SIEMENS

MindSphere

Analyze MyDrives

Operating Manual

Introduction 1

Security instructions 2

Description 3

Preparing 4

Starting Analyze MyDrives 5

User interface Analyze MyDrives 6

Operating Analyze MyDrives 7

09/2019

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.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

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.

Siemens AG
Digital Industries
Postfach 48 48
90026 NÜRNBERG
GERMANY

℗ 10/2019 Subject to change

Copyright © Siemens AG 2019.
All rights reserved

Table of contents

1 Introduction 5

1.1 About these instructions 5

1.2 Definitions 5

2 Security instructions 7

2.1 Security instructions 7

3 Description 9

4 Preparing 11

4.1 System requirements 11

4.2 MindSphere user account 11

5 Starting Analyze MyDrives 13

6 User interface Analyze MyDrives 15

6.1 Layout and controls 15

7 Operating Analyze MyDrives 17

7.1 Dashboard 17
7.1.1 Dashboard overview page 17
7.1.2 Filtering a dashboard view 18
7.1.3 Creating and editing aspects 20

7.2 Charts 24
7.2.1 Charts overview page 24
7.2.2 Filtering an asset view 26
7.2.3 Adding an asset on the overview page. 28
7.2.4 Creating and editing charts 30
7.2.4.1 Overview 30
7.2.4.2 Creating chart - line diagram 31
7.2.4.3 Creating chart - point cloud 34
7.2.4.4 Editing charts 38

7.3 Notifications 44
7.3.1 Notifications overview page 44
7.3.2 Creating and editing notifications 45
7.3.2.1 Overview 45
7.3.2.2 Creating notifications for the event type "Chart threshold value". 45
7.3.2.3 Creating notifications for the event type "Aspect variable". 48
7.3.2.4 Creating notifications for the event type "Connection status". 51
7.3.2.5 Creating notifications for the event type "Onboarding status". 53
7.3.2.6 Editing notifications 56

Introduction 1

1.1 About these instructions

These instructions describe the operation of the MindApp "Analyze MyDrives".

Keep these instructions in a safe place for subsequent use. Read these instructions before you use the MindApp "Analyze MyDrives", and follow the instructions and notes carefully.

Text format features

You can find the following text format features in these instructions:

1. Handling instructions are shown as a numbered list. Always perform the steps in the specified sequence.

- Enumerations are formatted as bulleted lists.
  - Enumerations at the second level are hyphenated.

Note

The notice provides you with additional information about the product itself, handling the product or the relevant documentation.

1.2 Definitions

Tenant

A tenant is the digital representation of a real company in MindSphere. A tenant includes the users, data, assets, and other properties.

A tenant groups users and offers them access to MindSphere. All users in a tenant have a common view of the stored data. Users only see the data of the assigned tenants by default.

Asset

An asset is the digital representation of a unit in the industrial process. In this case, an asset can be a motor or a converter. An asset is based on an asset type.

Aspects

Aspects or variable sets are a group of the same data points/variables and describe the context of the imported data, e.g. wear.

Data points or variables

For "Analyze MyDrives", data points or variables are all drive, NC and PLC values that can be sensed, e.g. voltage L1.

Security instructions 2

2.1 Security instructions

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. Products and solutions from Siemens 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 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 can 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 become available, and that only the latest product versions are used. Use of (older) product versions that are no longer supported, and failure to apply latest updates, may increase the 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/industrialsecurity

Description

3

MindSphere is a cloud-based, open IoT operating system from Siemens that connects your machines and physical infrastructure with the digital world. This allows you a complete overview of your data at all times. Several MindSphere-based applications, so-called "MindApps", are available to you.

What is Analyze MyDrives?

With the MindApp "Analyze MyDrives", you can monitor the drive components of your machines. The application collects all operating data and evaluates them. With "Analyze MyDrives", you can evaluate and visualize all parameters and define threshold values and a working range. In this way, you can find out the actual maintenance requirement based on continuous monitoring of the current consumption, torque, and frequency. You are informed about critical operating states of the drive train of the machine. Maintenance of machines in previously fixed intervals is no longer required. This increases the machine capacity utilization and productivity during maintenance intervals and downtimes are reduced. The analysis of the operating data also enables preventive maintenance and reduces unplanned costs.

Preparing

4

4.1 System requirements

Web browser

To use the MindApp "Analyze MyDrives", install the latest version of a web browser. We recommend Google Chrome or Mozilla Firefox.

4.2 MindSphere user account

To work with the MindApp "Analyze MyDrives", you need a MindSphere user account.

Contact your tenant administrator to obtain the logon data. Your tenant administrator is responsible for activating the MindSphere user accounts and issuing authorizations (user, administrator).

Starting Analyze MyDrives

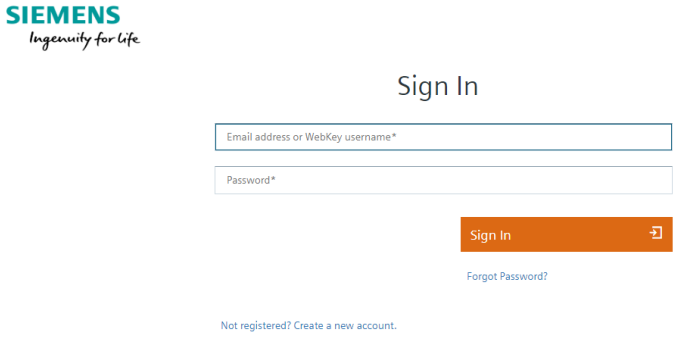
5

Requirements

- You require a MindSphere user account.
- The terminals used are secured accordingly, for example, with virus protection programs, firewalls, OS updates, etc.

Procedure

1. Click the link https://<your-account-name>.mindsphere.io.
2. Enter your e-mail address or your WebKey user name and your password. Click the "Sign In" button.



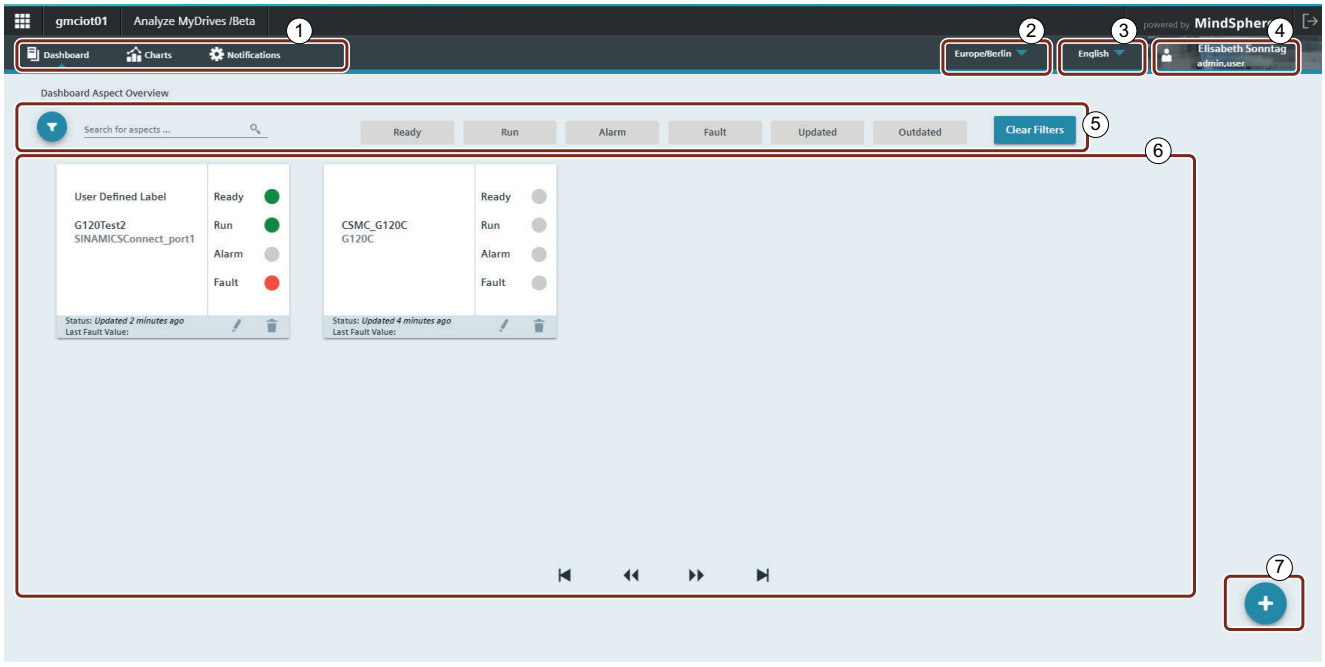
3. The MindSphereLaunchpad opens. You can access the individual applications via this user interface.
4. Click the button for the MindApp "Analyze MyDrives".

The application opens and the initial "Dashboard" page appears.

User interface Analyze MyDrives

6

6.1 Layout and controls



① The MindApp "Analyze MyDrives" is divided into the following operating areas:

- Dashboard
  On this page, you can create, delete, and edit aspects. A filter function for displaying the aspects is also available.
- Charts
  On this page, you can create and delete assets and charts. A filter function for displaying the assets is also available.
- Notifications
  On this page, you define the e-mail settings for notification, including when defined limit values are exceeded or a certain event occurs.

② Change time zone (local time at the user's location or UTC)

③ Changing the language

④ Profile: Name of the user and role (user, administrator)

⑤ Filter function: This is available for the operating areas Dashboard, and Charts

⑥ Display area for aspects in the Dashboard operating area and for assets in the Assets (Charts) operating area

⑦ Button for creating aspects or assets

See also

Editing notifications (Page 56)

Creating chart - line diagram (Page 31)

Dashboard (Page 17)
Charts (Page 24)

Operating Analyze MyDrives

7

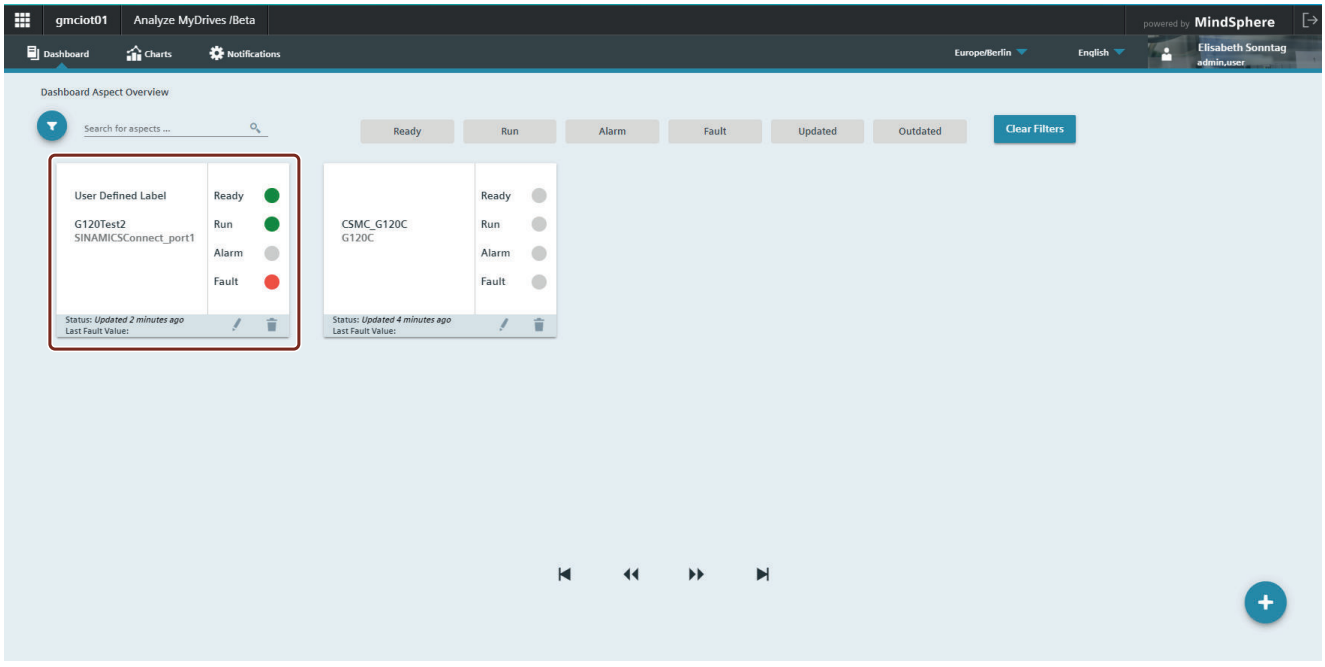
7.1 Dashboard

7.1.1 Dashboard overview page

On this page, aspects are shown with the following information:

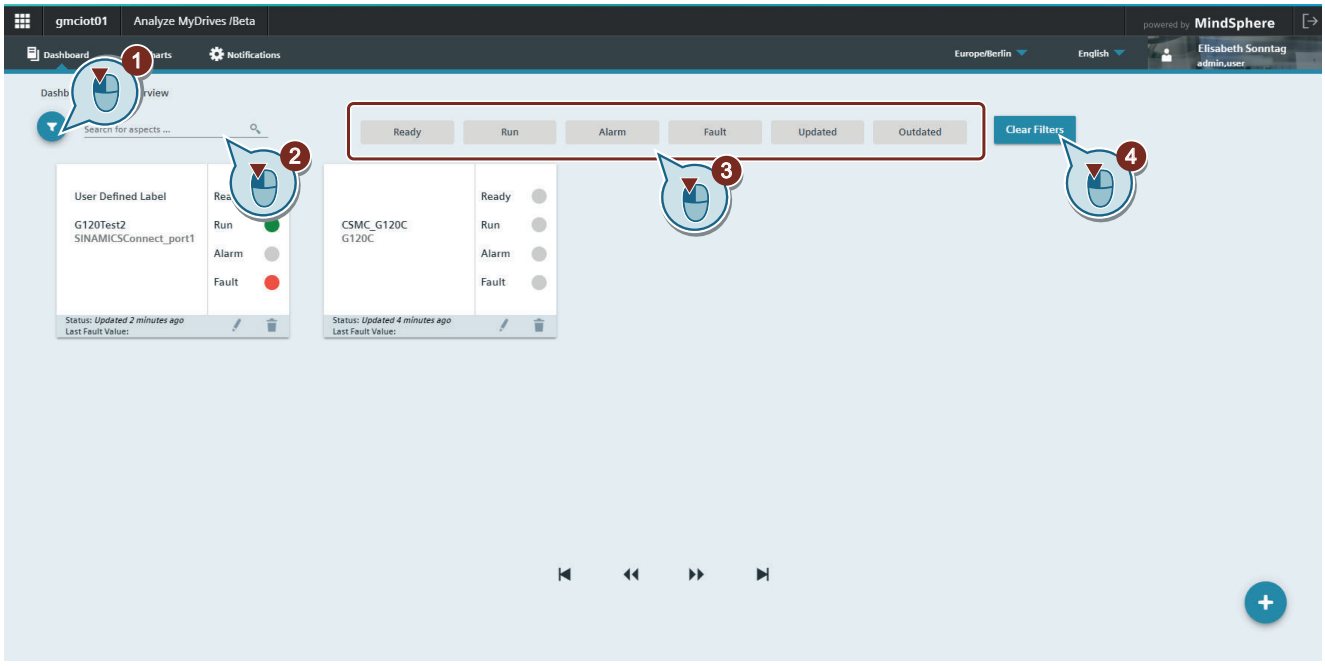
- Label of the dashboard item
- Aspect name
- Location
- Time when last updated
  Note: If the last update was more than one hour ago, the ! icon is shown.
- Number of the last fault
- Asset status:
  Ready = green, otherwise gray
  Run = green, otherwise gray
  Alarm = yellow, no alarm = gray
  Fault = red, no fault = gray

Moreover, you can edit or delete the aspects, and create new aspects.

