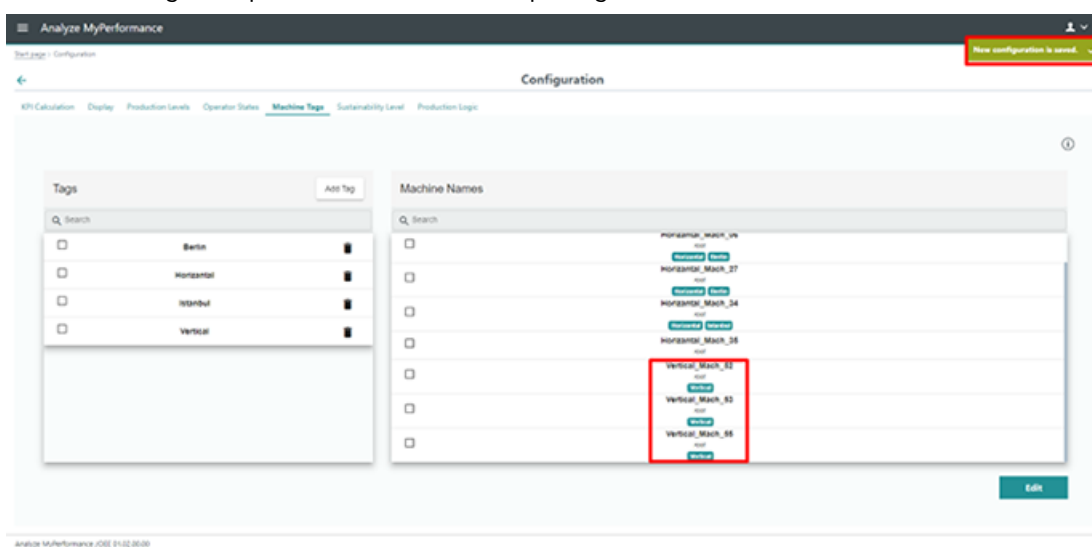
Warning

Are you sure you want to save the changes you made?

Cancel

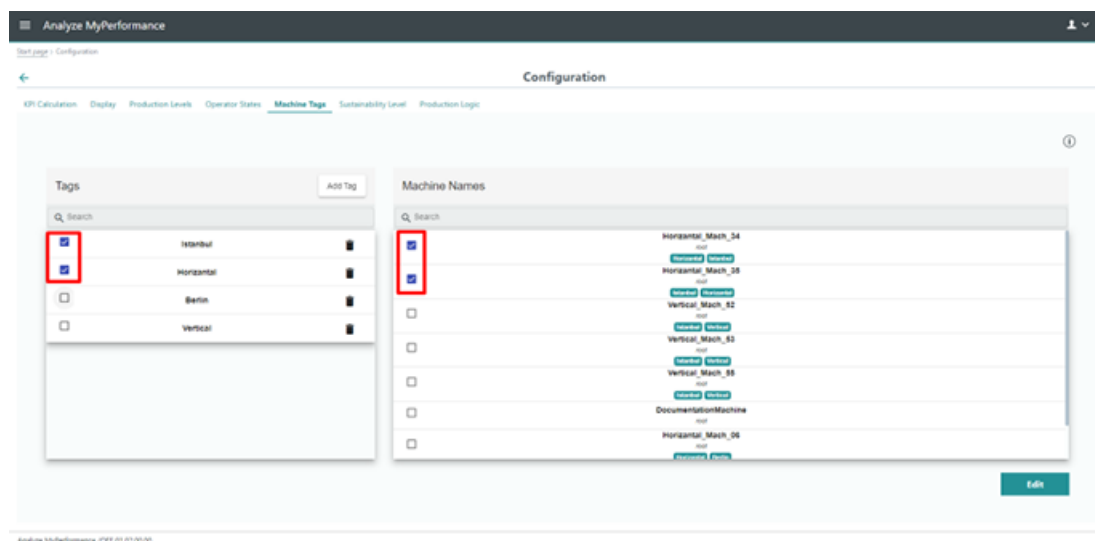
Confirm

The selected machines are tagged.
You can tag multiple machines with multiple tags.



Filtering

1. Select the checkboxes of the tag that you want
2. The machines in the "Performance Monitoring" view are filtered.



7.8 Sustainability level

The sustainability indicator informs about the negative impact on the environment, the energy consumption or the natural resources. It refers to the current production cycle. If the sustainability is above the percentage threshold, it changes color.

Elements

Element	Description
Sustainability level	Sustainability level, range from 0% to 100%.
Save	Saves the settings.
Reset	Discard the settings.

Procedure

To set the sustainability level, click "Configuration" on the start page of Analyze MyPerformance / OEE.

1. Click on the "Sustainability level" tab.
2. Click on the slider and move it to the desired value.
The default level is 75%.

3. To save the settings, click on "Save"
- OR -
4. To cancel the changes, click on "Reset".

[Start page](#) > [Configuration](#)

Configuration

KPI Calculation Display Production Levels Operator States Machine Tags **Sustainability Level** Production Logic Customize Utilization States

Sustainability Level

Level

0% < ————— ≤ 33%

Warning

Please note that the sustainability setting will be reset to default for all machines. Do you want to continue?

[Cancel](#) [Reset](#)

7.9 Production logic

7.9.1 Addresses

You can create new variables. You can customize the KPIs with new or existent variables.

Parameters and elements

Parameter/element	Description
Variable or Value	Name of the new variable
Variable Address	Address
Aspect	Aspect
	Deletes the variable.
	Adds a new variable.
Reset to defaults	Resets to default addresses.

Parameter/element	Description
Reset	Resets the changes.
Save	Saves the variables.

Procedure

Create a new variable

1. Click on the "Production Logic" tab in the "Configuration" view.

Start page > Configuration



KPI Calculation Display Production Levels Operator States Machine Tags Sustainability Level **Production Logic** Customize Utilization S

Addresses Machine State Calculation

Select a Machine for configuring address:

2. Select a machine.
3. Select a model. You have following options:
 - SINUMERIK
 - FANUC
 - Other

You see a list of all variables for this machine.

Addresses Machine State Calculation

Select a machine for configuring address:

Variable in value	Variable Address	Input
FeedOverride	/Channel/State/feedRateOverride	Input1 CH1_BaseConfig
SpindleOverride	/Channel/Spindle/spindleOverride	Input1 CH1_BaseConfig
NcProgramStatus	/Channel/State/programStatus	Input1 CH1_BaseConfig
StopCond	/Channel/State/stopCond	Input1 CH1_BaseConfig
CpMode	/Tag/State/cpMode	Input1 CH1_BaseConfig
ProtectionLevel	/Ack/Configuration/accessLevel	Input1 CH1_BaseConfig
NcDrAlarms	/Ack/State/humanAlarms	Input1 CH1_BaseConfig

4. Click on the "Plus" button to add a new variable.

5. Fill the spaces with the desired values.
 - Variable or value
 - Variable address
 - Aspect
6. Click on "Save" to add the new variable.
 - OR -
 - Click on "Reset" to undo all changes.
 - OR -
 - Click on "Reset to defaults" to use the default addresses.
7. Click on "Yes" to define a new algorithm.
 - OR -
 - Click on "No" to use the existing algorithm.
 - OR -
 - Click on "Cancel" if you do not want to save the variables.

Warning

Changes on the Address page is going to be saved.
Please press "Yes" if you would like to define a new algorithm.
Please press "No" if you would like to use the existing algorithm.
Please press "Cancel" if you don't want to save the changes.



The new variable is added.

The default addresses of the controllers are listed in the appendix. For more information, see Controller addresses (Page 294).

Note**Machine reboot**

Machine reboot is required after every configuration change.

Limitations

- Maximum 25 variables
- Maximum 100 characters for variable name
- Maximum 250 characters for variable address
- Maximum 50 characters for aspect name
- Newly added aspects can be visualized on the dashboards. For more information, see Generating charts (Page 135).
- Only integer or double values are supported. Make sure that the defined address's value is in integer or double format. If the received data from the defined address is null or in a string type, the data will be ignored.

- Auto workpiece count feature is not supported for the Machine Agent connected devices except for Fanuc.
- NC Program Name is not displayed for the Machine Agent connected devices except for Fanuc.
- You cannot edit the default addresses for Fanuc and SINUMERIK type devices. To remove these address from variable list, remove their usage in the algorithm page first.
- If a variable is used in the algorithm, remove it from the algorithm definition in order to remove it from address list
- The default variables are set for the SINUMERIK and Fanuc controllers. For the other type controllers, you must define the addresses manually.

Note

Defining a new algorithm

If you changed the existing variables, added or removed a variable from the list, you must define a new algorithm. Otherwise the machine status data is calculated "Unknown" and OEE/KPIs are calculated 0% when you restart your device after saving the new variable configuration.

If you would like to use the existing algorithm when you changed the variables, press "Save" and then "No" in the confirmation window.

To read data by using different adapters, add the prefix of the used adapter to the front of the address as below.

