

NOVEMBER 2020

# ABB Ability™ Smart Sensor

User guide for Smart Sensor Platform app and web portal

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# Outline

## Links to instructional videos and manuals

1. [ABB account registration](#)
2. [Organization management](#)
3. [Sensor activation – mobile app](#)
4. [Sensor commissioning – mobile app](#)
5. [Mobile app functionality](#)
6. [Web portal](#)
7. [Instant asset report; on-demand trend and raw data](#)
8. [Data visualization and interpretation](#)
9. [ABB Ability™ Digital Powertrain portal](#)
10. [ABB Ability™ Smart Sensor subscriptions](#)

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# LINKS AND MANUALS

PLEASE NOTE INSTRUCTIONAL VIDEOS AND INSTALLATION MANUALS

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# Links

## General information and documentation:

ABB Ability™ Smart Sensor:

<https://new.abb.com/motors-generators/service/advanced-services/smart-sensor>

For motors:

<https://new.abb.com/motors-generators/service/advanced-services/smart-sensor/smart-sensor-for-motors>

For pumps:

<https://new.abb.com/motors-generators/service/advanced-services/smart-sensor/smart-sensor-for-pumps>

For mounted bearings:

<https://new.abb.com/mechanical-power-transmission/smart-sensor-for-mechanical-products>

Cloud Interface API:

<https://new.abb.com/motors-generators/service/advanced-services/smart-sensor/cloud-interface>

## Videos

Introduction Smart Sensor:

<https://www.youtube.com/watch?v=AgUVI63mY3g>

First time user guide: <https://www.youtube.com/watch?v=TE14gDsEM4Q>

User / asset / organization management:

[https://www.youtube.com/watch?v=TgBZlyX\\_hLw](https://www.youtube.com/watch?v=TgBZlyX_hLw)

Activation and commissioning:

<https://youtu.be/rcOWbXf55ec?list=PLFwq1JTS1fh7Xv2q2YIle83EZi0SLVFH>

Data visualization on app:

<https://www.youtube.com/watch?v=49wgY6nX5Ls>

Data visualization on portal:

<https://www.youtube.com/watch?v=lacBttIARko>

Gateway installation manuals:

<https://youtu.be/4KTmrBtfgEo>

<https://youtu.be/BXB6nuUI8-g>

<https://youtu.be/P8Bj0-VtqRA>

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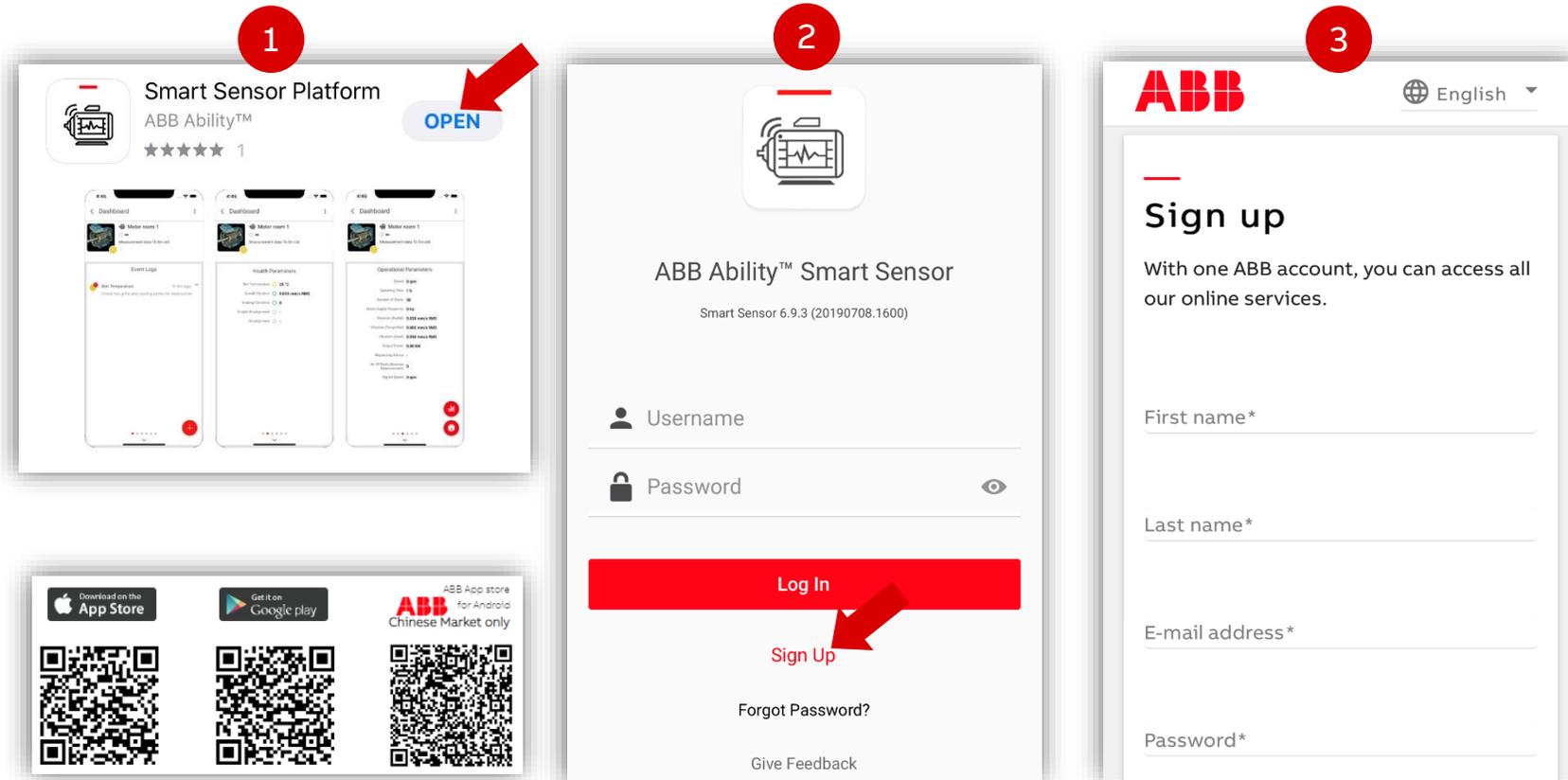
# 1. ABB account registration