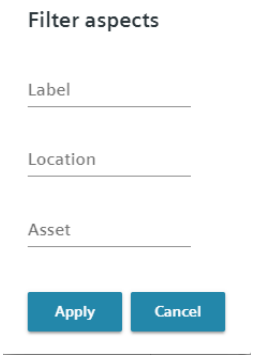


7.1.2 Filtering a dashboard view

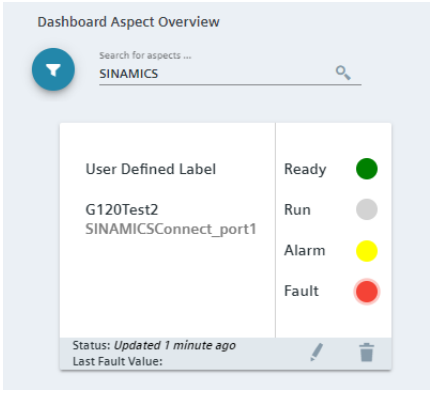
In the dashboard view, you can filter aspects in different ways.



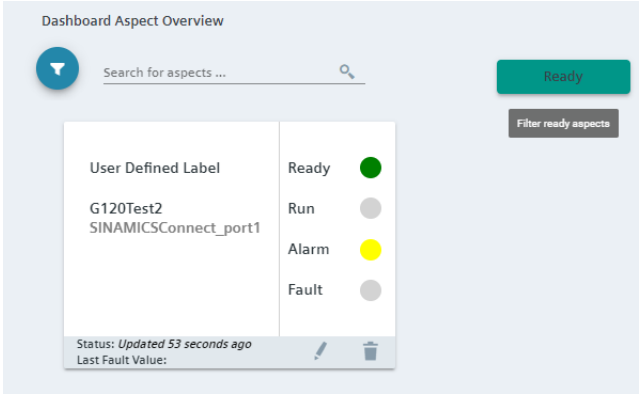
1. Click the Filter icon. The following dialog box opens. In this dialog box, you can filter aspects according to the "Label" of the dashboard item, "Location", and "Asset". Confirm your entry with "Apply".



2. In the "Search for aspects ..." field, you can enter a search term directly. Filtering starts on entry.



3. You can filter according to status. To do this, click the required status, e.g. "Ready". Filtering starts on selection.

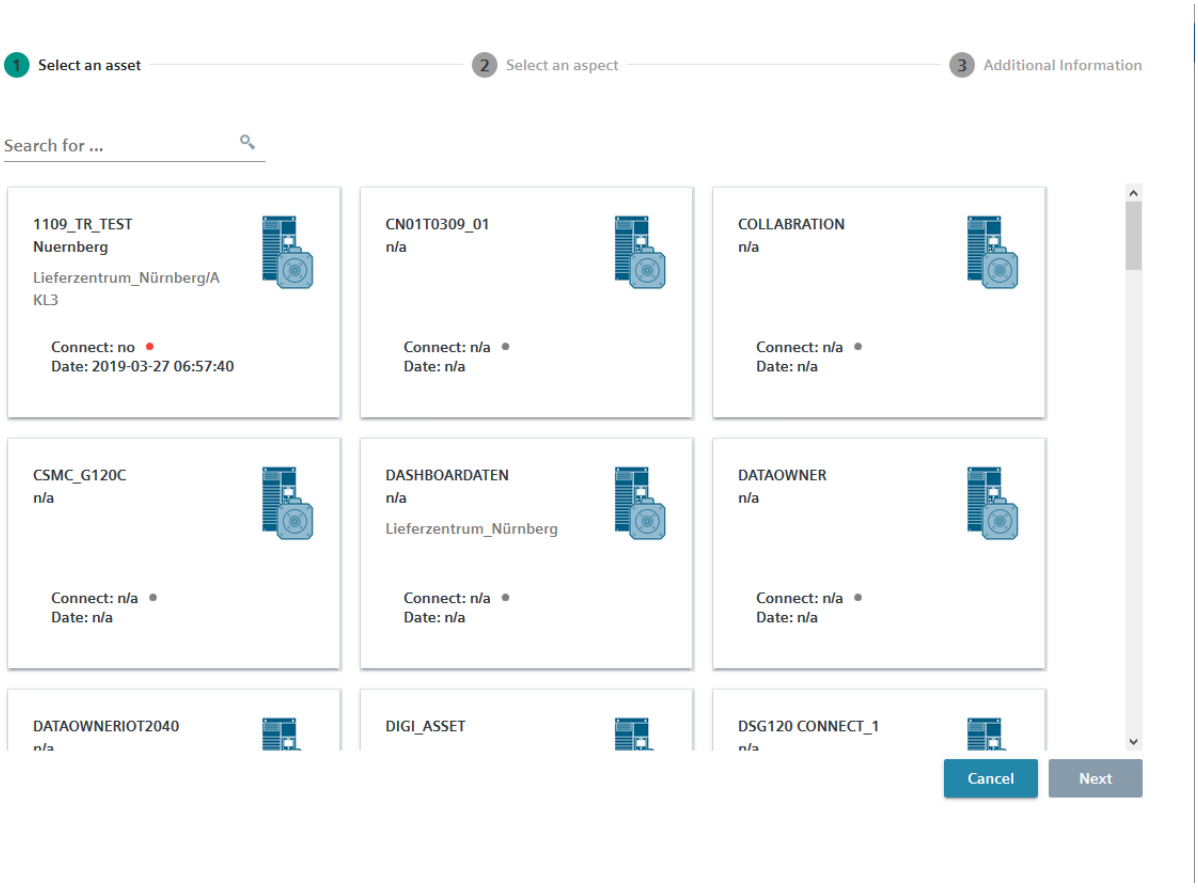


4. If you click the "Clear Filters" button, the filter criteria are reset.

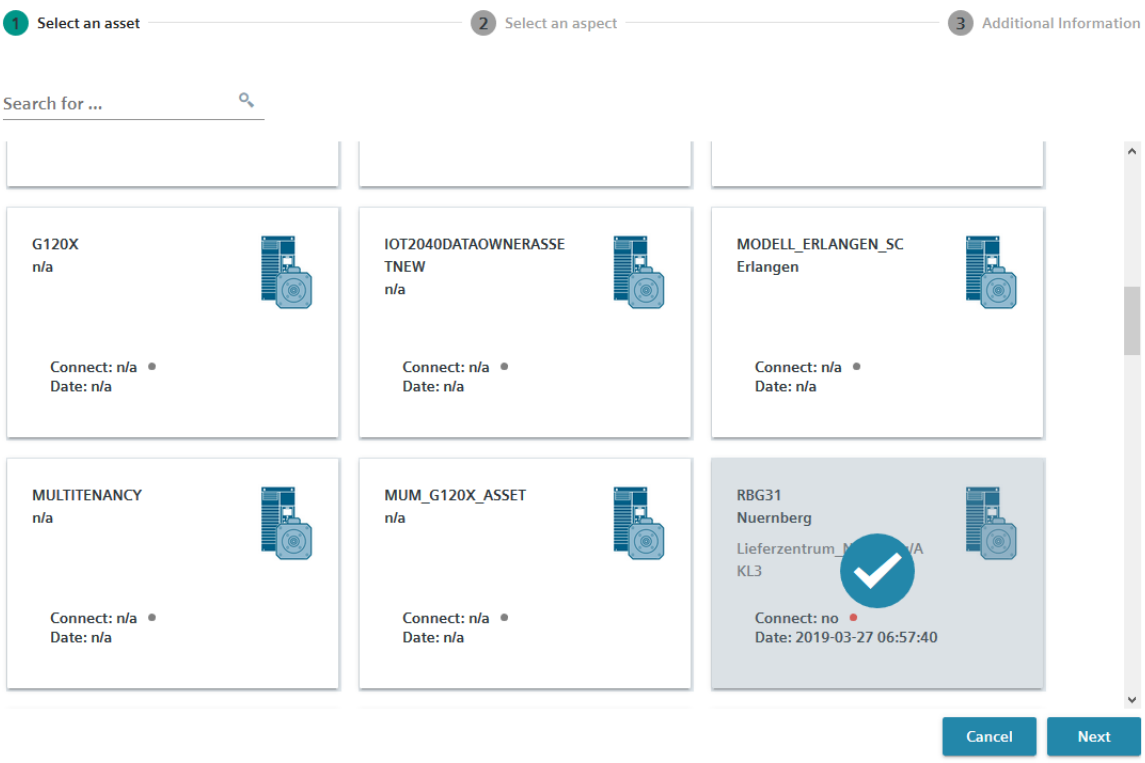
7.1.3 Creating and editing aspects

To create a new dashboard item on the Dashboard overview page, proceed as described below:

1. On the Dashboard overview page, click the button. The following dialog box opens.



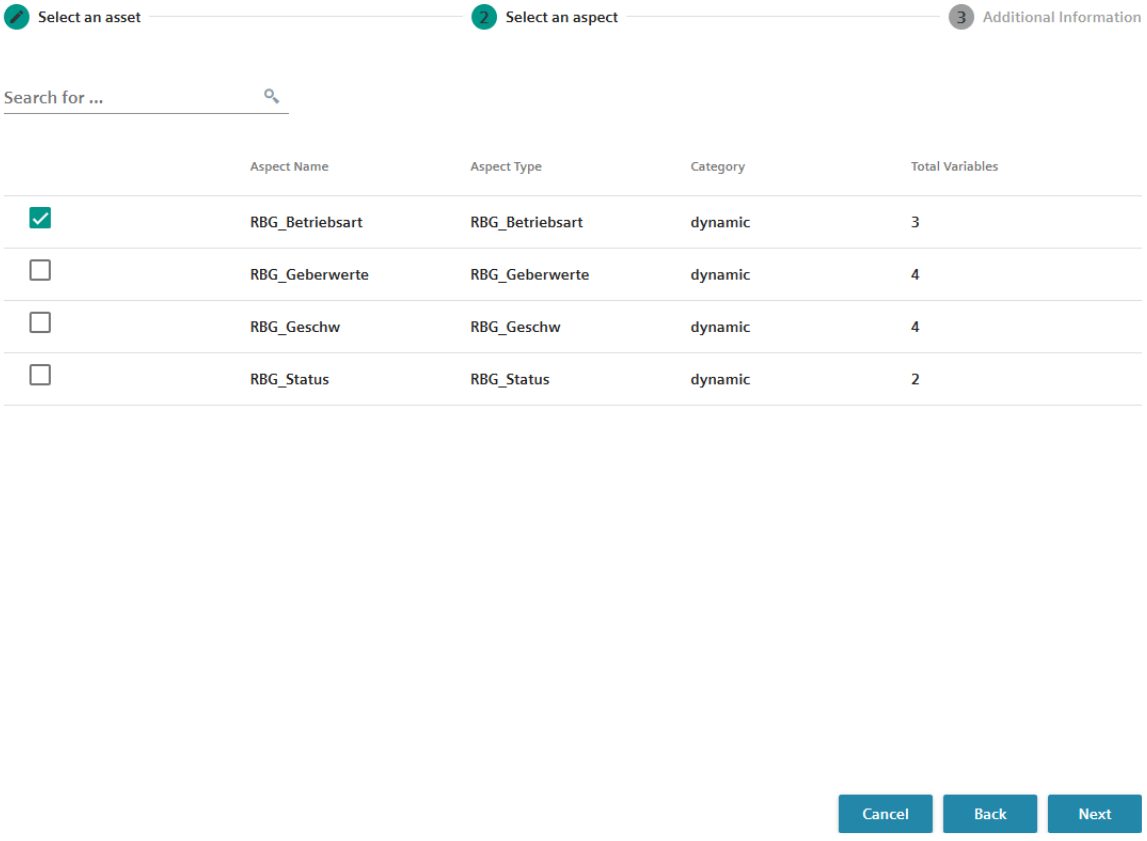
2. Select an asset. Confirm your selection with "Next".


1 Select an asset
2 Select an aspect
3 Additional Information
Search for ...
G120X
n/a
Connect: n/a
Date: n/a
IOT2040DATAOWNERASSE
TNEW
n/a
Connect: n/a
Date: n/a
MODELL_ERLANGEN_SC
Erlangen
Connect: n/a
Date: n/a
MULTITENANCY
n/a
Connect: n/a
Date: n/a
MUM_G120X_ASSET
n/a
Connect: n/a
Date: n/a
RBG31
Nuernberg
KL3
Connect: no
Date: 2019-03-27 06:57:40
Cancel
Next

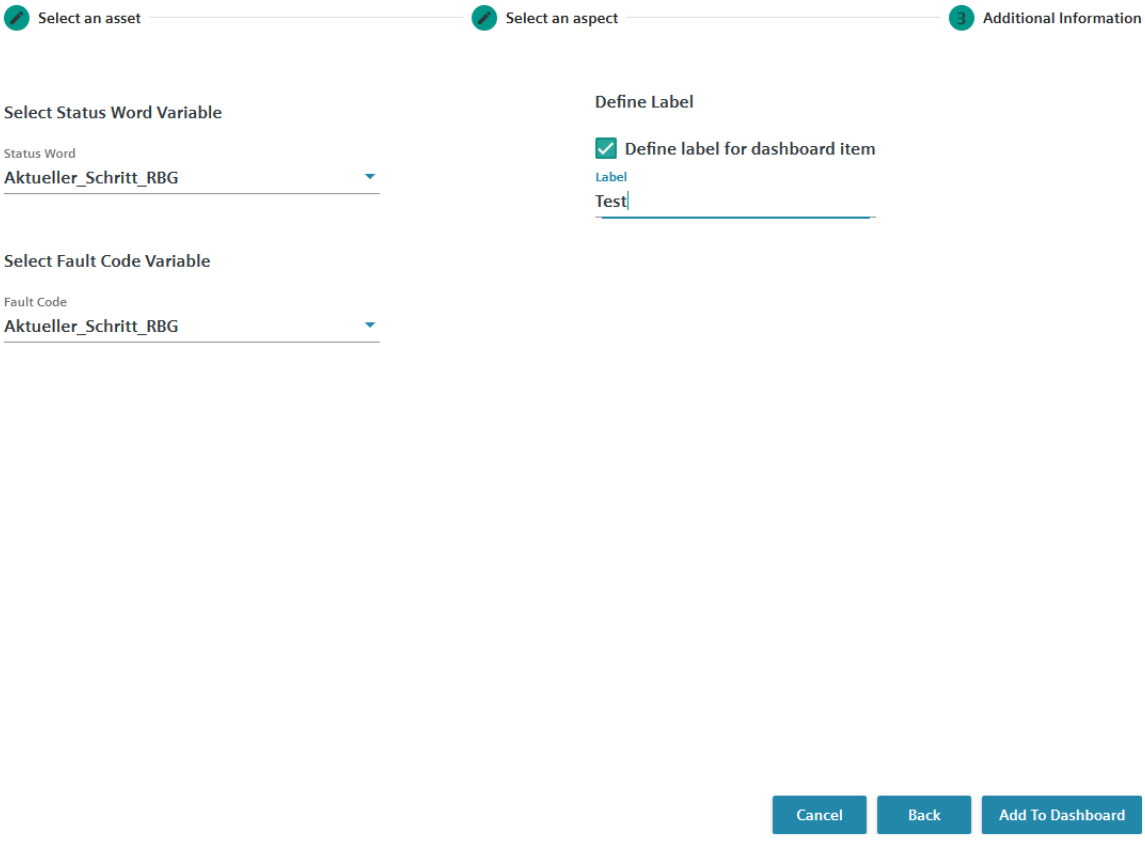
3. Select an aspect from the list. Confirm your selection with "Next".

Note

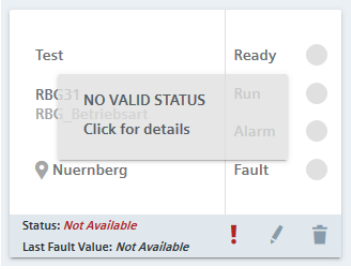
1. You can only create one instance of an aspect in the dashboard.
2. The subsequent "Additional information" dialog is optional. If you neither select the status word variable nor a fault code, then you can use the details view to display aspect details. However, the status word variable and the fault code for the aspect are not taken into account on the dashboard overview page.