- For Fanuc adapter:
 - "ext::fanuc::"
 - Example: "ext::fanuc::/pmc/pmcrrng/G/byte[1,12]"
- For Mitsubishi adapter:
 - "ext::mitsubishi::"
 - Example: "ext::mitsubishi::/nc/axis/powerConsumption[1]"
- For Heidenhain adapter:
 - "ext::heidenhain::"
 - Example: "ext::heidenhain::\PLC\memory\BI4123"
- For OpcUA adapter:
 - "ext::opcua::2/"
 - 2 in the prefix may be different according to the your configuration
 - Example: "ext::opcua::2//Bag/State/opModeBag/State/opMode[u1]"
- For MTConnect adapter:
 - "ext::MTConnect::"
 - Example: "ext::MTConnect::/variable/auto_time"

Note**Reset to default**

Pressing the "Reset to Defaults" button retrieves default variables and addresses for SINUMERIK and Fanuc type devices. For the other devices, all addresses are removed.

7.9.2 Machine state calculation

Parameters and elements

Following elements are available:

Elements	Description
Status Name	Name of the machine status
Algorithm	Algorithm to describe this status
New Algorithm	Adds a new algorithms
	Information
Add	Opens the window to add a new variable or expression.
Restore to Default	Resets the changes.
Save	Saves the changes.

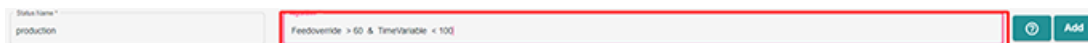
Procedure

1. Click on the "Machine State Calculation" tab.
2. Select a machine.
The existent algorithms are shown.

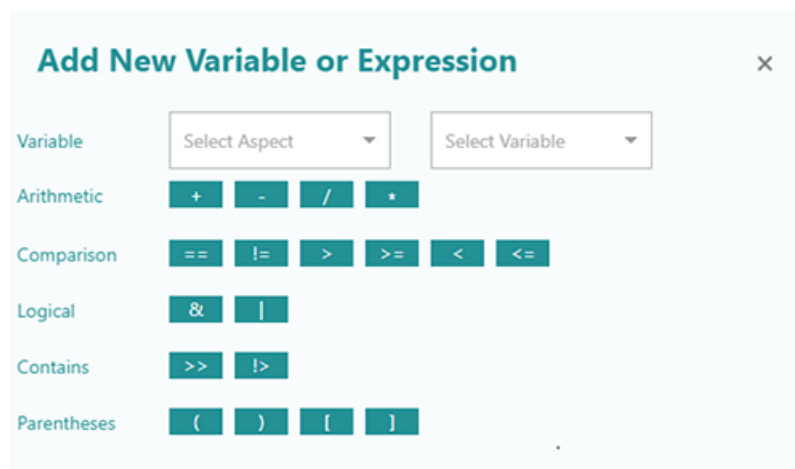


The screenshot shows the 'Machine State Calculation' configuration interface. On the left, under 'Addresses', the 'Machine State Calculation' tab is active. Below it, a dropdown menu shows 'ID01 - K7_Machine' selected. There are four status name input fields: 'Ausfallzeit ohne technische oder organisatorische Gründe', 'Technische Störung', 'Produktion', and 'Organisatorische Störung'. On the right, there are four algorithm entries, each with a status name and an algorithm expression, and an 'Add' button. At the bottom, there are 'New Algorithm', 'Restore to Default', and 'Save' buttons.

3. To edit an algorithm, click the algorithm.



- Type the new algorithm.
- Click on "Add" to add a new variable or expression. Select the variable or expression in the window that appears.



4. To create a new algorithms click the "New Algorithm" button. For every algorithm

- Type the algorithm.
- Click the "Add" button to add anew variable or expression. Select the variable or expression in the window that appears.

5. Click on "Save".

6. - OR -

7. Click on "Restore to default" to reset to the default.

8. Click on "Confirm".

Warning

Are you sure you want to save the changes you made?



The machine states are calculated based on the new algorithm.

Note**New variable**

If you have saved a new variable, you must define a new algorithm by clicking on the "New Algorithm" button. Otherwise your machine status data is calculated as "unknown".

The "Save" button in the right-below corner is only updating the existing algorithm for the existing variables.

Note**Restore to default**

Clicking on the "Reset to Default" button resets the algorithms according to the machine model.

- If the connected device is SINUMERIK, algorithms are reset to SINUMERIK's default.
- If the connected device is Fanuc, algorithms are reset to Fanuc's default.
- If the connected device is other than SINUMERIK or Fanuc, all the algorithms are removed. You must create a new algorithm in order to calculate the machine status in AMP for resetting other device's algorithm.

Restrictions

- If two or more of the algorithms are "valid" with the received values, the application calculates the incorrect machine status.
- If all of the algorithms are "invalid" with the received values, the application calculates the machine status as "Unknown". Your OEE/KPI is calculated as 0% for this machine.
- The entered algorithm must include a comparison like "equal, greater than, less than". Otherwise you cannot save the algorithm.

7.10 Customize utilization states

You can define custom utilization states for the utilization plan. These states are mapped to the default shift states.

Parameters and elements

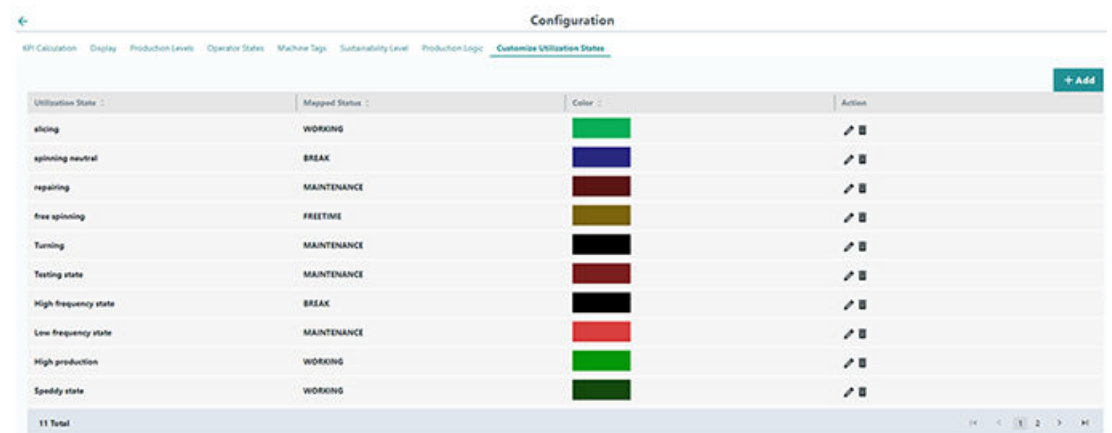
The following parameters and elements are available:

Parameter/element	Description
Utilization State	Name of the utilization
Mapped Status	Select a status: • Working • Break • Maintenance • Freetime

Parameter/element	Description
Color	Color of the utilization state.
	The "Sorting" button sorts a column alphabetically, either in ascending or descending order.
Action	
	The "Edit" symbol opens the utilization state.
	Deletes the selected utilization state.
	Add a new utilization state.

Procedure

1. Click the "Customize Utilization Status" tab.
2. You see a list of all utilization states that you have already created. Up to 10 utilization states are displayed on a page.



Utilization State	Mapped Status	Color	Action
sticking	WORKING		 
spinning neutral	BREAK		 
regaining	MAINTENANCE		 
free spinning	FREETIME		 
turning	MAINTENANCE		 
Testing state	MAINTENANCE		 
High frequency state	BREAK		 
Low frequency state	MAINTENANCE		 
High production	WORKING		 
Spindly state	WORKING		 

Note

Utilization states

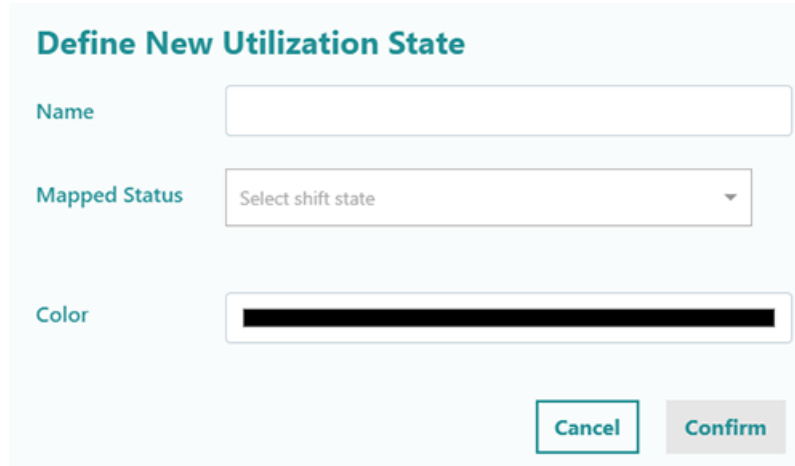
The maximum number of utilization states is 50.

The names of the utilization states can be in any language such as Chinese, Arabic or Korean.

Add a utilization state

1. Click the "Add" button.
2. The "Define New Utilization State" window appears.
3. Enter the name of the utilization state.
4. Select one the shift status to map the utilization state.

5. Click the colored bar to select a new color.
6. Click "Confirm" to save the utilization state
- OR -
Click "Cancel" to return to the list without saving.

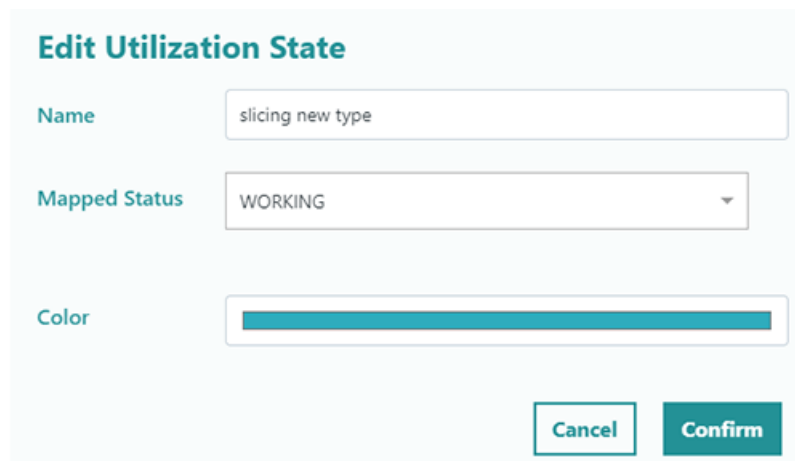


The form is titled "Define New Utilization State" in teal. It contains three input fields: "Name" (a text box), "Mapped Status" (a dropdown menu with "Select shift state" as the placeholder), and "Color" (a color selection bar showing a black bar). At the bottom right, there are two buttons: "Cancel" (outlined in teal) and "Confirm" (solid grey).

Edit a utilization state

You can edit the name or the color of a utilization state. The mapped state cannot be edited.

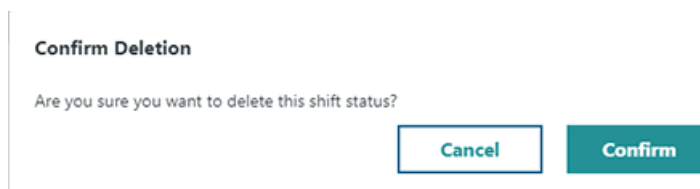
1. Click the "Edit" icon.
2. The "Edit Utilization State" window appears.
3. Enter the new name of the utilization state.
4. Select the new color.
5. Click "Confirm" to save the changes of the utilization state
- OR -
Click "Cancel" to return to the list without saving.



The form is titled "Edit Utilization State" in teal. It contains three input fields: "Name" (a text box with "slicing new type" entered), "Mapped Status" (a dropdown menu with "WORKING" selected), and "Color" (a color selection bar showing a teal bar). At the bottom right, there are two buttons: "Cancel" (outlined in teal) and "Confirm" (solid teal).

Delete a utilization state

1. Click the "Delete" icon.
2. Click "Confirm" to delete the state
- OR -
Click "Cancel"



Analyze MyPerformance API

8.1 Token for openness interface (extension interface)

Software products from third-party suppliers can access data or functions from the Mcenter via its open interfaces. An access token obtained from the Identity Service is used for identification.

Prerequisite

- You require administrator rights to generate the token.
- You need a token as generated by user login or generated by an authentication of the third-party component.

The "OpennessToken.json" file contains the following parameters:

- client_id
- client_secret
- identityServiceUrl

For more information, see Manage openness clients (Page 80).

Request the access token with the Identity Service URL as basis address

The content type of the request is: "application/x-www-form-urlencoded".

Use the following key value pairs in the HTTP request form.

client_id	sinint-api-client
grant_type	ClientAuthGrantType
ClientAuthPayload	{"ClientId" : "<clientid>", "Secret" : "<secret>"}

Example of an HTTP request code

Replace "<clientid>" and "<secret>" by the data that you obtain in the "OpennessToken.json" file that is downloaded.

```
POST /connect/token HTTP/1.1
Host: <Identity Service URL, which comes from the downloaded JSON
file>
"Content-Type: application/x-www-form-urlencoded; boundary=boundary"
--boundary
Content-Disposition: x-www-form-urlencoded; name="client_id"
client_Id:sinint-api-client
--boundary
Content-Disposition: x-www-form-urlencoded; name="grant_type"
grant_type:ClientAuthGrantType
--boundary
Content-Disposition: x-www-form-urlencoded; name="ClientAuthPayload"
```

```
{ "ClientId": "<clientid>", "Secret": "<secret>" }
--boundary--
```

Possible answers

- OK (200)
 - No problems occurred while processing the request.
 - Example:


```
HTTP/1.1 200 OK
Content-Type: application/json; charset=UTF-8
{
  "access_token": "<access_token>",
  "expires_in": "<expiration_time_in_seconds>",
  "token_type": "Bearer"
}
```
- Bad Request (400)
 - At least one of the form data items is missing or is incorrect.
 - Example:


```
HTTP/1.1 400 Bad Request
Content-Type: application/json; charset=UTF-8
{
  "error": "<error description>"
}
```

Note**Messages**

- Each request provided with the access token as owner token for a platform service is satisfied.
 - If an access token is not listed or the listed access token is invalid, you receive "HTTP code 401 (Unauthorized)" as a response. In this case, you must request a new access token from the Identity Service.
-

8.2 Providing and obtaining data via the ERP/MES systems

8.2.1 Assigning a shift plan

To ensure that information provided or obtained from the ERP/MES System are not rejected as "Unauthorized", a generated token via Identity Service must be used for the authorization.

For more information, see Token for openness interface (extension interface) (Page 249).

Prerequisite

The token must have been created.

For more information, see:

- Manage openness clients (Page 80)

Assigning a shift plan to a machine

POST /production-planning/v1/shiftplans

- Assigns a utilization plan to the specified machine starting from the desired date.

Procedure

1. Open the following URL (<http://<IP Address of the SI5 Server>:8080/amp/shiftcalendar/api/production-planning/shiftplans>).
2. Select the API method POST.
3. Insert the bearer token to the authorization field.
4. Insert the JSON file of the desired shift plan to the body field as raw data.
5. Send the request.

JSON body structure

Parameter	Description
machineName	Machine name of the preferred machine to use in the Mcenter system
planName	Name of the shift plan that is going to be assigned to the machine
startDate	Start date of the assigned shift plan (Format must be in "YYYY-MM-DD" format)
days	Contains the daily plan of the shift statuses in a JSON format.

Structure of "days" in JSON format

Parameter	Description
day	Name of the day
shifts	Contains the shift information for the day in a JSON format.

Structure of "shifts" in JSON format

Parameter	Description
order	Order of the shift
startTime	Start time of the shift
endTime	End time of the shift
shiftStatuses	Contains the status information of the shift in a JSON format.

Structure of "shiftStatuses" in JSON format

Parameter	Description
startTime	Start time of the status
endTime	End time of the status
name	Name of the status
productionInfo	Contains the targets and production information of the status in a JSON format.

Structure of "productionInfo" in JSON format

Parameter	Description
targetCycleTime	Target cycle time of the status
targetCycleTimeUnit	Unit of the entered target cycle time (Sec. Min. Hour)
targetPieceCount	Target piece number of the status
workpieceName	Name of the workpiece that is going to be used in the status
ncProgramName	Name of the NC Program that is going to be used in the status

Example JSON

Example for the Monday's first shift:

```
{
  "machineName": "Test_1",
  "planName": "ApiTemplateTest",
  "startDate": "2022-07-25",
  "days": [
    {
      "day": "MONDAY",
      "shifts": [
        {
          "order": 1,
          "startTime": "09:00",
          "endTime": "14:00",
          "shiftStatuses": [
            {
              "startTime": "09:00",
              "endTime": "13:00",
              "name": "WORKING",
              "productionInfo": {
                "targetCycleTime": 5,
                "targetCycleTimeUnit": "Min",
                "targetPieceCount": 50,
                "workpieceName": "workpieceName",
                "ncProgramName": "ncProgramName"
              }
            }
          ],
          "startTime": "13:00",

```

```
        "endTime": "14:00",  
        "name": "BREAK"  
      }  
    ]  
  }  
]  
}
```

Note**Omissible attributes**

You can omit the attributes "targetCycleTime", "targetCycleTimeUnit", "targetPieceCount", "workpieceName" and "ncProgramName". In this case, the default value is set to null. You can combine these attributes with the needed information later. All the other attributes are obligatory.