4. In the dialog box that then opens, you can select a status word variable and a fault code variable, and, if necessary, define a label for a dashboard item. To display the label, you must select the "Define label for dasboard item" checkbox.

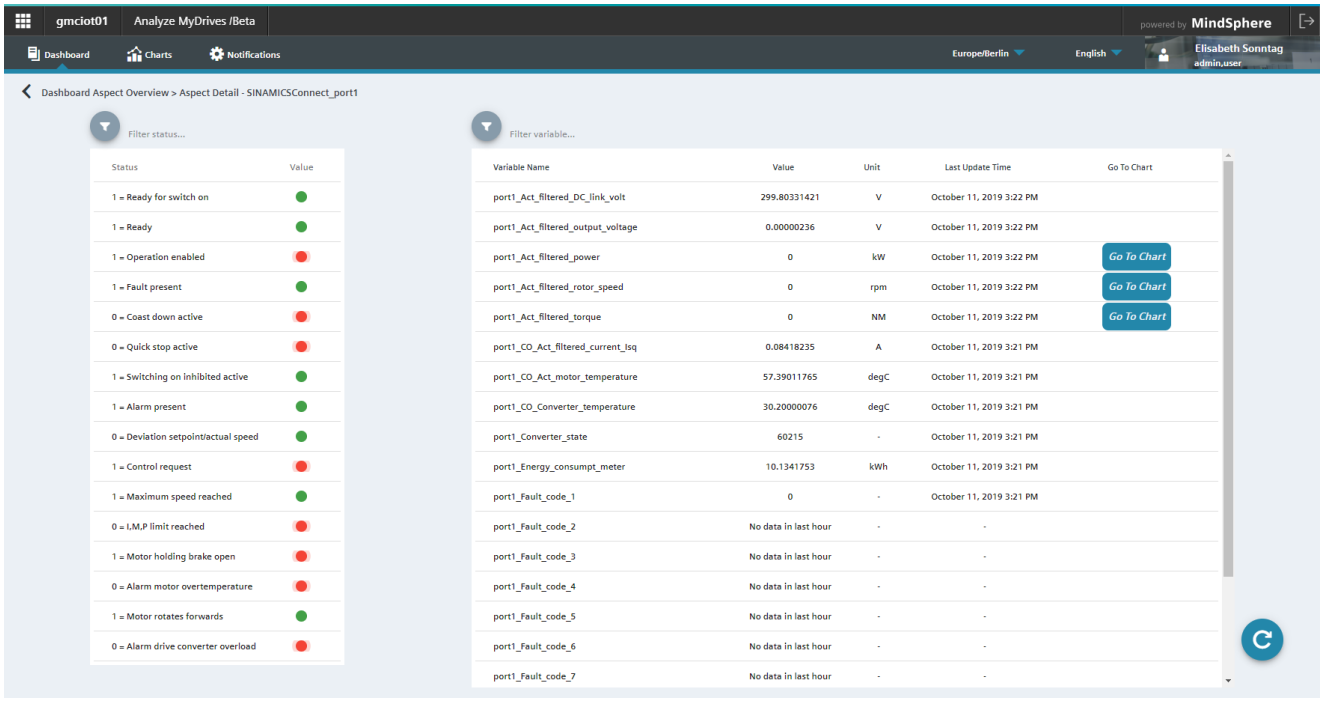


5. Confirm your entries by clicking "Add To Dashboard". The dashboard item is displayed on the dashboard overview page.



Detailed view

When you click the dashboard item, the detailed view opens. In the detailed view, the "Status" of the device is displayed together with its "Value". In addition, the assets/variables are listed together with their "Value", "Unit", and "Last Update Time". If a chart has been configured for an Aspect Variable, then you can open the associated chart using "Go to chart".



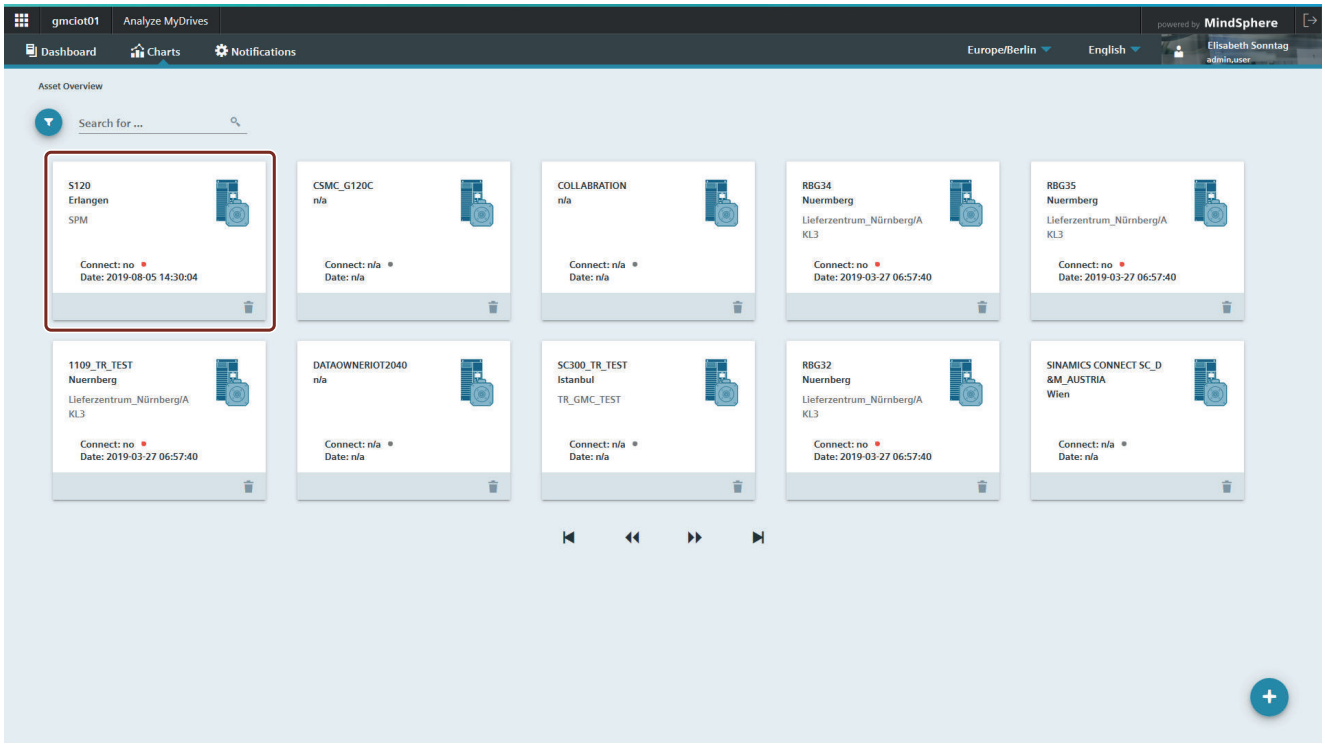
7.2 Charts

7.2.1 Charts overview page

On this page, assets are shown with the following information:

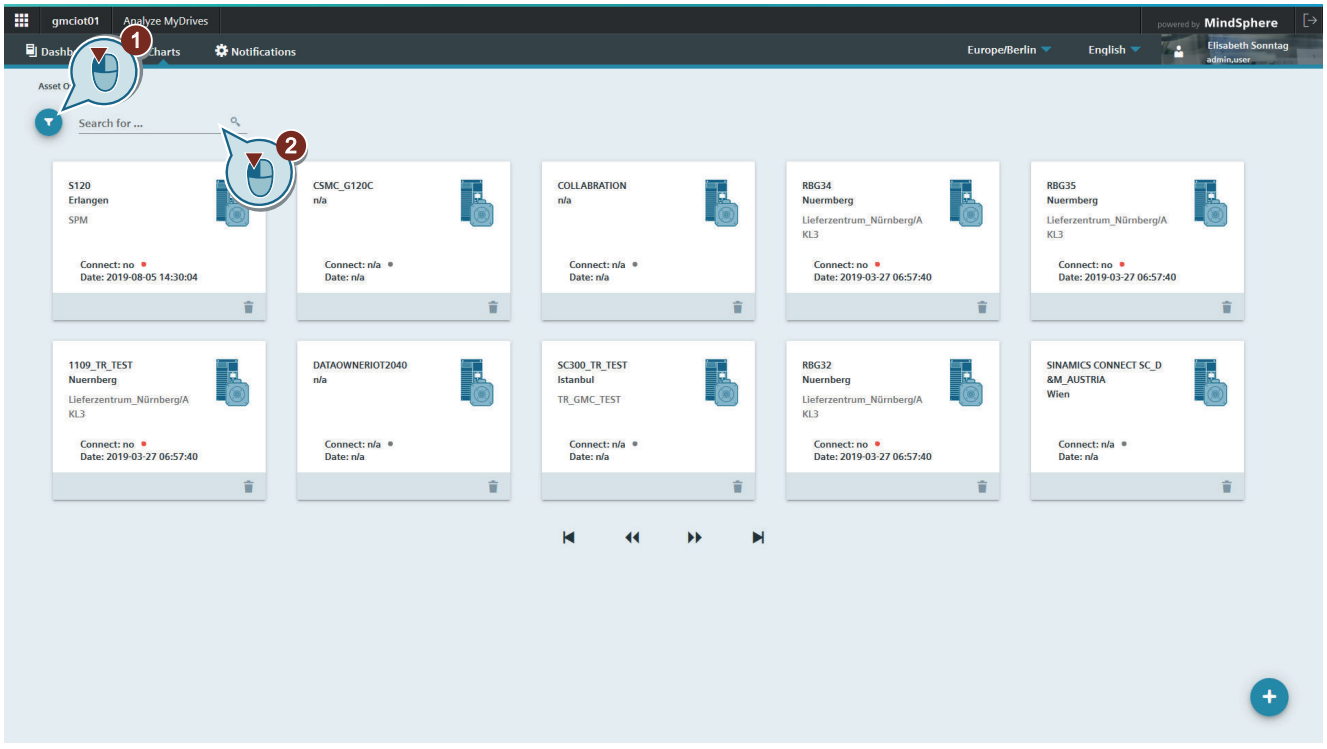
- Asset name
- Location
- Asset Type
- Connectivity (yes, no, outdated)
- Online since (date/time)

Moreover, you can delete the aspects and create new aspects .

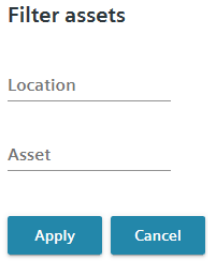

gmciot01
Analyze MyDrives
powered by MindSphere
Dashboard
Charts
Notifications
Europe/Berlin
English
Ellsabeth Sonntag
admin.user
Asset Overview
Search for ...
S120
Erlangen
SPM
Connect: no
Date: 2019-08-05 14:30:04
CSMC_G120C
n/a
Connect: n/a
Date: n/a
COLLABRATION
n/a
Connect: n/a
Date: n/a
RBG34
Nuermberg
Lieferzentrum_Nürnberg/A
KL3
Connect: no
Date: 2019-03-27 06:57:40
RBG35
Nuermberg
Lieferzentrum_Nürnberg/A
KL3
Connect: no
Date: 2019-03-27 06:57:40
1109_TR_TEST
Nuernberg
Lieferzentrum_Nürnberg/A
KL3
Connect: no
Date: 2019-03-27 06:57:40
DATAOWNERIOT2040
n/a
Connect: n/a
Date: n/a
SC300_TR_TEST
Istanbul
TR_GMC_TEST
Connect: n/a
Date: n/a
RBG32
Nuernberg
Lieferzentrum_Nürnberg/A
KL3
Connect: no
Date: 2019-03-27 06:57:40
SINAMICS CONNECT SC_D
&M_AUSTRIA
Wien
Connect: n/a
Date: n/a

7.2.2 Filtering an asset view

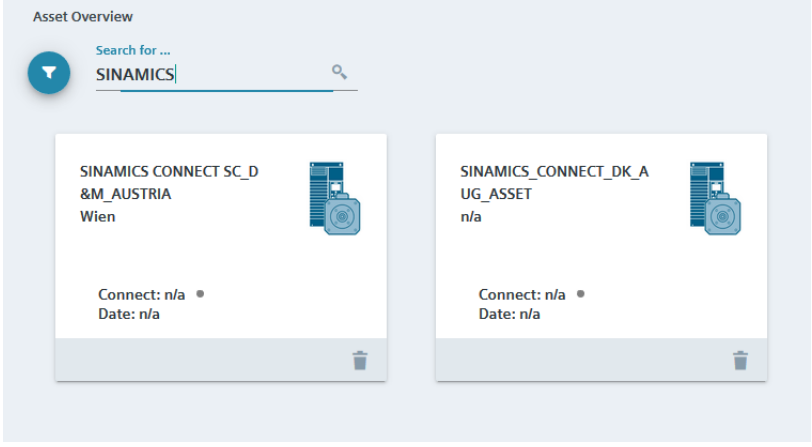
In the charts view, you can filter aspects in different ways.



1. Click the Filter icon. The following dialog box opens. In this dialog box, you can filter according to "Location" and "Asset". Confirm your entry with "Apply".



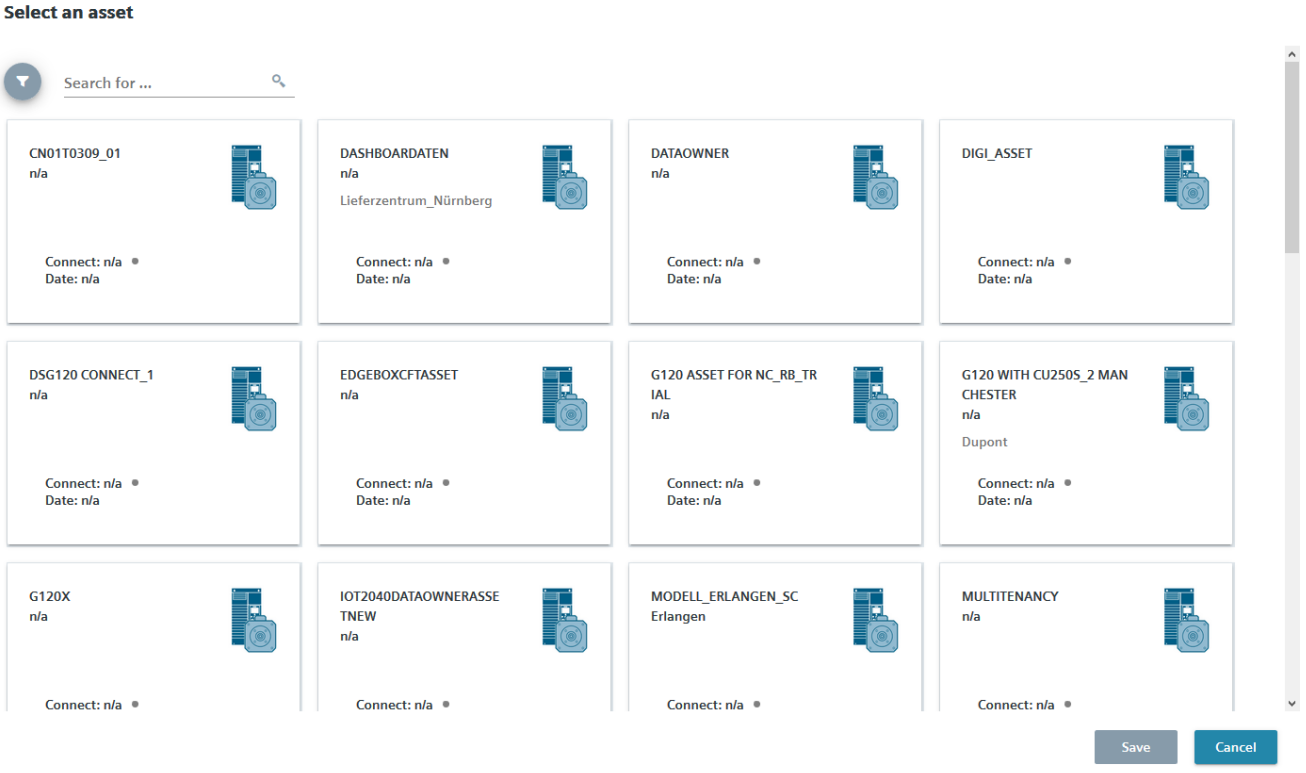
2. In the "Search for ..." field, you can enter a search term directly. Filtering starts on entry.