Exception structures

- **Not Found (404)**

- **"Wrong URL"**

Response:

```
{
  "timestamp": "2022-08-25T10:07:04.215+0000",
  "status": 404,
  "error": "Not Found",
  "message": "No message available",
  "path": "/amp/api/production-planning/v1/shiftplans"
}
```

- **Bad Request (400)**

- **"The request body is null"**

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request"
}
```

- **"Not existing machine"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "machineName",
      "message": "Can not find asset information"
    }
  ]
}
```

- **"Missing machineName field"**

Response:

```
{
  "code": "AMP008",
  "message": "Validation exception!!!",
  "detailMessage": "The argument 'machineName' must not be null!"
}
```

– **"Missing startDate field"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "startDate",
      "message": "Shift plan start date cannot be null"
    }
  ]
}
```

– **"Invalid startDate format"**

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request"
}
```

– **"Date of past/today"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "startDate",
      "message": "Shift plan assignment date cannot be in past or today"
    }
  ]
}
```

– **"Missing days field"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "days",
      "message": "Days cannot be empty or null"
    }
  ]
}
```

- **"Missing day field"**

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "days",
      "message": "1004#Each day of the week must exist and the
re must be no duplicates"
    }
  ]
}
```

- **"Invalid Day Name"**

Note

Monday is set as "MONDAY" to take response.

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request",
  "detailMessage": "Can not parse value MONDAY"
}
```

- **"Missing order field"**

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "order",
      "message": "Shift order cannot be null"
    }
  ]
}
```

– **"Invalid shift order"**

Note

Order was set as "0" to take response.

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "days[0].shifts",
      "message": "1005#Start and end time of the shifts must
not overlap. Shift order must be between 1 and 24 and unique in
a shift."
    }
  ]
}
```

– **"Gap between shifts as an orders"**

Note

Orders were set respectively 1,3 to take response.

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "days[0].shifts",
      "message": "1005#Start and end time of the shifts must
not overlap. Shift order must be between 1 and 24 and unique in
a shift."
    }
  ]
}
```

– **"Missing startTime field"**

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "startTime",
      "message": "Shift start time can not be null"
    }
  ]
}
```

– **"Missing endTime field"**

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "endTime",
      "message": "Shift end time can not be null"
    }
  ]
}
```

– **"Missing/Not Exist name field"**

Response:

```
{
  "code": "AMP012",
  "message": "Invalid shift status name !"
}
```

– **"Invalid type name"**

NoteType Name was set as "NotExistState" to take response.

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request",
  "detailMessage": "Can not parse value NotExistState"
}
```

– **"Overlapping Shifts"**

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "days[0].shifts",
      "message": "1005#Start and end time of the shifts must not overlap. Shift order must be between 1 and 24 and unique in a shift."
    }
  ]
}
```

– **"Invalid targetCycleTime"**

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "targetCycleTime",
      "message": "must be greater than or equal to 0"
    }
  ]
}
```

– **"Invalid targetCycleTimeUnit"**

Note

targetCycleTimeUnit was set as "Seca" to take response.

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request",
  "detailMessage": "Can not parse value Seca"
}
```

– **"Invalid targetPieceCount"**

Response:

```
{
  "code": "AMP006",
  "message": "constraints not valid",
  "detailMessage": "",
  "errors": [
    {
      "field": "targetPieceCount",
      "message": "Target pieces valid range is from 1 to 9999"
    }
  ]
}
```

– **"Exceeding the multiplication of target pieces and target cycle time values to the planned production time"**

Response:

```
{
  "code": "AMP011",
  "message": "The multiplication of target pieces and target cycle time values should not exceed the planned production time !"
}
```

- **"Wrong targetCycleTimeUnit"**

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request",
  "detailMessage": "Can not parse value : Secc."
}
```

- **Internal Server Error (500)**

- **"Invalid Token"**

Response:

```
{
  "timestamp": "2022-08-25T10:58:50.534+0000",
  "status": 500,
  "error": "Internal Server Error",
  "message": "Invalid access token!",
  "path": "/amp/api/production-planning/v1/shiftplans"
}
```

8.2.2 Providing shift results

To ensure that information provided or obtained from the ERP/MES System are not rejected as "Unauthorized", a generated token via Identity Service must be used for the authorization.

For more information, see Token for openness interface (extension interface) (Page 249).

Prerequisite

The token must have been created.

For more information, see:

- Manage openness clients (Page 80)

Providing shift results to a machine

POST /production-quality/workpiece/v1/shift-result

- Provides the shift results to specified machine for the existing shift number and date

Procedure

1. Open the following URL (<http://<IP Address of the SI5 Server>:8080/amp/mcenter-adapter/api/production-quality/workpiece/v1/shift-result>).
2. Select the API method POST.
3. Insert the bearer token to the authorization field.
4. Insert the JSON file of the desired shift result to the body field as raw data.
5. Send the request.

JSON body structure

Parameter	Description
date	Date of the provided shift result (Format must be in "YYYY-MM-DD" format)
machineName	Machine name of the preferred machine to use in the Mcenter system
shiftNumber	Shift number of the provided shift result
goodPieceCount	Good piece count of the provided shift result
scrapPieceCount	Scrap piece count of the provided shift result

Example JSON for shift result

```
{
  "date": "2022-08-18",
  "machineName": "Test_1",
  "shiftNumber": 1,
  "goodPieceCount": 100,
  "scrapPieceCount": 10
}
```

Limitations

- In the provided data, there should be a shift plan.
- Machine Name should exist.
- Shift Number should exist in the related data.
- Good/Scrap piece count should be between [0 - 2147483647].

Exception structures

- **Not Found (404)**
 - **"Wrong URL"**
Response:

```
{
  "timestamp": "2022-08-25T14:55:54.566+0000",
  "status": 404,
  "error": "Not Found",
  "message": "No message available",
  "path": "/amp/api/production-quality/v1/shift-results"
}
```
 - **"Not exist shift number in the related date"**
Response:

```
{
  "code": "AMP010",
  "message": "There is no shift with order 5"
}
```
 - **"Not exist shift plan the related date"**
Response:

```
{
  "code": "AMP010",
  "message": "Shift plan not found for specified date !!!"
}
```
- **Unsupported Media Type (415)**
 - **"The request body is null"**
Response:
"The type of the input parameters are not valid. Content type "not supported".

- **Bad Request (400)**

- **"Missing Date field"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "date",
      "message": "Date cannot be null !"
    }
  ]
}
```

- **"Invalid Date format"**

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request"
}
```

- **"Invalid Date (If shift plan not exist in that date)"**

Response:

```
{
  "code": "AMP010",
  "message": "Shift plan not found for specified date !!!"
}
```

- **"Invalid Date (If date is in the future)"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "date",
      "message": "Date should be in past or present !"
    }
  ]
}
```

- **"Not existing machine"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for detail s.",
  "detailMessage": "",
  "errors": [
    {
      "field": "machineName",
      "message": "Can not find asset information"
    }
  ]
}
```

- **"Missing machineName field"**

Response:

```
{
  "code": "AMP008",
  "message": "Validation exception!!!",
  "detailMessage": "The argument 'machineName' must not be null!"
}
```

- **"Missing shiftNumber field"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for detail s.",
  "detailMessage": "",
  "errors": [
    {
      "field": "shiftNumber",
      "message": "Shift order cannot be less than 1 !"
    }
  ]
}
```

- **"ShiftNumber Less than 1"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for detail s.",
  "detailMessage": "",
  "errors": [
    {
      "field": "shiftNumber",
      "message": "Shift order cannot be less than 1 !"
    }
  ]
}
```

- **"ShiftNumber more than 24"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "shiftNumber",
      "message": "Shift order cannot be greater than 24 !"
    }
  ]
}
```

- **"Not exist 'WORKING' type in the shift"**

Response:

```
{
  "code": "AMP010",
  "message": "There is no WORKING shift status for specified date!!!"
}
```

- **"Not exist field is added"**

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request"
}
```

- **Internal Server Error (500)**

- **"Invalid Token"**

Response:

```
{
  "timestamp": "2022-08-25T10:58:50.534+0000",
  "status": 500,
  "error": "Internal Server Error",
  "message": "Invalid access token!",
  "path": "/amp/api/production-quality/v1/shift-result"
}
```

8.2.3 Getting shift based OEE

To ensure that information provided or obtained from the ERP/MES System are not rejected as "Unauthorized", a generated token via Identity Service must be used for the authorization.

For more information, see Token for openness interface (extension interface) (Page 249).

Prerequisite

The token must have been created.

For more information, see:

- Manage openness clients (Page 80)

Getting shift based OEE of machine

GET /production-quality/custom-kpi/v1/kpis

- Gets the shift based OEE of specified machine for the desired day

Procedure

1. Open the following URL (<http://<IP Address of the SI5 Server>:8080/amp/mcenter-adapter/api/production-quality/custom-kpi/v1/kpis/{machineName}?from={Instant}&to={Instant}>).
2. Select the API method GET.
3. Insert the bearer token to the authorization field.
4. Send the request.

Response structure

Parameter	Description
message	Shows the response message
machineName	Machine name of the preferred machine to use in the Mcenter system
shifts	Contains the shift information for the day in a JSON format

Structure of "shifts" in JSON format

Parameter	Description
date	Desired Date
shiftNumber	Order of the shift
kpis	Contains the KPI information for the day in a JSON format.
shiftResult	Contains the shift result information of the shift in a JSON format.

Structure of "KPIs" in JSON format

Parameter	Description
oee	Shows the overall equipment efficiency.
availability	Shows the availability.
quality	Shows the quality.
performance	Shows the performance.

Structure of "shiftResult" in JSON format

Parameter	Description
goodPieceCount	Shows the good piece count.
badPieceCount	Shows the scrap piece count.
targetPieceCount	Shows the target piece count.

Example response for the results of first shift

```
{
  "message": "Successfully got shift based kpi list",
  "machineName": "PetClient_TC_1",
  "shifts": [
    {
      "date": "2023-04-11",
      "shiftNumber": 1,
      "kpis": [
        {
          "name": "availability",
          "value": 0.61194
        },
        {
          "name": "performance",
          "value": 1.00000
        },
        {
          "name": "quality",
          "value": 1.00000
        },
        {
          "name": "sustainability",
          "value": 0.60912
        },
        {
          "name": "oee",
          "value": 0.61194
        }
      ],
      "shiftResult": {
        "goodPieceCount": 0,
        "badPieceCount": 0,
        "targetPieceCount": 0
      }
    }
  ],
}
```

Exception structures

- **Not Found (404)**

- **"Wrong URL"**

Response:

```
{
  "timestamp": "2022-08-26T11:39:50.010+0000",
  "status": 404,
  "error": "Not Found",
  "message": "No message available",
  "path": "/amp/api/production-quality/v1/kpiss/Test_01"
}
```

- **"Not Exist KPI Result for the desired date"**

Response:

```
{
  "code": "AMP010",
  "message": "KPI not found for given range !"
}
```

- **"Not exist machineName"**

Response:

```
{
  "code": "AMP011",
  "message": "Can not find machine information for machineName : NotExistMachine"
}
```

- **Bad Request (400)**

- **"Missing "from" parameter"**

Response:

```
{
  "code": "AMP001",
  "message": "from parameter is missing"
}
```

- **"Missing "to" parameter"**

Response:

```
{
  "code": "AMP001",
  "message": "to parameter is missing"
}
```

- **"Wrong Date format"**

Response:

```
{
  "code": "AMP006",
  "message": "2022-09-03T23:00:00Zaa value for to should be of type class java.time.Instant"
}
```

- **Internal Server Error (500)**

– **"Invalid Token"**

Response:

```
{
  "timestamp": "2022-09-19T23:05:37.768+0000",
  "status": 500,
  "error": "Internal Server Error",
  "message": "Invalid access token!",
  "path": "/amp/api/production-quality/v1/kpis/Test_1"
}
```

8.2.4 Getting average OEE/KPI

To ensure that information provided or obtained from the ERP/MES System are not rejected as "Unauthorized", a generated token via Identity Service must be used for the authorization.

For more information, see Token for openness interface (extension interface) (Page 249).

Prerequisite

The token must have been created.

For more information, see:

- Manage openness clients (Page 80)

Getting average OEE/KPI of machine

GET /production-quality/custom-kpi/v1/kpis/average

- Gets the average OEE of specified machine for the desired date range

Procedure

1. Open the following URL (<http://<IP Address of the SI5 Server>:8080/amp/mcenter-adapter/api/production-quality/custom-kpi/v1/kpis/average/<MachineName>?from=<startDate>&to=<endDate>>).
2. Select the API method GET.
3. Insert the bearer token to the authorization field.
4. Send the request.

Response structure

Parameter	Description
message	Shows the response message.
machineName	Machine name of the preferred machine to use in the Mcenter system
from	Beginning of the desired date range

Parameter	Description
to	End of the desired date range
kpi	Contains the KPI information of the shift in a JSON format.

Structure of "kpi" in JSON format

Parameter	Description
oee	Shows the overall equipment efficiency.
availability	Shows the availability.
quality	Shows the quality.
performance	Shows the performance.

Example response

```
{
  "message": "Successfully got average kpi list",
  "machineName": "PetClient_TC_1",
  "from": "2023-04-11",
  "to": "2023-04-12",
  "kpiList": [
    {
      "name": "availability",
      "value": 0.21063
    },
    {
      "name": "oee",
      "value": 0.21063
    },
    {
      "name": "performance",
      "value": 1.00000
    },
    {
      "name": "quality",
      "value": 1.00000
    },
    {
      "name": "sustainability",
      "value": 0.60912
    }
  ]
}
```

Exception structures

- **Not Found (404)**
 - **"Wrong URL"**
Response:

```
{
  "timestamp": "2022-08-26T12:49:44.893+0000",
  "status": 404,
  "error": "Not Found",
  "message": "No message available",
  "path": "/amp/api/production-quality/v1/average-ooes/Test_01"
}
```
 - **"Not exist machineName"**
Response:

```
{
  "code": "AMP011",
  "message": "Can not find machine information for machineName
: NotExistMachine"
}
```
- **Bad Request (400)**
 - **"Missing "from" parameter"**
Response:

```
{
  "code": "AMP001",
  "message": "from parameter is missing"
}
```
 - **"Missing "to" parameter"**
Response:

```
{
  "code": "AMP001",
  "message": "to parameter is missing"
}
```
 - **"Wrong Date format"**
Response:

```
{
  "code": "AMP006",
  "message": "2022-09-10aa value for to should be of type class
java.time.LocalDate"
}
```
- **Internal Server Error (500)**
 - **"Invalid Token"**
Response:

```
{
  "timestamp": "2022-09-19T23:04:58.428+0000",
  "status": 500,
  "error": "Internal Server Error",
  "message": "Invalid access token!",
  "path": "/amp/api/production-quality/v1/kpis/average/Test_1"
}
```

8.2.5 Getting granular OEE/KPI

To ensure that information provided or obtained from the ERP/MES System are not rejected as "Unauthorized", a generated token via Identity Service must be used for the authorization.

For more information, see Token for openness interface (extension interface) (Page 249).

Prerequisite

The token must have been created.

For more information, see:

- Manage openness clients (Page 80)

Getting granular OEE/KPI of machine

GET /production-quality/custom-kpi/v1/kpis/granular

- Gets the granular OEE of specified machine for the desired date range with desired granular

Procedure

1. Open the following URL (<http://<IP Address of the SI5 Server>:8080/amp/mcenter-adapter/api/production-quality/custom-kpi/v1/kpis/granular/<MachineName>?from=<StartDate>&to=<EndDate>&intervalUnit=<Granular>>).
2. Select the API method GET.
3. Insert the bearer token to the authorization field.
4. Send the request.

Response structure

Parameter	Description
message	Shows the response message.
payload	Contains the KPI information of the shift in a JSON format.

Structure of "payload" in JSON format

Parameter	Description
start	Shows the overall equipment efficiency.
end	Shows the availability.
kpi	Contains the KPI information for the day in a JSON format.

Structure of "kpi" in JSON format

Parameter	Description
oee	Shows the overall equipment efficiency.
availability	Shows the availability.
quality	Shows the quality.
performance	Shows the performance.

Example response

```
{
  "message": "Successfully got granular kpi list",
  "payload": [
    {
      "start": "2023-04-11",
      "end": "2023-04-12",
      "kpiList": [
        {
          "name": "oee",
          "value": 38.7100
        },
        {
          "name": "availability",
          "value": 38.7100
        },
        {
          "name": "performance",
          "value": 100.0000
        },
        {
          "name": "quality",
          "value": 100.0000
        },
        {
          "name": "sustainability",
          "value": 119.2600
        }
      ]
    }
  ]
}
```

Exception structures

- **Not Found (404)**

- **"Wrong URL"**

Response:

```
{
  "timestamp": "2022-08-26T13:42:40.253+0000",
  "status": 404,
  "error": "Not Found",
  "message": "No message available",
  "path": "/amp/api/production-quality/v1/granular-oes/Test_01"
}
```

- **"Not exist machineName"**

Response:

```
{
  "code": "AMP011",
  "message": "Can not find machine information for machineName
: NotExistMachine"
}
```

- **Bad Request (400)**

- **"Missing "from" parameter"**

Response:

```
{
  "code": "AMP001",
  "message": "from parameter is missing"
}
```

- **"Missing "to" parameter"**

Response:

```
{
  "code": "AMP001",
  "message": "to parameter is missing"
}
```

- **"Missing "intervalUnit" parameter"**

Response:

```
{
  "code": "AMP001",
  "message": "intervalUnit parameter is missing"
}
```

- **"Wrong Date format"**

Response:

```
{
  "code": "AMP006",
  "message": "2022-09-10aa value for to should be of type class
java.time.LocalDate"
}
```

- **"Exceeding Max Date Range"**

Response:

```
{
  "code": "AMP007",
  "message": "Bad request exception!!!",
  "detailMessage": "Query dates are not valid. Date range should be max 730 days."
}
```

- **"Wrong interval Unit"**

Response:

```
{
  "code": "AMP012",
  "message": "Wrong intervalUnit format. Should be one of [day, week, month, quarter, year]"
}
```

- **Internal Server Error (500)**

- **"Invalid Token"**

Response:

```
{
  "timestamp": "2022-09-19T23:04:10.882+0000",
  "status": 500,
  "error": "Internal Server Error",
  "message": "Invalid access token!",
  "path": "/amp/api/production-quality/v1/kpis/granular/Test_1"
}
```

8.2.6 Adding custom state

To ensure that information provided or obtained from the ERP/MES System are not rejected as "Unauthorized", a generated token via Identity Service must be used for the authorization.