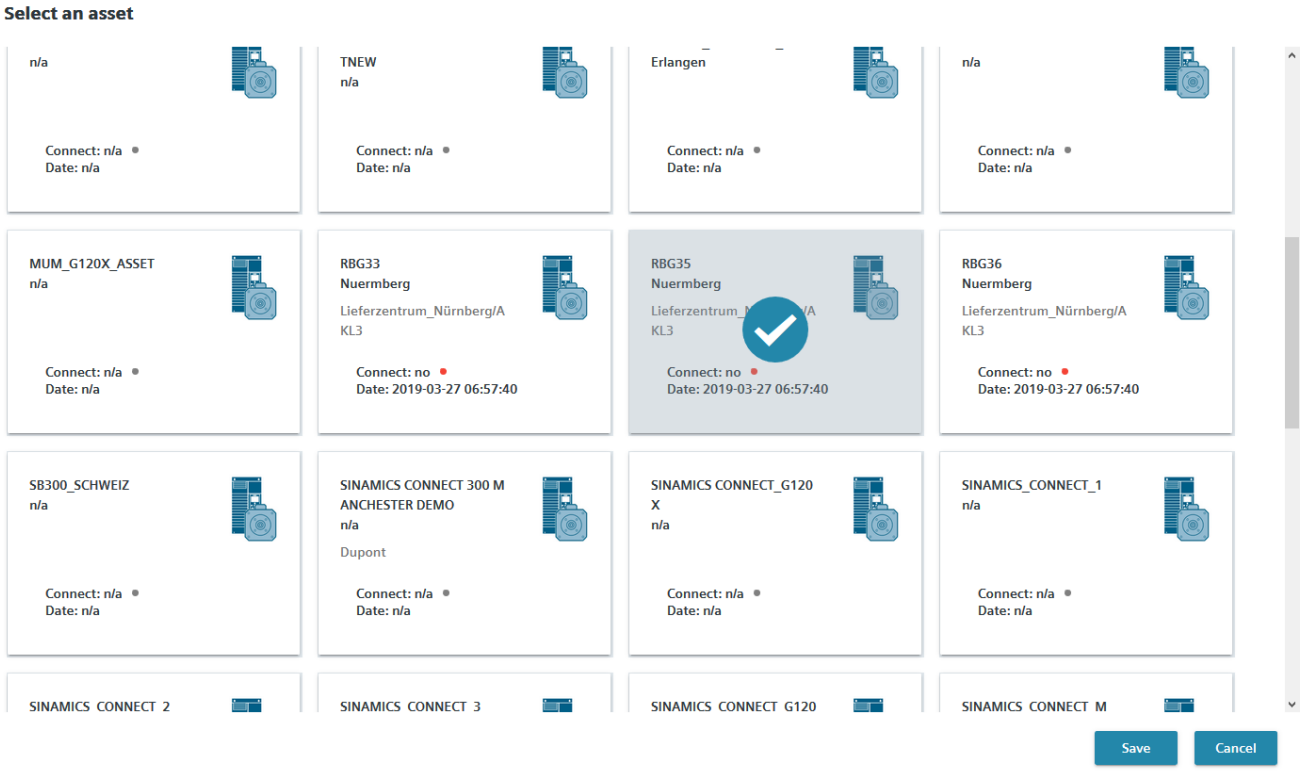
7.2.3 Adding an asset on the overview page.

To add an asset on the charts overview page, proceed as described below:

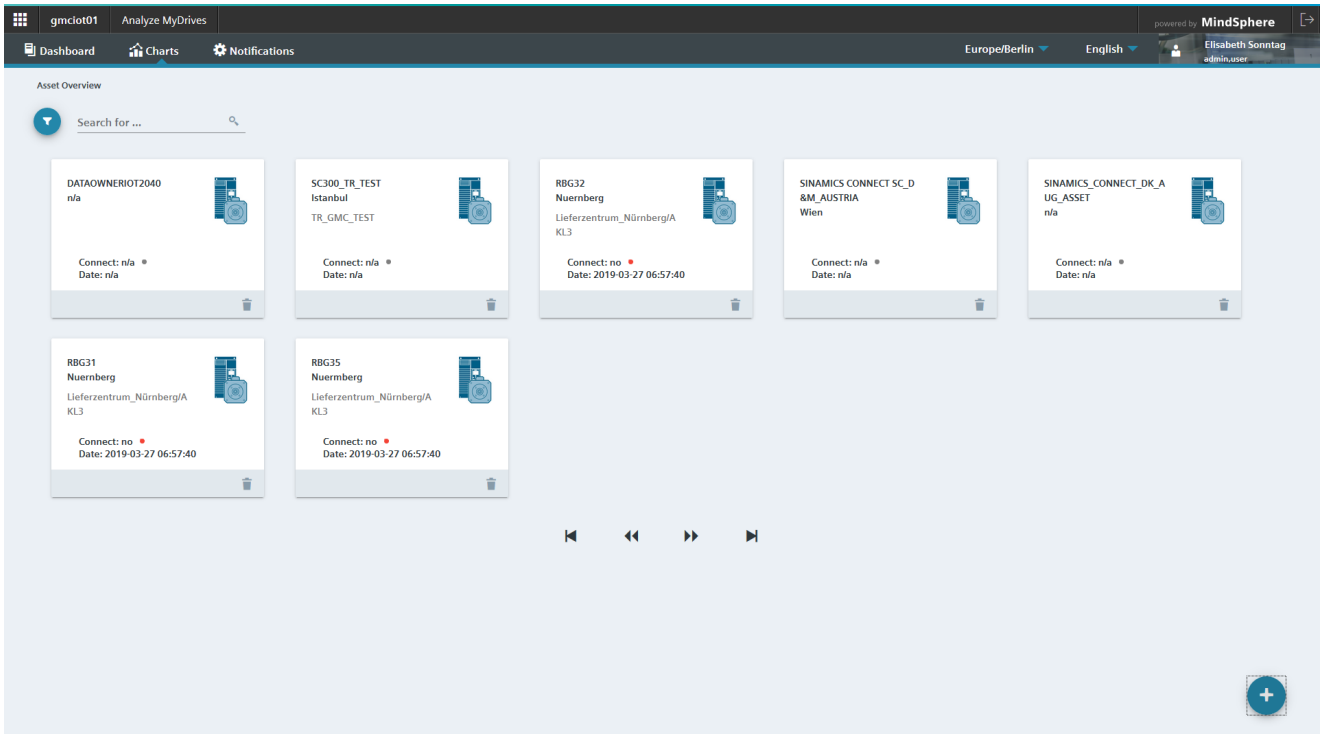
1. On the charts overview page, click the button. The following dialog box opens.



2. Select one asset or multiple assets. Confirm with "Save".



3. The asset is displayed on the chart overview page. To create a chart for the asset, proceed as described in Section Creating charts (Page 31).

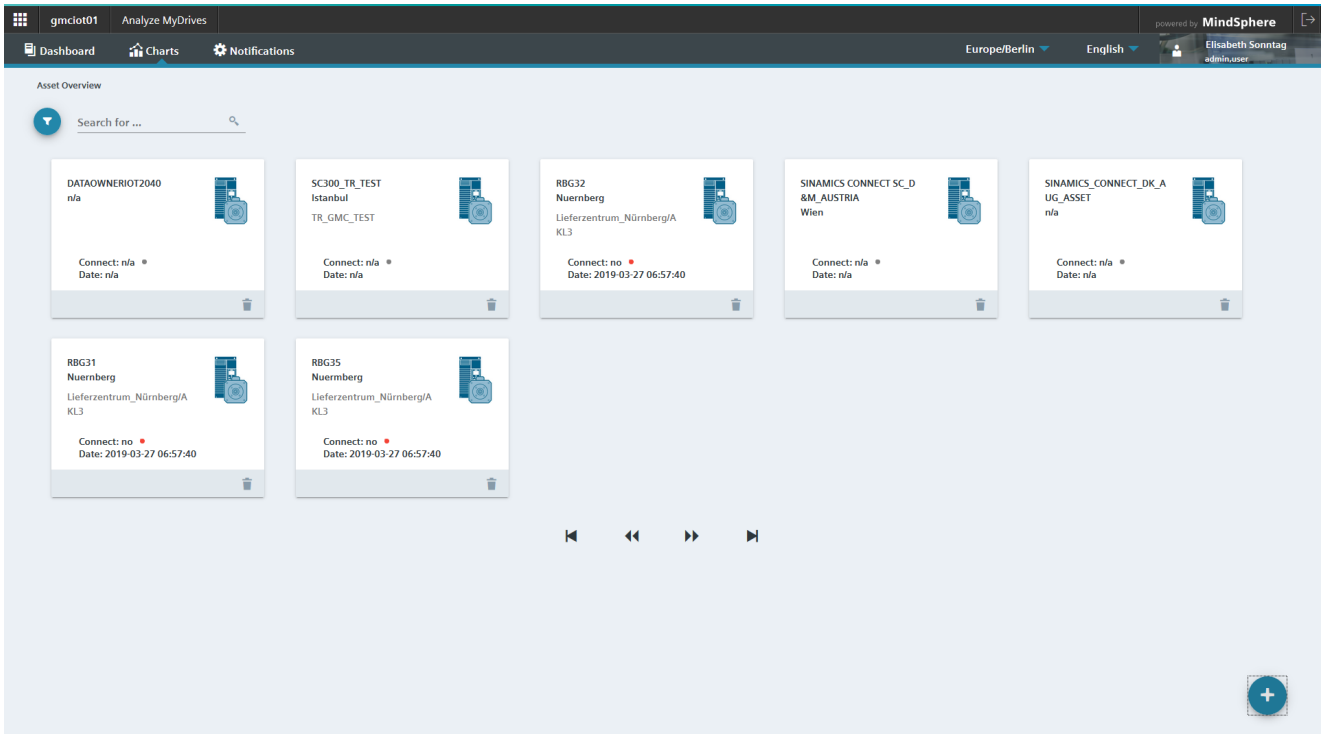


7.2.4 Creating and editing charts

7.2.4.1 Overview

On the "Charts" page, you can create charts for the assets created on the (Page 28)overview page. You can select one of the following chart types:

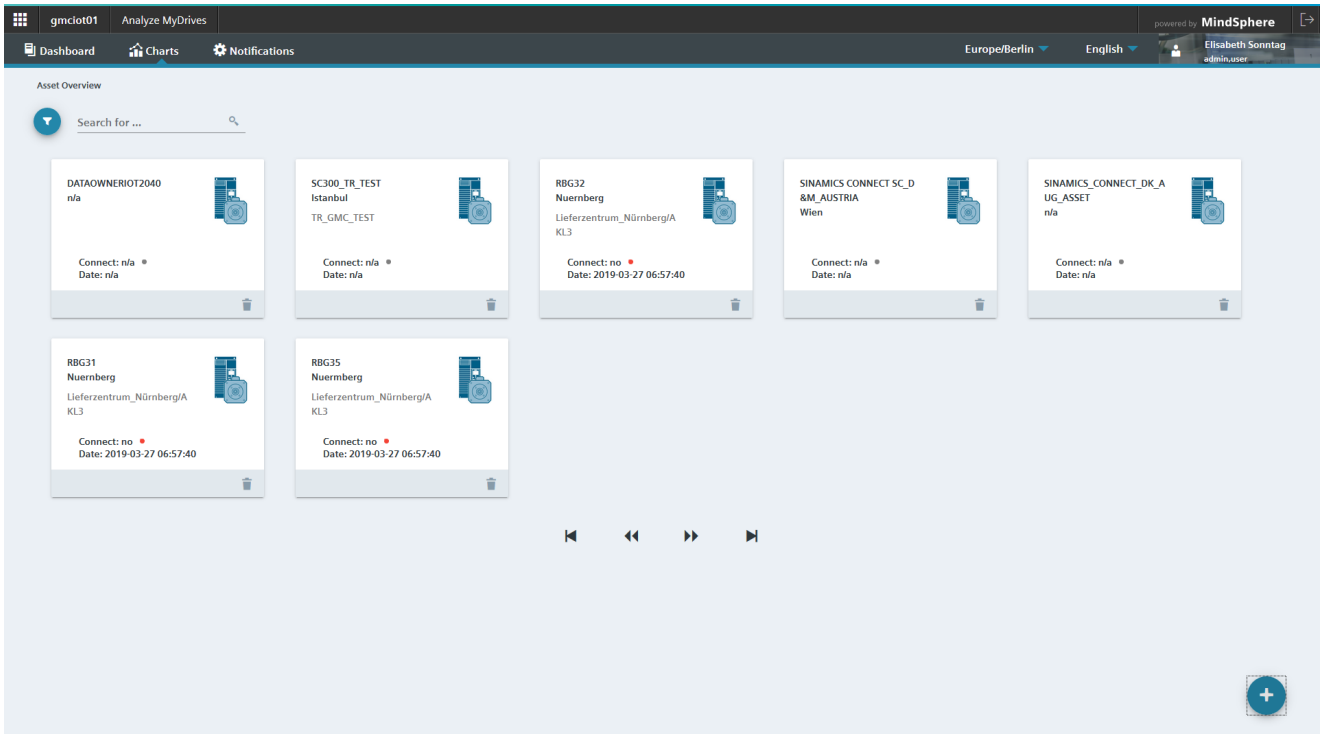
- Line diagram (Page 31)
- Point cloud (Page 34)



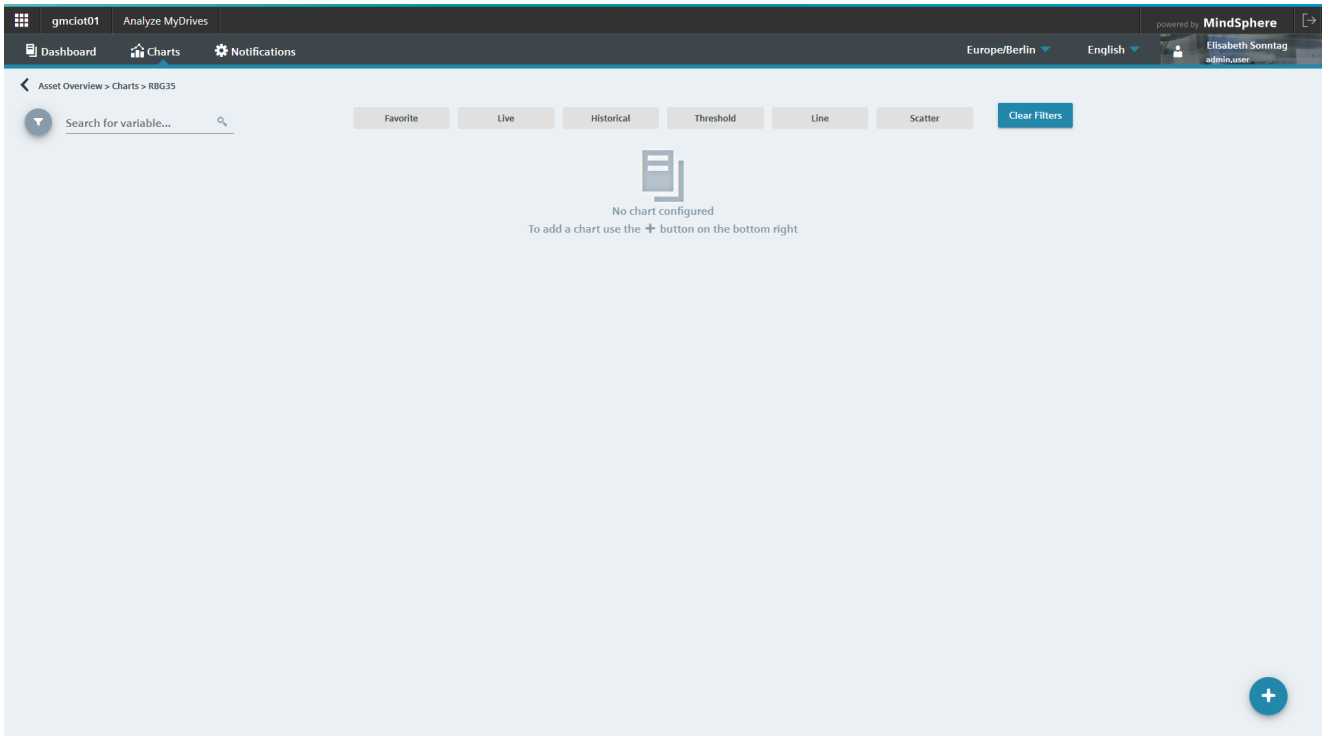
7.2.4.2 Creating chart - line diagram

To create a chart of the "Line diagram" type, proceed as described below:

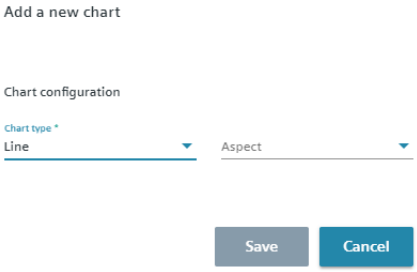
1. On the chart overview page, click the asset for which you want to create a chart.