For more information, see Token for openness interface (extension interface) (Page 249).

Prerequisite

The token must have been created.

For more information, see:

- Manage openness clients (Page 80)

Adding custom state

POST /production-planning/v1/shiftstatus

- Send the custom state.

Procedure

1. Open the following URL (<http://<IP Address of the SI5 Server>:8080/amp/api/production-planning/v1/shiftstatus>).
2. Select the API method POST.
3. Insert the bearer token to the authorization field.
4. Insert the JSON file of the desired custom state to the body field as raw data.
5. Send the request.

JSON body structure

Parameter	Description
name	Name of custom state (Max. 200 characters)
color	Color of the custom state (Format must be in "#XXXXXX" format) (X can be [0,9] and [a,f])
mappedStatus	Name of predefined states (WORKING, BREAK, FREETIME, MAINTENANCE)

Limitations

- State name must be unique.
- State name contains maximum 200 characters.
- Existent mapped status should be used (WORKING, BREAK, FREETIME, MAINTENANCE).

Example JSON

```
{
  "name": "New Custom State",
  "color": "#a34b53",
  "mappedStatus": "WORKING"
}
```

Exception structures

- **Not Found (404)**

- **"Wrong URL"**

Response:

```
{
  "timestamp": "2022-09-19T22:09:57.229+0000",
  "status": 404,
  "error": "Not Found",
  "message": "No message available",
  "path": "/amp/api/production-planning/v1/shiftstatusNotExistPath"
}
```

- **Bad Request (400)**

- **"Missing "name" field"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "name",
      "message": "Status name cannot be empty or null."
    }
  ]
}
```

- **"Missing "color" field"**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for details.",
  "detailMessage": "",
  "errors": [
    {
      "field": "color",
      "message": "Color cannot be empty or null."
    }
  ]
}
```

- **"Missing "mappedStatus" field" (will be updated)**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for detail s.",
  "detailMessage": "",
  "errors": [
    {
      "field": "name",
      "message": "Status name cannot be empty or null."
    }
  ]
}
```

- **Custom State has more than 200 characters**

Response:

```
{
  "code": "AMP003",
  "message": "Validation error. Check 'errors' field for detail s.",
  "detailMessage": "",
  "errors": [
    {
      "field": "name",
      "message": "Status name length should be max 200 characters."
    }
  ]
}
```

- **Try to Add Same Custom State Name**

Response:

```
{
  "code": "AMP012",
  "message": "2400#The shift status with given name already exists."
}
```

- **Try to Add Not Exist Mapped Status**

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request",
  "detailMessage": "Can not parse value : NotExistMappedStatus. Type should be one of [ WORKING MAINTENANCE FREETIME BREAK ]"
}
```

- **Sending the Wrong Json Structure**

Response:

```
{
  "code": "AMP005",
  "message": "Malformed JSON request"
}
```

- **Sending the Fifty First**

Response:

```
{
  "code": "AMP012",
  "message": "2500#Cannot exceed max number of allowed shift statuses"
}
```

- **Internal Server Error (500)**

- **"Invalid Token"**

Response:

```
{
  "timestamp": "2022-09-19T23:03:19.178+0000",
  "status": 500,
  "error": "Internal Server Error",
  "message": "Invalid access token!",
  "path": "/amp/api/production-planning/v1/shiftstatus"
}
```

8.2.7 Getting all custom states

To ensure that information provided or obtained from the ERP/MES System are not rejected as "Unauthorized", a generated token via Identity Service must be used for the authorization.

For more information, see Token for openness interface (extension interface) (Page 249).

Prerequisite

The token must have been created.

For more information, see:

- Manage openness clients (Page 80)

Getting all custom states

GET /production-planning/v1/shiftstatus

- Gets the all active custom states.

Procedure

1. Open the following URL (<http://<IP Address of the SI5 Server>:8080/amp/api/production-planning/v1/shiftstatus>).
2. Select the API method GET.
3. Insert the bearer token to the authorization field.
4. Send the request.

Response structure

Parameter	Description
payload	Contains all active custom states in a JSON format.

Structure of "payload" in JSON format

Parameter	Description
name	Name of the custom state
color	Color of the custom state
mappedStatus	Name of predefined states (WORKING, BREAK, FREETIME, MAINTENANCE)

Example responses

```
{
  "payload": [
    {
      "name": "WORKING",
      "color": "#5dbebe",
      "mappedStatus": "WORKING"
    },
    {
      "name": "BREAK",
      "color": "#bcc9cc",
      "mappedStatus": "BREAK"
    },
    {
      "name": "New Custom State_1",
      "color": "#345327",
      "mappedStatus": "WORKING"
    }
  ]
}
```

Exception structures

- **Not Found (404)**

- **"Wrong URL"**

Response:

```
{
  "timestamp": "2022-09-19T22:54:12.048+0000",
  "status": 404,
  "error": "Not Found",
  "message": "No message available",
  "path": "/amp/api/production-planning/v1/
shiftstatusNotExistPath"
}
```

- **Internal Server Error (500)**

- **"Invalid Token"**

Response:

```
{
  "timestamp": "2022-09-19T23:03:19.178+0000",
  "status": 500,
  "error": "Internal Server Error",
  "message": "Invalid access token!",
  "path": "/amp/api/production-planning/v1/shiftstatus"
}
```


Mendix integration

9.1 Overview

In this chapter you can read how to use the openness interfaces of Mcenter from your Mendix low-code environment. The documentation of the existing openness interfaces is available in the Operating Manual of each application that supports such API. This documentation is focused on how to reach those APIs from a Mendix application.

To be able to use the open APIs, you need to authenticate with our identity solution, acquire a token and send it with all your requests to the openness interface endpoints.

In the following sections you can find a detailed description on how this authentication works, followed by the documentation of the Mcenter authenticator module for Mendix that can be used to automate most of the steps of the authentication process.

9.2 Authentication

The Mcenter server uses OAuth2 for authentication. Getting data from the server requires an access token. Access tokens can be acquired via openness clients.

Keep in mind that the openness clients have limited rights and only the supported endpoints can be called with them.

9.2.1 Creating an openness client

Procedure

1. To create an openness client, start the "Manage openness clients" application.
2. Click on "Create".
3. Name your client.
4. Click on "Confirm & Download".
5. The downloaded file contains the credentials of the openness client.

9.2.2 Acquiring an access token

You can acquire tokens by sending a REST request to the server's token endpoint with the credentials of the openness client.

Request method: POST

Request URL: <URLoftheserver>/int/identity/connect/token

Header:

Content-Type: application/x-www-form-urlencoded

Body:

client_id: sinint-api-client

grant_type: ClientAuthGrantType

ClientAuthPayload: {"clientId":"<Client ID from file>","secret":"<secret from file>"}

The response is a JSON file containing the access token:

```
{
  "access_token": "<accesstoken>",
  "expires_in": 3600,
  "token_type": "Bearer",
  "scope": "sinint-api"
}
```

The access token is valid for an hour. The token should be used while it is valid. Only request a new token when the old one has expired.

9.2.3 Using the access token

When you request data from the Mcenter server, the access token must be included in the request. To use the access token, set the Authorization header of the request to "bearer" and insert the access token:

Authorization: bearer <insert access token here>

9.3 Using the openness client in Mendix

9.3.1 Storing the openness client

The credentials of the openness client need to be stored in the Mendix application. You can store the contents of the "OpennessToken.json" file or just the necessary properties (clientId and secret).

The URL of the server's token endpoint also needs to be stored. The token endpoint is:

<server URL> /int/identity/connect/token

You can also get the URL of the Identity service from the downloaded file. It is the identityServiceUrl field.

9.3.2 Getting access token from server

An access token can be acquired by sending a REST request to the server's token endpoint. Create a microflow in your Mendix application that sends the request to the server with the credentials of the openness client.

Create a REST request with the following configuration:

- Set Location to the address from configuration (should be <server address>/int/identity/connect/token)
- Set HTTP method to POST
- Add HTTP header Content-Type: 'application/x-www-form-urlencoded'
- At Request choose Custom request template
- Set Template to client_id=sinint-api-client&grant_type=ClientAuthGrantType&ClientAuthPayload={1}
- Parameter is the client credentials in JSON format
- At Response set Response handling to Apply import mapping and select the matching mapping

9.3.3 Storing access token

Store the received access token to be used for authentication. Create an entity with the following structure to store the access token:

- access_token: string
- expires_in: integer
- token_type: string
- scope: string

Store the datetime when the token was received. With the store datetime and the "expires_in" property, it can be determined if the token is still valid. The "expires_in" property is in seconds. Its default value is 3600 (one hour).

Create a JSON mapping to easily convert the received JSON into an entity.

9.3.4 Getting data from Mcenter server

To get data from the server, a REST request must be sent to the appropriate endpoint. An access token must be included in the request.

To achieve this in the Mendix application, create a microflow in your application. First, check stored access token. If no access token is stored or the stored token is expired, request a new access token.

9.4 Using the provided Mendix authentication module

Create a REST request. In the Call REST microflow activity at HTTP Headers, add a custom HTTP header:

- Key: Authorization
- Value: 'Bearer ' + <access token>

Set the URL to the server endpoint you want to get the data from. The returned data is in JSON format. Create an entity and JSON mapping to store the received data.

9.4 Using the provided Mendix authentication module

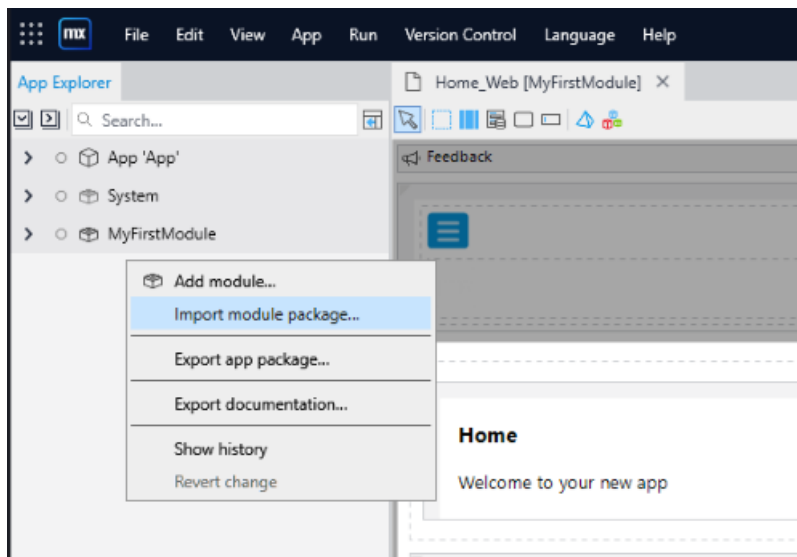
Prerequisite

You are familiar with Mendix development, have Mendix studio installed and already started to develop an application which needs to show data coming from Mcenter.

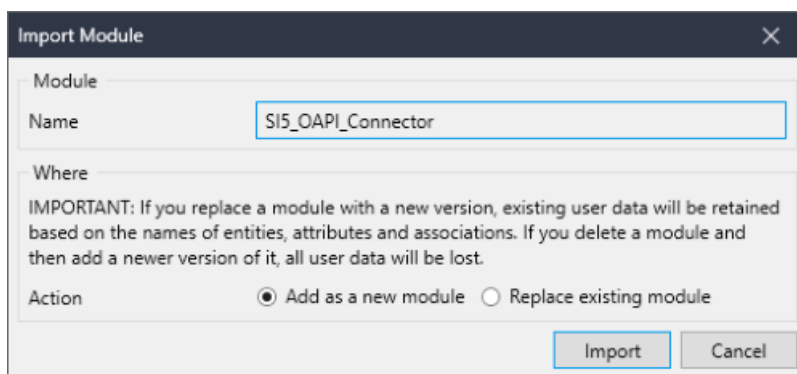
9.4.1 Installing the module

Procedure

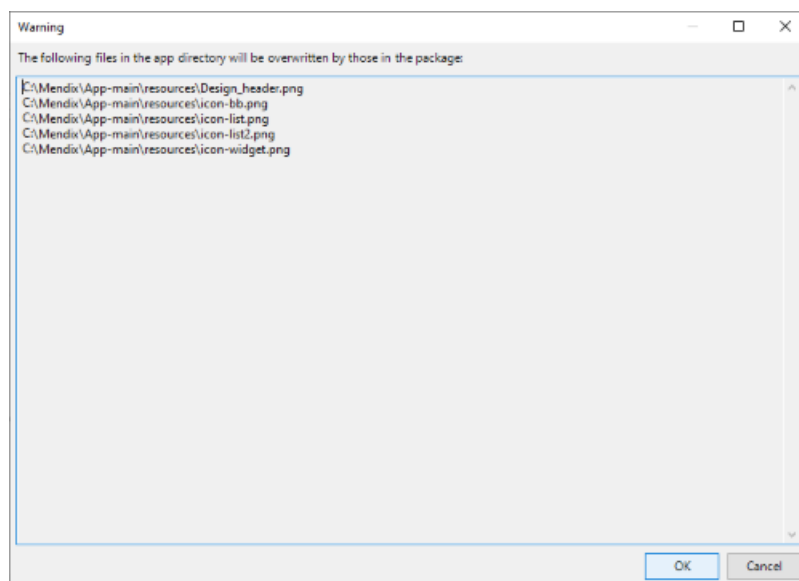
1. To import the authentication module into your Mendix application, right click on the empty space in the App Explorer view and select "Import module package". Select your package file (SI5_OAPI_Connector.mpk) and click "Open".



2. The "Import Module" window opens. Select the "Add as a new module" action and click on the "Import" button.



3. Click on the "OK" button to acknowledge the following warning:



9.4.2 Setting up authentication

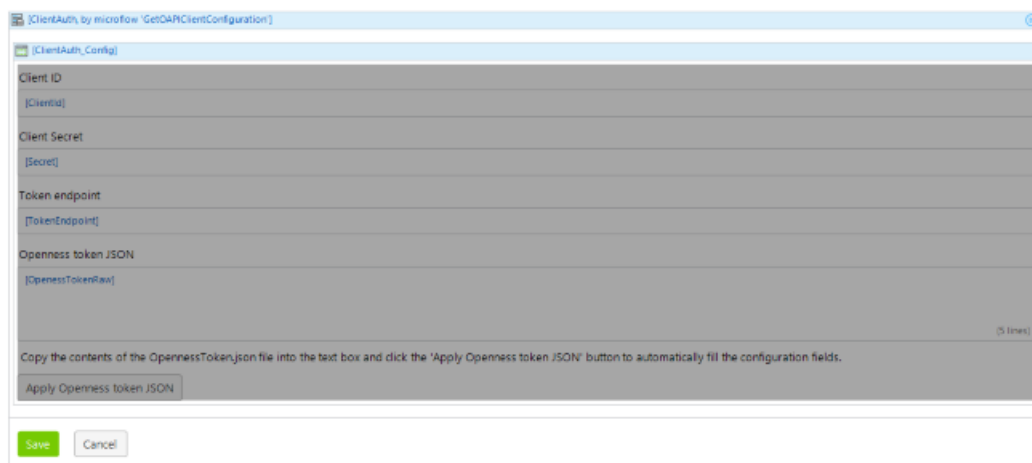
Procedure

1. Configure the connection to Mcenter. To start, create a dataview at the appropriate place.
2. Configure the microflow data source to use the following microflow:
"SI5_OAPI_Connector.GetOAPIClientConfiguration"

The screenshot shows the 'Edit Data View' dialog for 'dataView1'. The 'General' tab is selected. The 'Form orientation' is set to 'Horizontal'. The 'Label width (weight)' is set to '3'. The 'Show footer' is set to 'Yes'. The 'Empty entity message' field is empty. The 'Data source' section shows 'Type' set to 'Microflow'. The 'Microflow' field contains 'SI5_OAPI_Connector.GetOAPIClientConfigura'. The 'Microflow settings' field is empty. The 'Editability' section shows 'Editable' set to 'Yes' and 'Read-only style' set to 'Control'. The 'Visibility' section shows 'Visible' set to 'Default'. The 'Common' section shows 'Name' set to 'dataView1' and 'Tab index' set to '0'. The 'OK' and 'Cancel' buttons are at the bottom right.