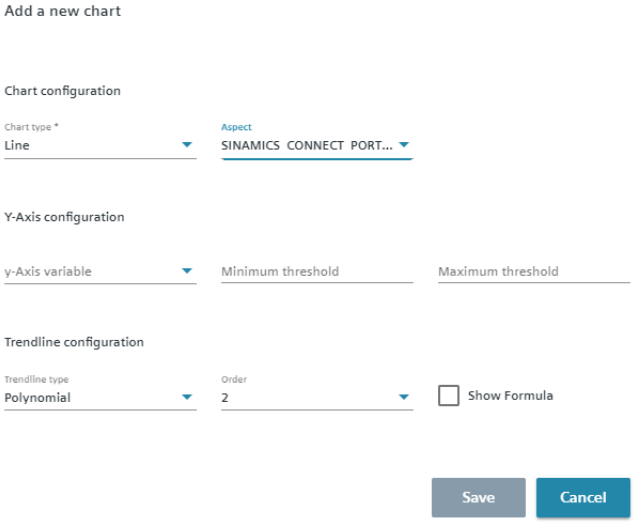
2. In the dialog box that then opens, click the button.



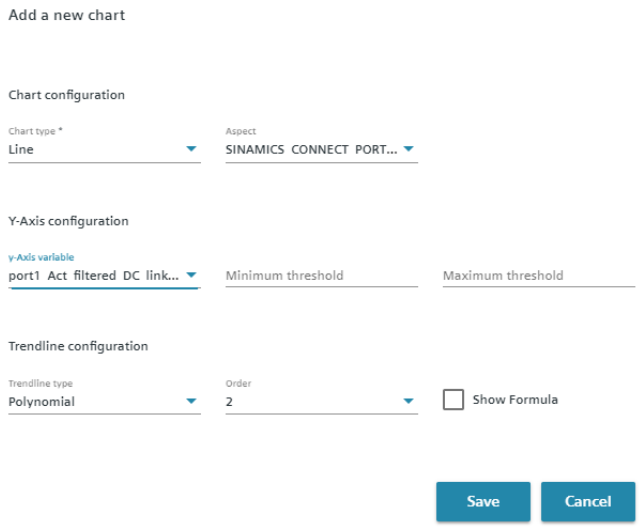
3. Select the chart type "Line diagram". With the line diagram, you configure the Y axis, the X axis is the time axis.



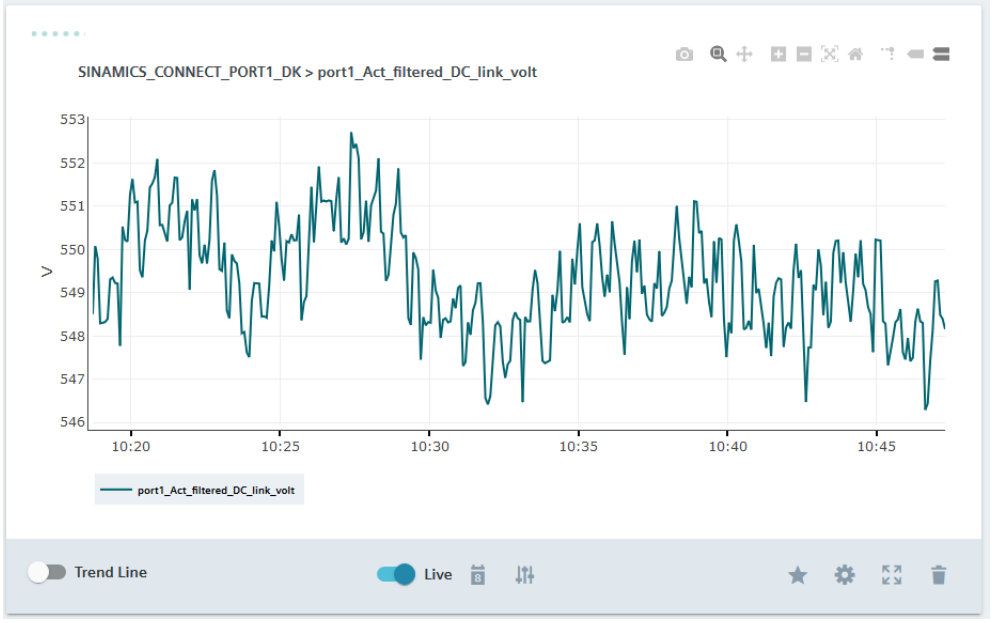
4. Select an aspect. After making your selection, the following dialog is displayed.



5. Select the "Y axis variable". Determine the "minimum limit" and/or "maximum limit" as required. Further, you determine the "Trend line type" in this dialog and activate "Display formula" as required. When you select "Show Formula", the trendline formula is displayed on the chart as a legend.



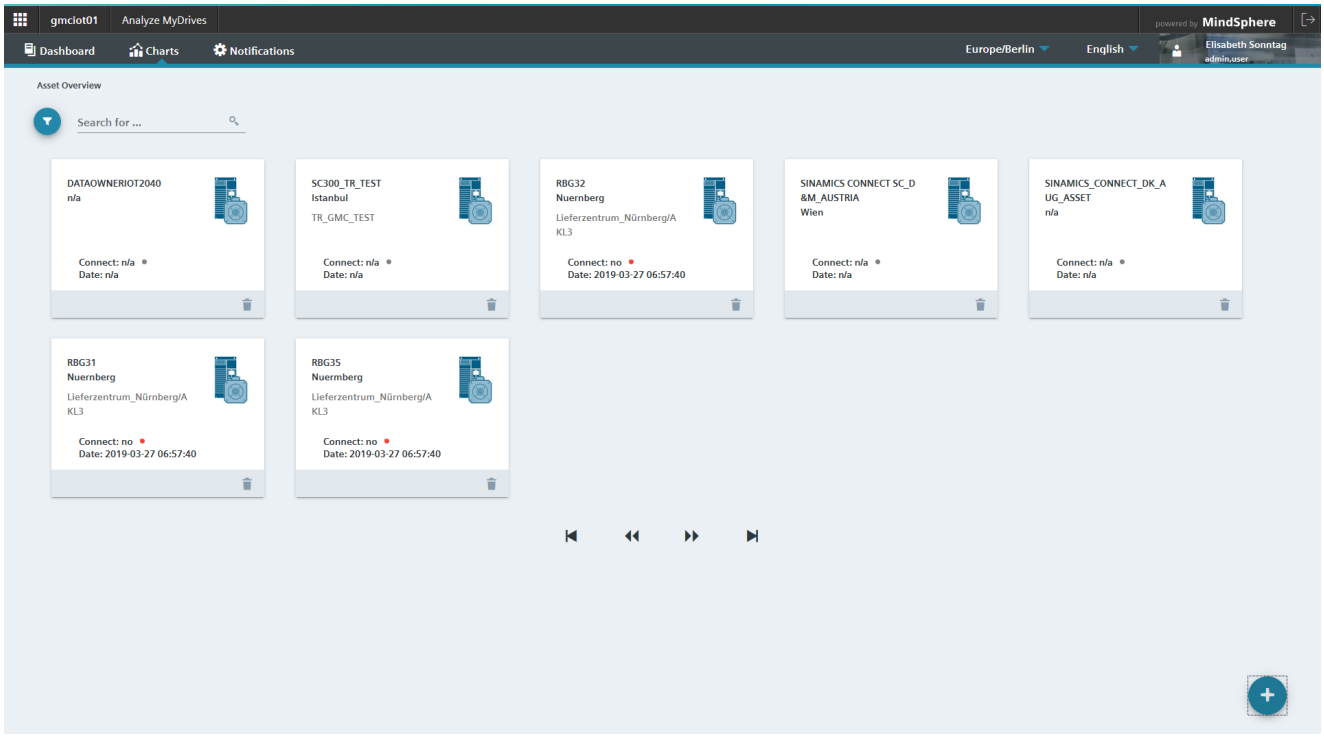
6. Confirm your entries with "Save".
7. The chart is displayed. You can adapt the display options and change the chart settings (Page 38).



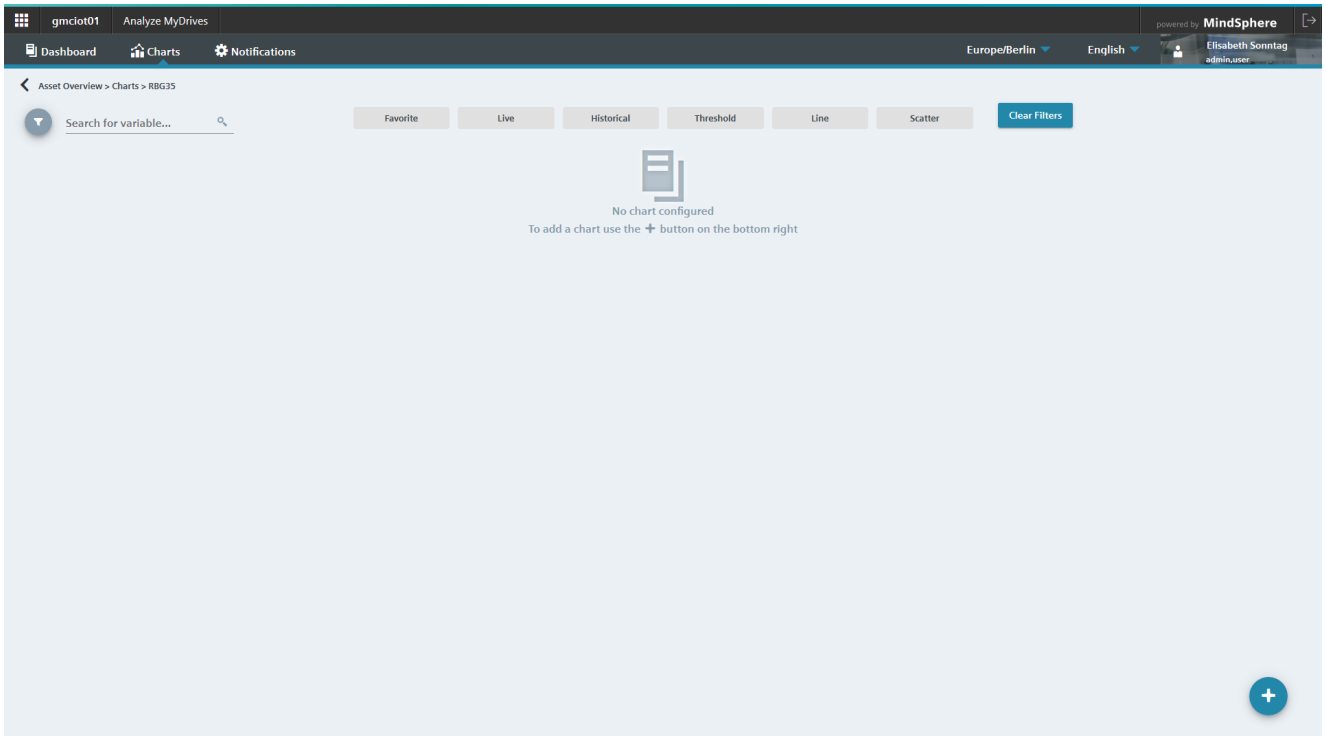
7.2.4.3 Creating chart - point cloud

To create a chart of the "Point cloud" type, proceed as described below:

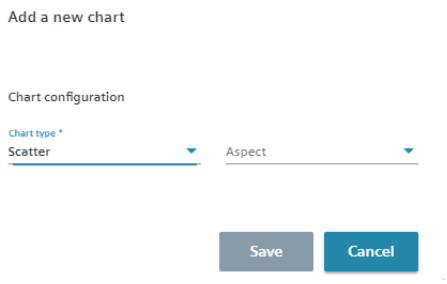
1. On the chart overview page, click the asset for which you want to create a chart.



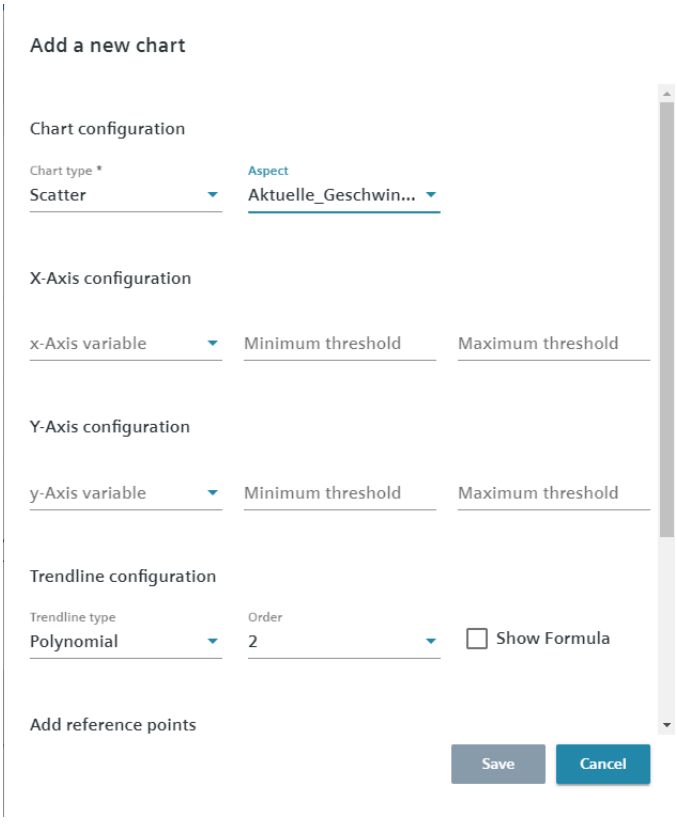
2. In the dialog box that then opens, click the + button.