3. Add the "ClientAuth_Config" snippet from the "_USE ME" folder in the connector module, a "Save" and a "Cancel" button to the data view. The end result should look like the following:

9.4 Using the provided Mendix authentication module



The screenshot shows a configuration window titled "ClientAuth, by microflow 'GetOAPClientConfiguration'". Inside the window, there is a tab labeled "ClientAuth_Config". The configuration fields are as follows:

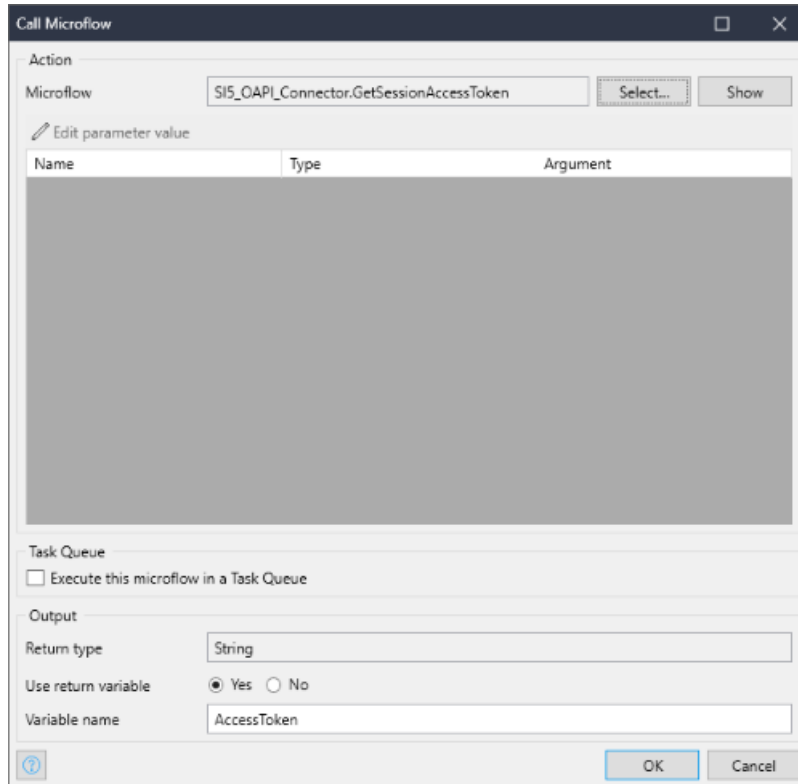
- Client ID:** [ClientId]
- Client Secret:** [Secret]
- Token endpoint:** [TokenEndpoint]
- Openness token JSON:** [OpennessTokenRaw] (5 lines)

Below the fields, there is a text box containing the instruction: "Copy the contents of the OpennessToken.json file into the text box and click the 'Apply Openness token JSON' button to automatically fill the configuration fields." Below the text box is a button labeled "Apply Openness token JSON". At the bottom of the window, there are two buttons: "Save" (green) and "Cancel" (grey).

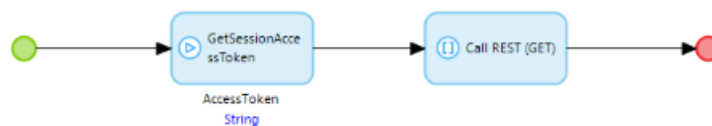
9.4.3 Accessing Mcenter open API

Procedure

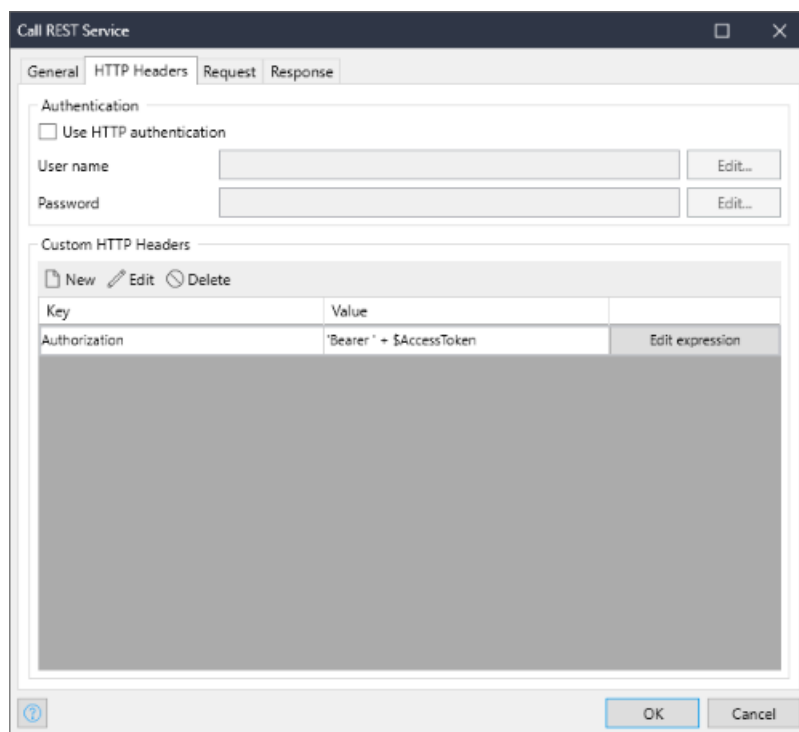
1. To insert the proper authorization header into your REST call, in your microflow, add a "Microflow call" activity before "Call REST". Configure it to run the "SI5_OAPI_Connector.GetSessionAccessToken" microflow. The returned string should be stored in a variable. In this example, the variable name "AccessToken" is used.



2. The resulting flow should look like the following:



3. Add the "Authorization" header into the request and set its value to 'Bearer ' + \$AccessToken`. Replace "\$AccessToken" with the name of your variable.



Appendix

A.1 List of abbreviations

Admin	Administrator (user role)
API	Application Programming Interface: Programming interface or extension interface for connection and interaction between software systems
CNC	Computerized Numerical Control
COM	Communication
DIR	Directory, directory
FAQ	Frequently Asked Questions
h	Hour
HTTP	Hyper Text Transfer Protocol, hypertext transfer protocol
HTTPS	Hyper Text Transfer Protocol Secure, secure hypertext transfer protocol
IB	Commissioning engineer (user role)
ID	Identification number
IE	Internet Explorer
IFC	Interface Client
IIS	Internet Information Services
IoT	Internet of Things
MB	Megabyte
MLFB	Machine-Readable Product Code
MMR /Tools	Manage MyResources /Tools management
MMR /Programs	Manage MyResources /Programs management
MSTT	Machine control panel
NC	Numerical Control: Numerical control
NCU	Numerical Control Unit: NC hardware unit
OEE	Overall Equipment Effectiveness
OEM	Original Equipment Manufacturer
OP	Operation Panel: Operating equipment
OMP /NX-Cam Editor	Optimize MyProgramming /NX-Cam Editor
PC	Personal Computer
PCU	PC Unit: Computer unit
PLC	Programmable Logic Control
SI	SINUMERIK Integrate
SK	Softkey
SSL	Secure Sockets Layer, cryptographic protocol to encrypt data transferred between server and client
SW	Software
TLS	Transport Layer Security, cryptographic protocol to encrypt data transferred between server and client

TMD	Tool Master Data
TMD-ID	Unique identification of Tool Master Data
TOA	Tool Offset Active, identifier (file type) for tool offset
URL	Uniform Resource Locator
UTC	Universal Time Coordinated

A.2 Controller addresses

Controller	Variable name	Address	Aspect name
SINUMERIK	Feedoverride	/Channel/State/feedRateIpoOvr[u1]	CH1_BasicConfig
	Spindleoverride	/Channel/Spindle/speedOvr[u1,1]	CH1_BasicConfig
	NCProgramStatus	/Channel/State/progStatus[u1]	CH1_BasicConfig
	StopCond	/Channel/State/stopCond[u1]	CH1_BasicConfig
	Opmode	/Bag/State/opMode[u1] CH1_BasicConfig	CH1_BasicConfig
	ProtectionLevel	/Nck/Configuration/accessLevel	CH1_BasicConfig
	NrOfAlarms	/Nck/State/numAlarms[u1]	CH1_BasicConfig
FANUC	Feedoverride	ext::fanuc::/pmc/address/data/G/byte/address[12]	CH1_BasicConfig
	NCProgramStatus	ext::fanuc::/cnc/info/status#automatic_operation	CH1_BasicConfig
	StopCond	ext::fanuc::/cnc/info/status#automatic_operation	CH1_BasicConfig
	Opmode	ext::fanuc::/cnc/info/status#automatic_manual_mode_selection	CH1_BasicConfig
	NCProgram	ext::fanuc::/cnc/program/path	CH1_BasicConfig

Index

A

- Administrate SINUMERIK Integrate
 - Overview, 35
 - Plant management, 37
- Assign Plan, 176

C

- Change password, 29
- Configuring
 - Display, 221
 - KPI calculation, 219
 - Production levels, 222
- Create
 - Utilization plan, 169
- Create a plant node, 37

D

- Delete
 - Utilization plan, 171
- Displaying the product version, 26

K

- KPI calculation
 - Configuring, 219

L

- Logging in, 23
- Logout, 24, 26

M

- Machine
 - Create, 60
 - Delete, 68
 - Parameter, 61, 74
- Machine Agent
 - Installer, 58
 - Onloading keys, 58
- Machine Status Trend, 115
 - Manual State, 120

- Manage applications
 - Assignments overview, 69
 - Change assignment, 75
 - Machine overview, 72
 - Updating assignment, 77

- Manage machines
 - Create the machine type, 58
 - Creating a machine, 60
 - Deleting a machine, 68
 - Editing a machine, 67
 - Overview of machines, 54

- Manage users
 - Create a new account, 44
 - Deleting user accounts, 49
 - Functions and roles, 40
 - Overview, 38
 - Resetting the password, 53
 - Updating an account, 46

- Manual State, 119

N

- Node types, 36

O

- OpennessToken.json, 84

P

- Production quality, 183

S

- Select a language, 28
- Sorting machines, 55

T

- Time interval
 - Custom date, 122
 - Manual State, 120
 - Predefined date, 108, 111, 124
- Token
 - For extension interface, 249

U

Utilization plan

 Create, 169

 Delete, 171

Utilization planning

 Overview, 164