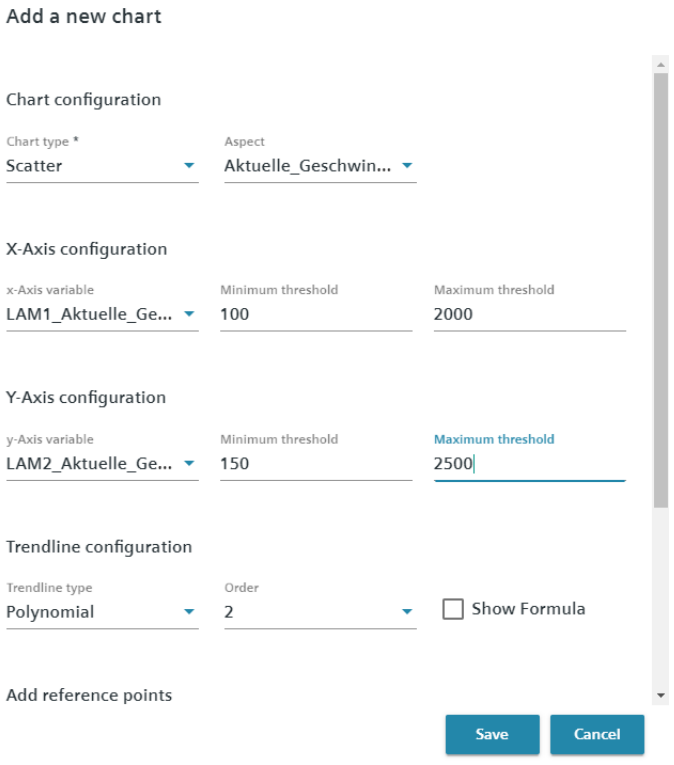
3. Select the chart type "Point cloud". With this chart type, you configure the X and Y axis.



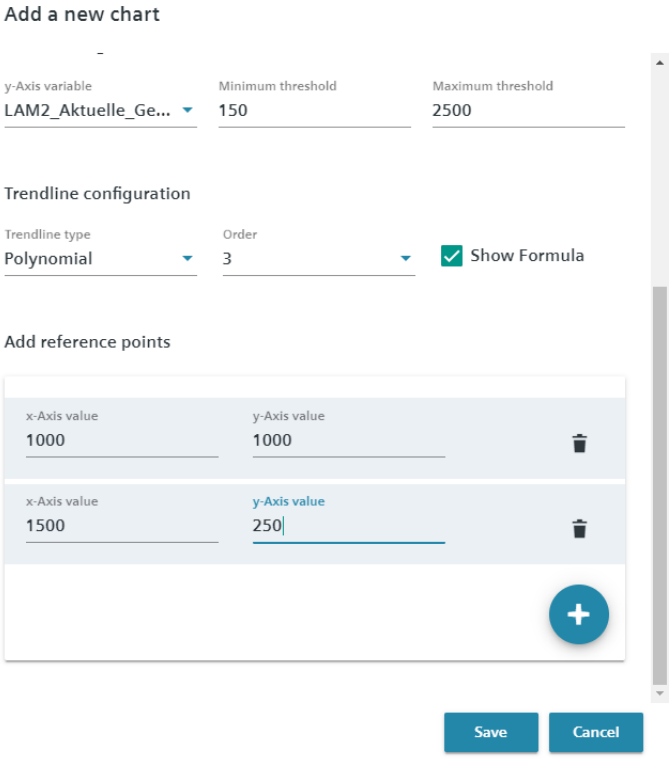
4. Select an aspect. After making your selection, the following dialog is displayed.



5. Assign variables to the X and Y axis. Determine the "minimum limit" and/or "maximum limit" for the respective variable, as required. Configure the trend line and activate "Display formula" as required. When you select "Show Formula", the trendline formula is displayed on the chart as a legend.



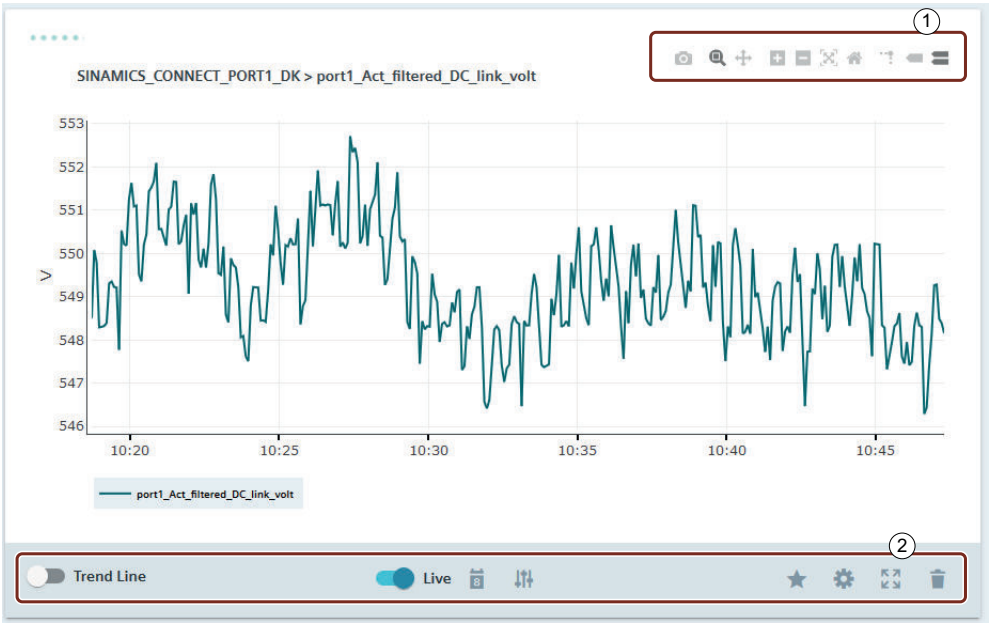
6. You can define reference points as necessary. Click . Enter the X and Y value. Repeat this procedure to create further reference points.



7. Confirm your entries with "Save".
8. The chart is displayed. You can adapt the display options and change the chart settings .

7.2.4.4 Editing charts

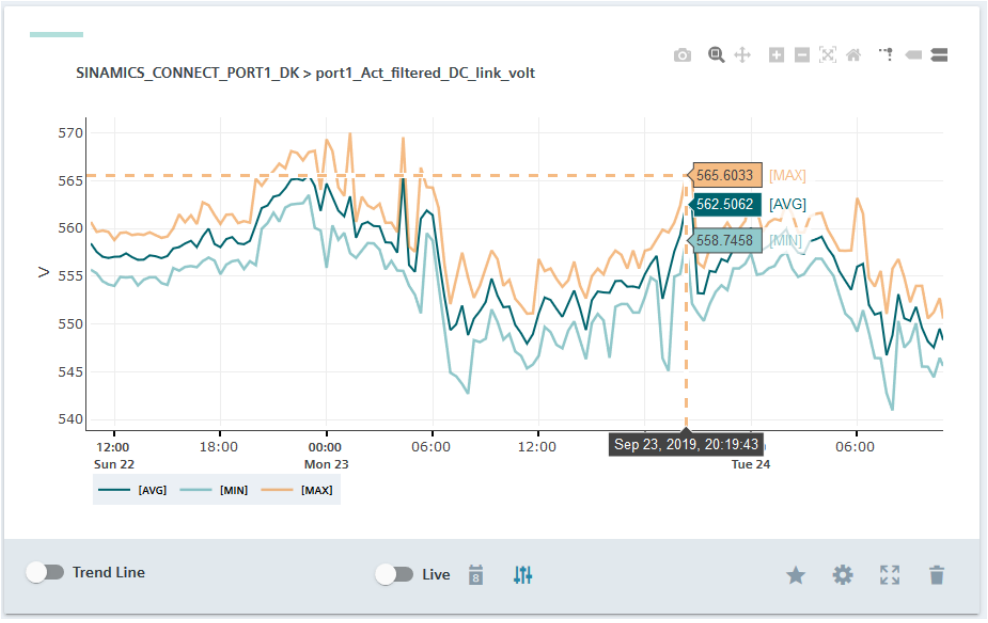
You can adapt the display of the charts using the display options and the chart settings. The functions are described below:



Display options ①

	Saves the record as a png file in the "Downloads" folder on your PC.
	In this mode, you can mark a range in the chart using the mouse. The selected range is enlarged.
	In this mode, you can navigate forward and backward in the record.
	Zoom +
	Zoom -
	Automatic scaling of the data in the record.
	Reset the axes

	Display lines for a specific point in the diagram on the X and Y axes.



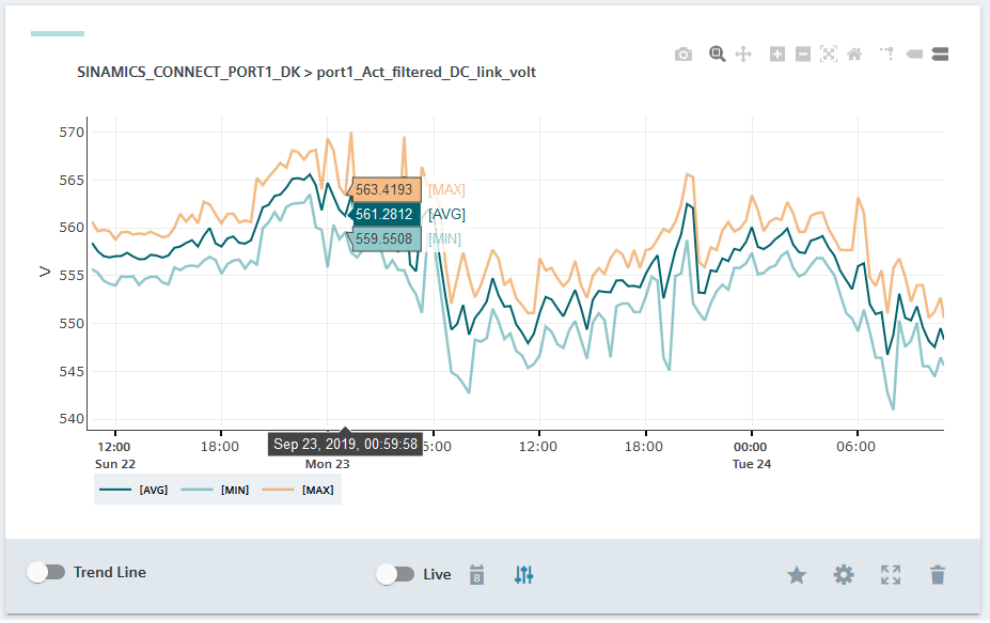
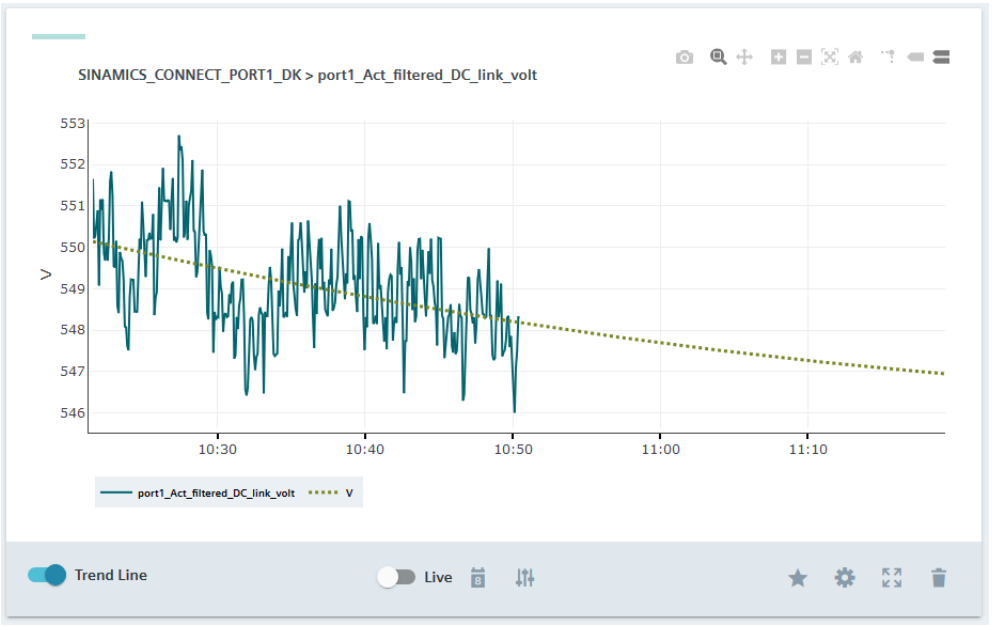
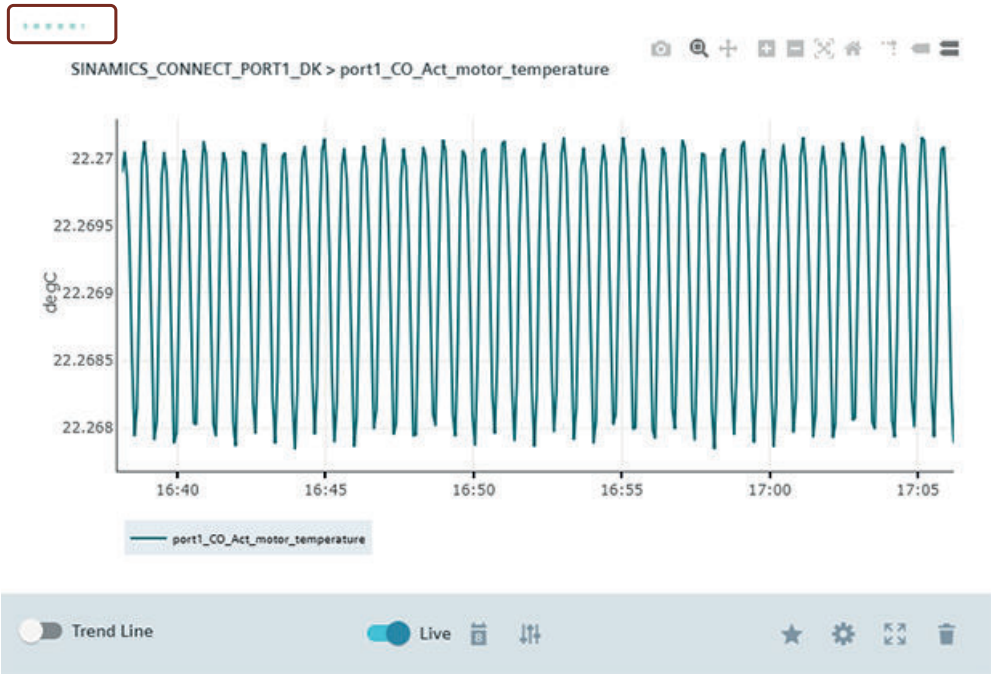
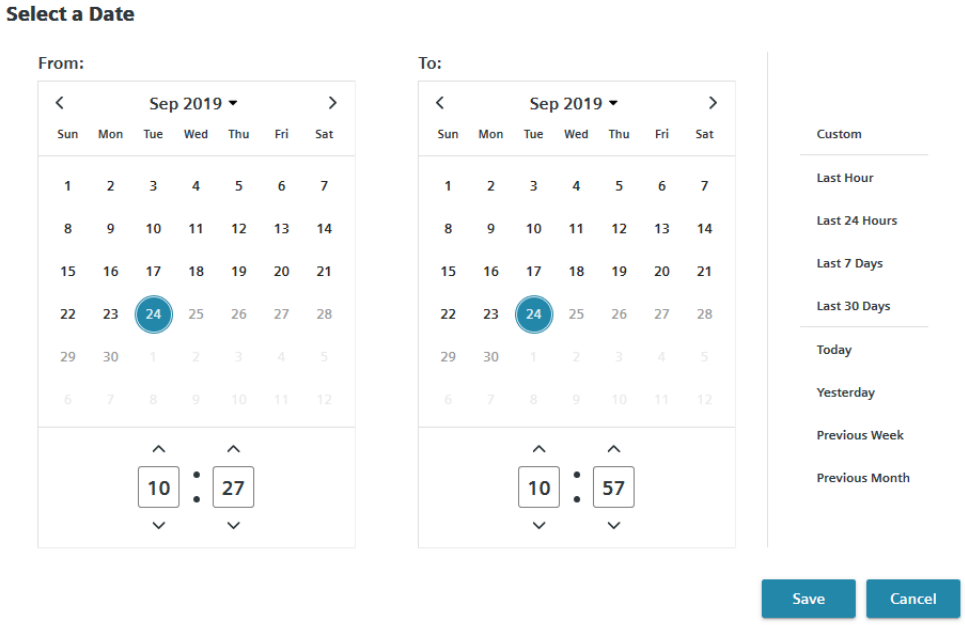
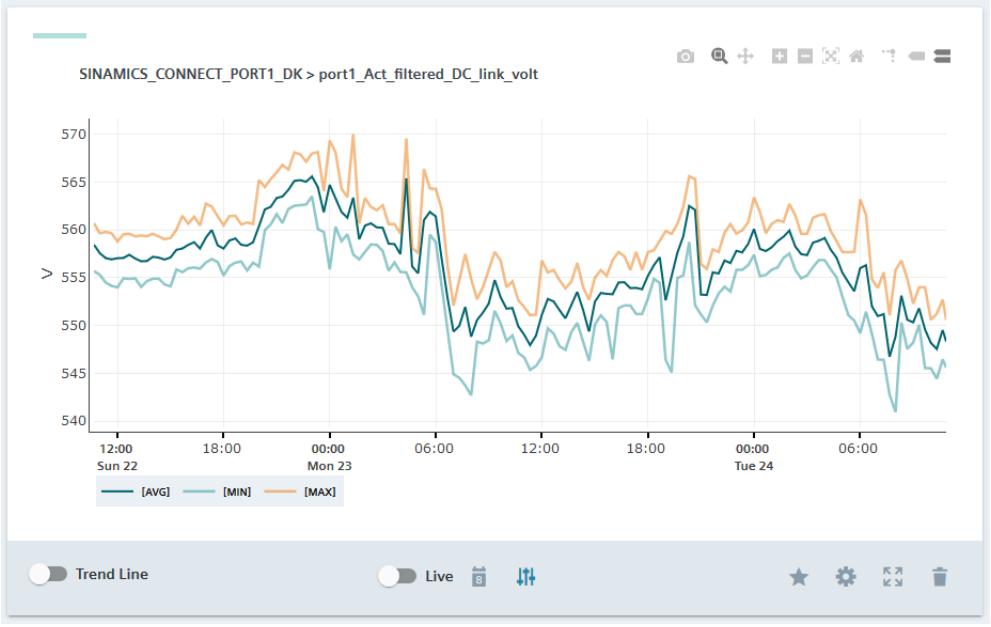
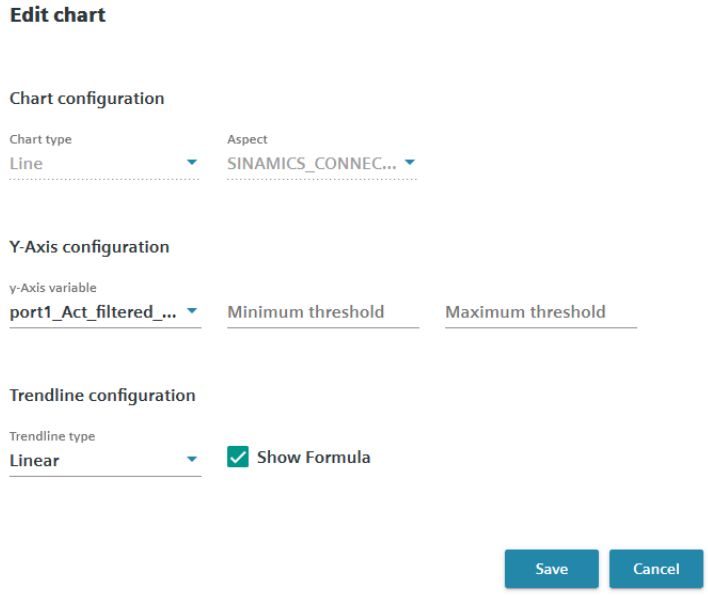
	Shows the value of the nearest data point
	Shows all data points 

Chart settings ②

Trend Line	Show trend line 
Live	Activating/deactivating live data. The following icon is displayed for active live data. 

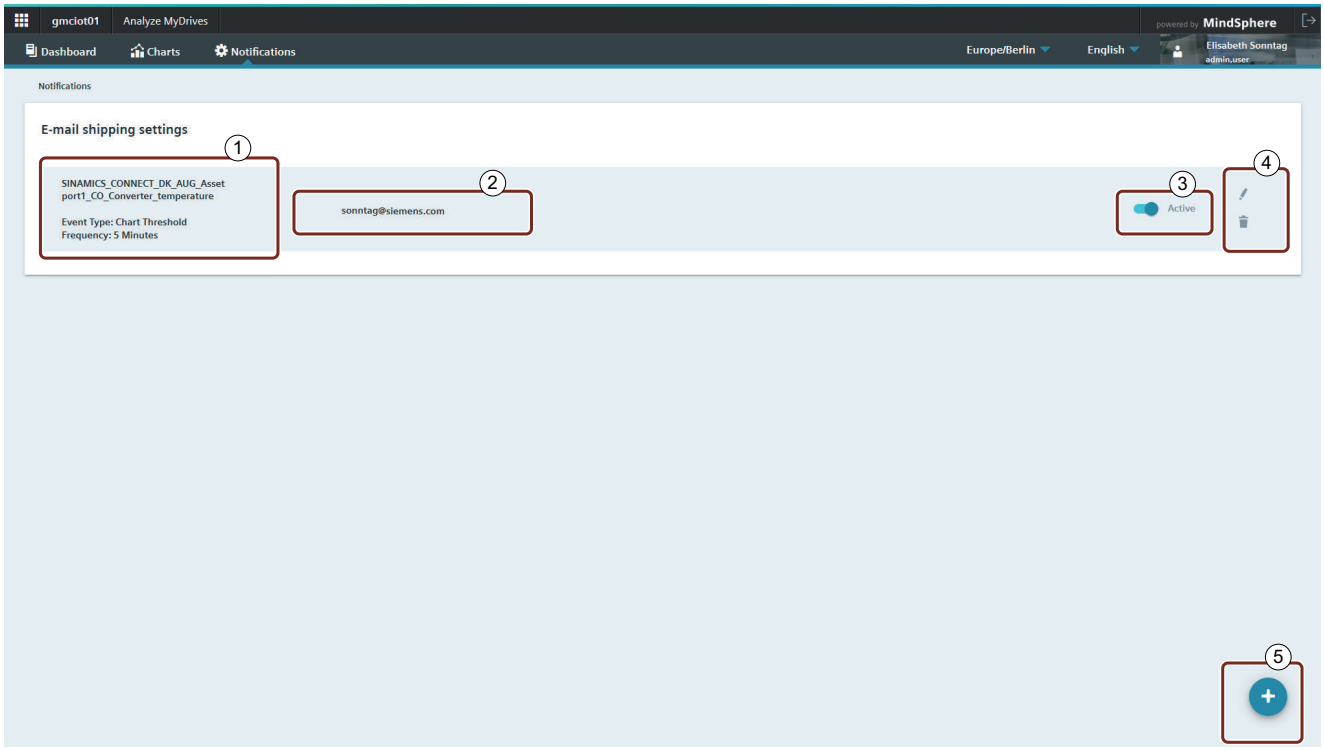
	You can define a time range with date and time or select a defined time, e.g. "Yesterday". The maximum timeframe is 6 months. 
	Show data statistics 
	Save as favorite or delete from favorites

	Edit chart settings 
	Full screen mode
	Delete chart

7.3 Notifications

7.3.1 Notifications overview page

On this page, the configured e-mail notifications are displayed.



① The following information is displayed for a notification:

- Asset Type
- Event type (chart threshold value, aspect variable, onboarding status, connection status)
- Frequency (5 minutes, daily, weekly)

② E-mail address to which the notification is sent

③ Active Activate/deactivate notifications

④ Editing e-mail texts and e-mail address

Delete a notification

⑤ Create a notification

7.3.2 Creating and editing notifications

7.3.2.1 Overview

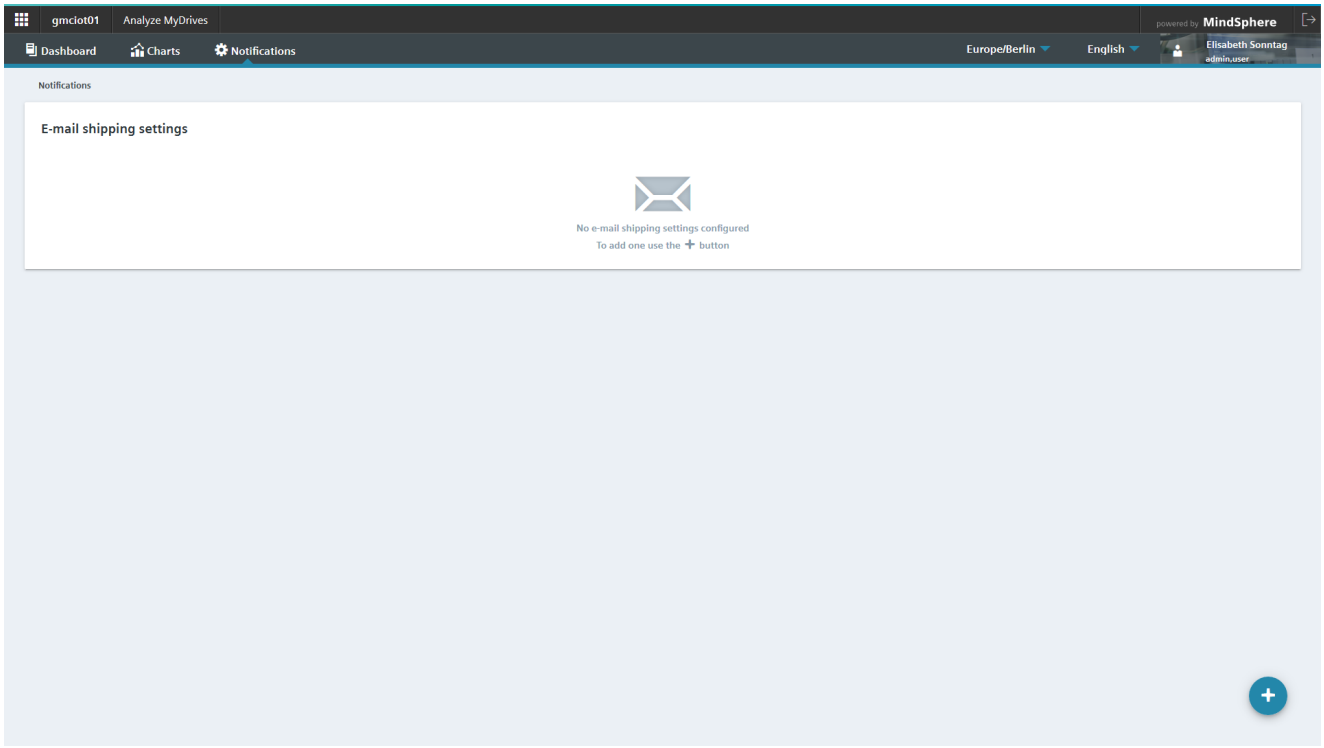
On the "Notifications" page, you can create new e-mail notifications for the following event types:

- Chart threshold value (Page 45)
- Aspect variable (Page 48)
- Connection status (Page 51)
- Onboarding status (Page 53)

When an event occurs, MindSphere sends a notification to the e-mail address you have stated. Three e-mails are forwarded. The notification function is then deactivated.

Note

The MindSphere notification service, which transfers messages via the Internet, is used to forward e-mails. The transmission of data via the Internet (untrusted channel) generally entails a residual risk regarding the confidentiality of data.



7.3.2.2 Creating notifications for the event type "Chart threshold value".

You can define a "minimum limit" and/or "maximum limit" for line diagrams. With the event type "Chart threshold value", a notification is sent out if the value is outside the defined range.

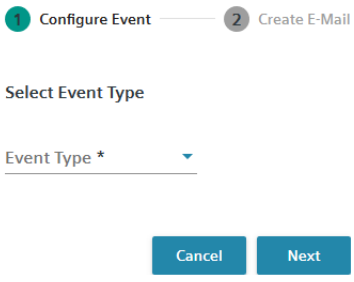
Example

The maximum motor temperature is 40 °C. If the motor temperature exceeds the maximum limit, MindSphere sends a notification to the defined recipient.

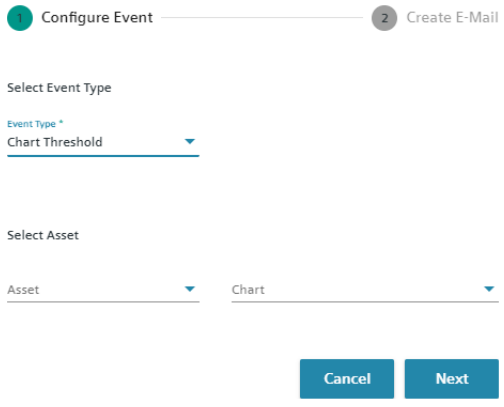
Procedure

Proceed as described below:

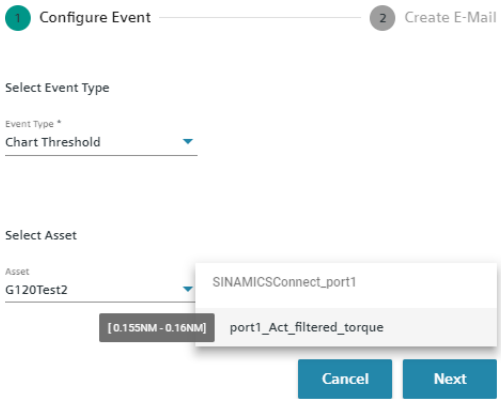
1. Click the button. The following dialog box opens.



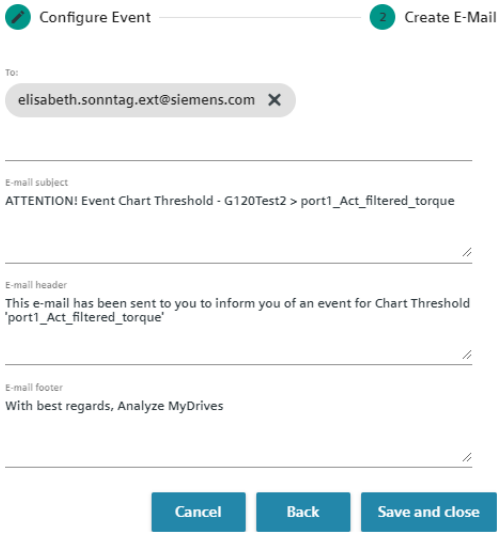
2. Select the event type "Chart threshold value". The following dialog box opens.



3. Select an asset. You can only select an asset which has been created on the charts overview page.
   If a line diagram with defined threshold values was created for this asset, you can select the diagram under "Chart". In the selection list, use the mouse to display the "maximum limit" and "minimum limit" for the diagram.



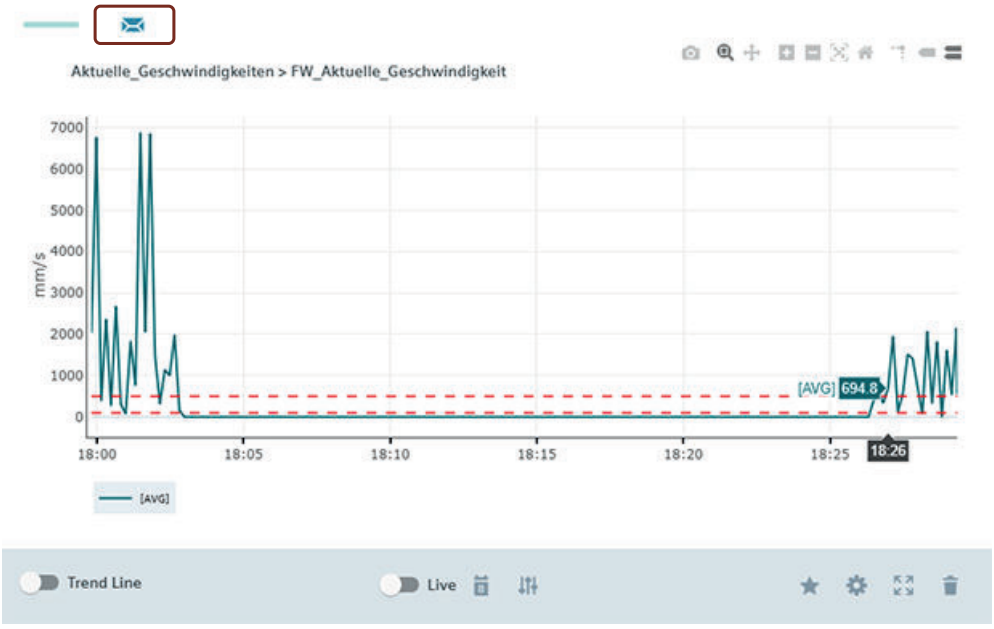
4. Confirm with "Next".
5. Configure the e-mail recipient in field "To" (you can enter more than one recipient) and the "E-mail subject", the "E-mail header", and the "E-mail footer".



6. Confirm with "Save and close".

Chart

If notifications have been configured for a chart, an e-mail icon is displayed on the chart.



7.3.2.3 Creating notifications for the event type "Aspect variable".

With the event type "Aspect variable", you define a condition for a confounding variable. If the target value fulfils this condition, a notification is sent out.

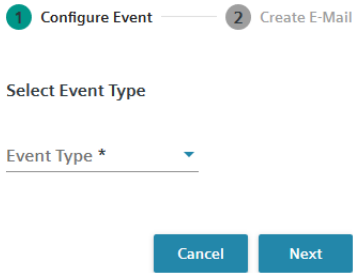
Example

If the value of the confounding variable exceeds 1422, MindSphere sends a notification to the defined recipient.

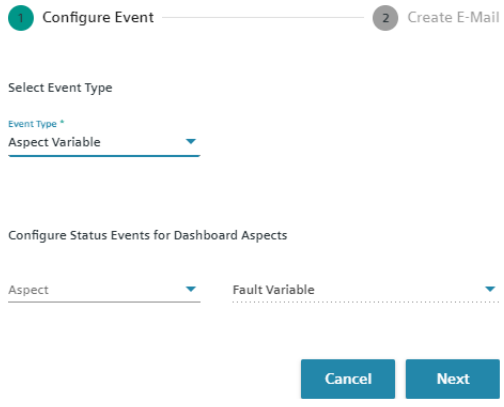
Procedure

Proceed as described below:

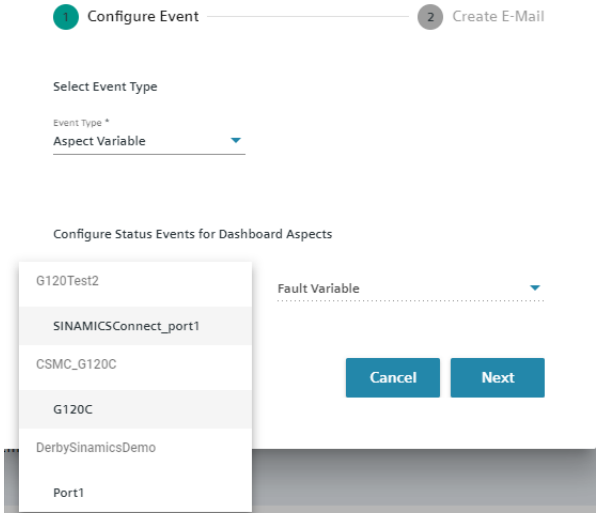
1. Click the button. The following dialog box opens.



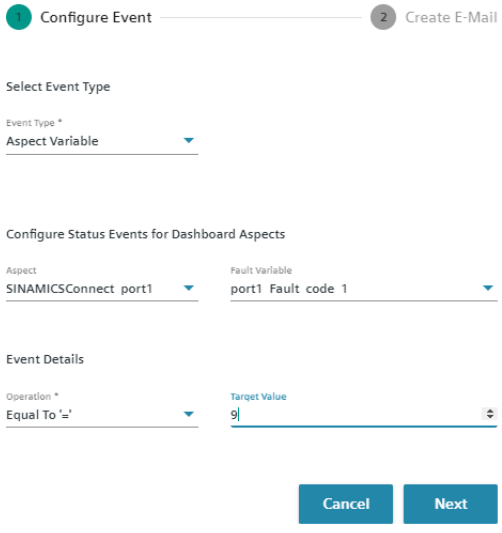
2. Select the event type "Aspect variable". The following dialog box opens.



3. Select an aspect. You can only select an asset which has been created on the dashboard overview page.

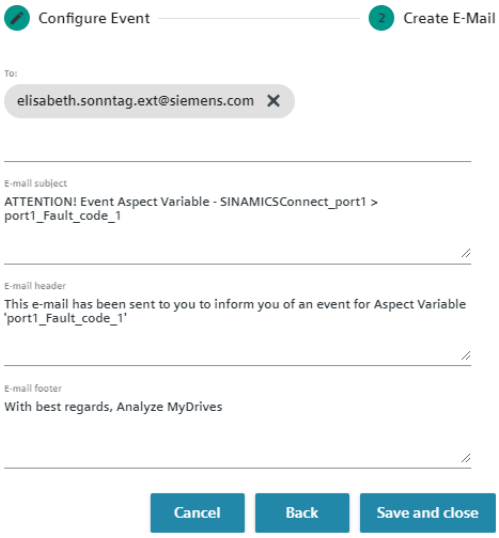


4. Select a confounding variable which is defined in the aspect. After selecting the confounding variable, the event details are displayed. Define the event details. "Equal to '=' ", "greater than '>' " or "less than' <' " can be selected for the condition. Finally, define the target value.



5. Confirm with "Next".

6. Configure the e-mail recipient in field "To" (you can enter more than one recipient) and the "E-mail subject", the "E-mail header", and the "E-mail footer".



7. Confirm with "Save and close".

7.3.2.4 Creating notifications for the event type "Connection status".

With the event type "Connection status", a notification is sent out if the connection status of an asset changes.

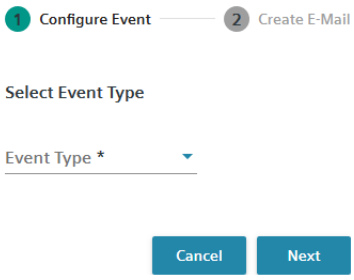
Example

If the connection status changes from "online" to "offline" or vice versa, MindSphere sends a notification to the defined recipient.

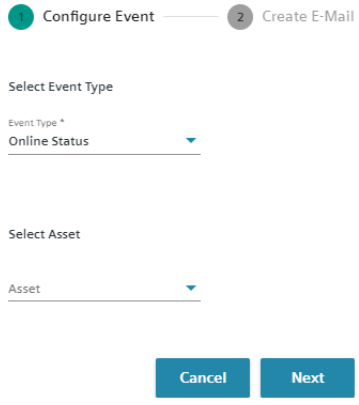
Procedure

Proceed as described below:

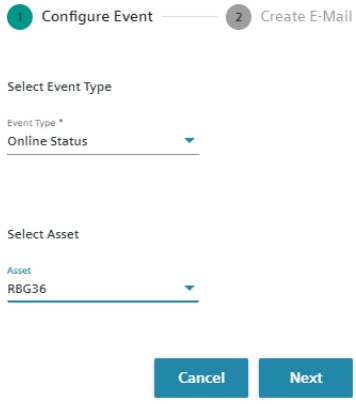
1. Click the + button. The following dialog box opens.



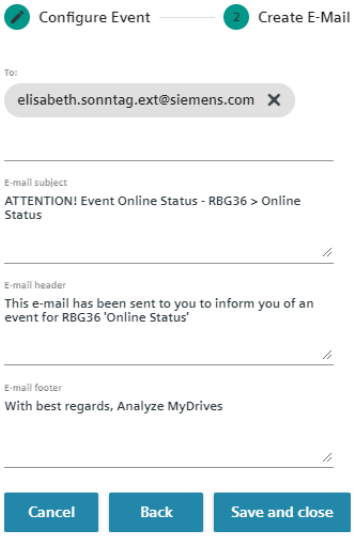
2. Select the event type "Connection status". The following dialog box opens.



3. Select an asset. You can only select an asset which has been created on the charts overview page.



4. Confirm with "Next".
5. Configure the e-mail recipient in field "To" (you can enter more than one recipient) and the "E-mail subject", the "E-mail header", and the "E-mail footer".



6. Confirm with "Save and close".

7.3.2.5 Creating notifications for the event type "Onboarding status".

An asset can be onboarded or offboarded or try to be integrated. With the event type "Onboarding status", a notification is sent out if the onboarding status of an asset changes.

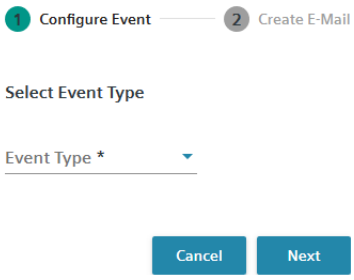
Example

The onboarding status changes from "onboarded" to "offboarded". If the onboarding status changes, MindSphere sends a notification to the defined recipient.

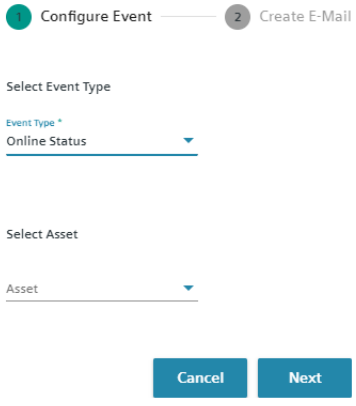
Procedure

Proceed as described below:

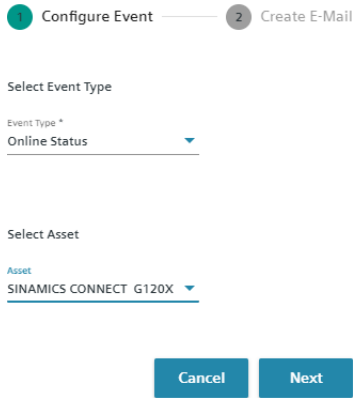
1. Click the + button. The following dialog box opens.



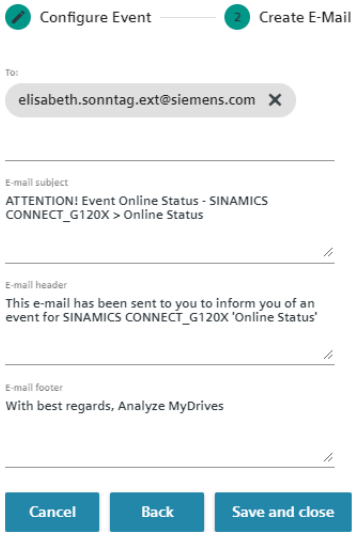
2. Select the event type "Onboarding status". The following dialog box opens.



3. Select an asset. You can only select an asset which has been created on the charts overview page.



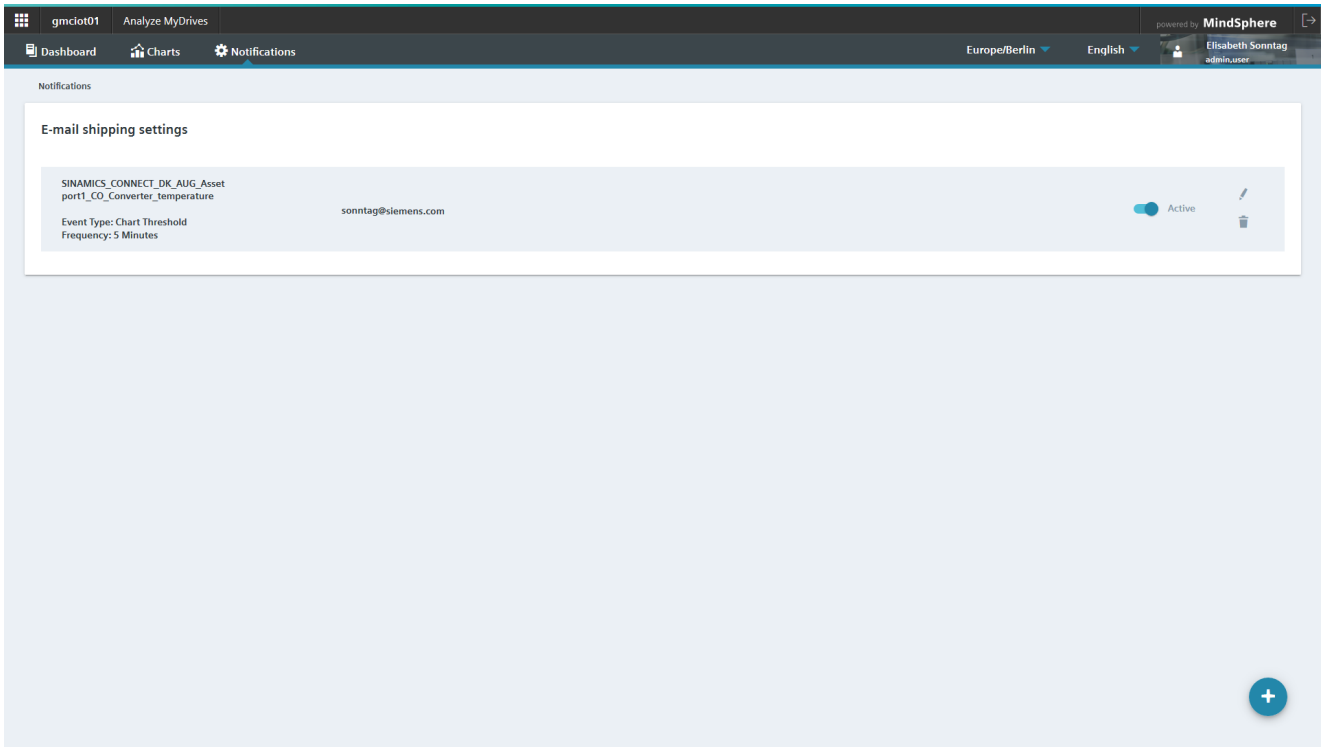
4. Confirm with "Next".
5. Configure the e-mail recipient in field "To" (you can enter more than one recipient) and the "E-mail subject", the "E-mail header", and the "E-mail footer".



6. Confirm with "Save and close".

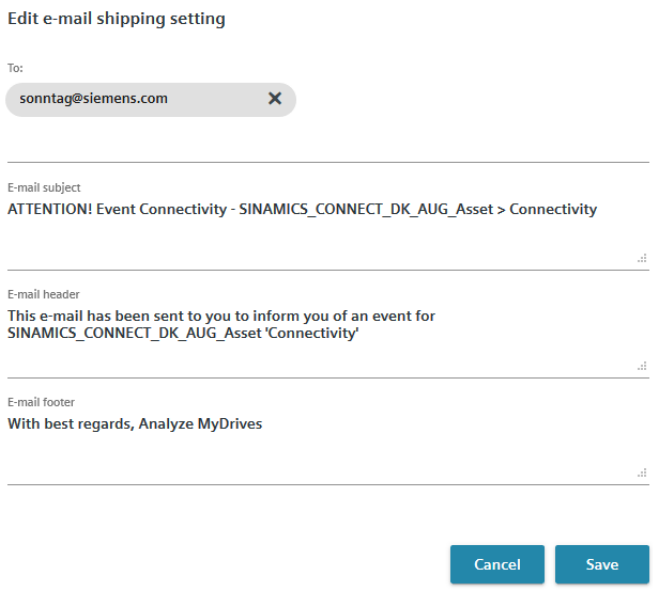
7.3.2.6 Editing notifications

You can adjust the e-mail notifications subsequently. Proceed as described below:



Procedure

1. Next to the notification that you want to change, click .
2. Make the required changes. You can delete the e-mail recipient or add a new recipient and adjust the texts.



3. Apply the changes with "Save and close".