[Back to table of contents](#)

<https://www.youtube.com/watch?v=TE14gDsEM4Q>

# ABB account registration – mobile app

Register new account in ABB system via the mobile app or web portal



1) Install “Smart Sensor Platform” on mobile device (iOS or android)

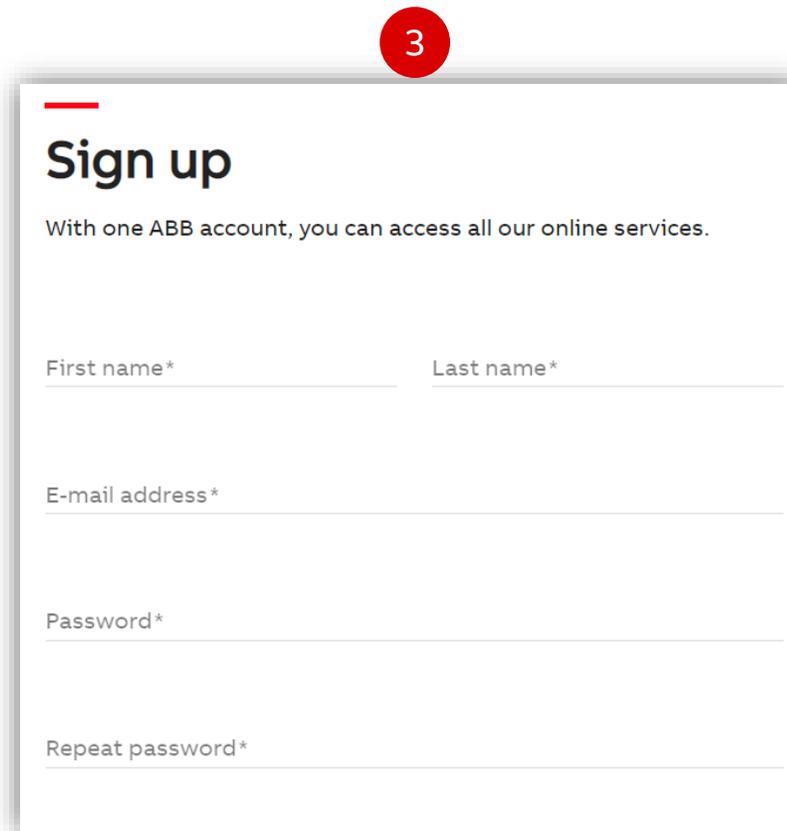
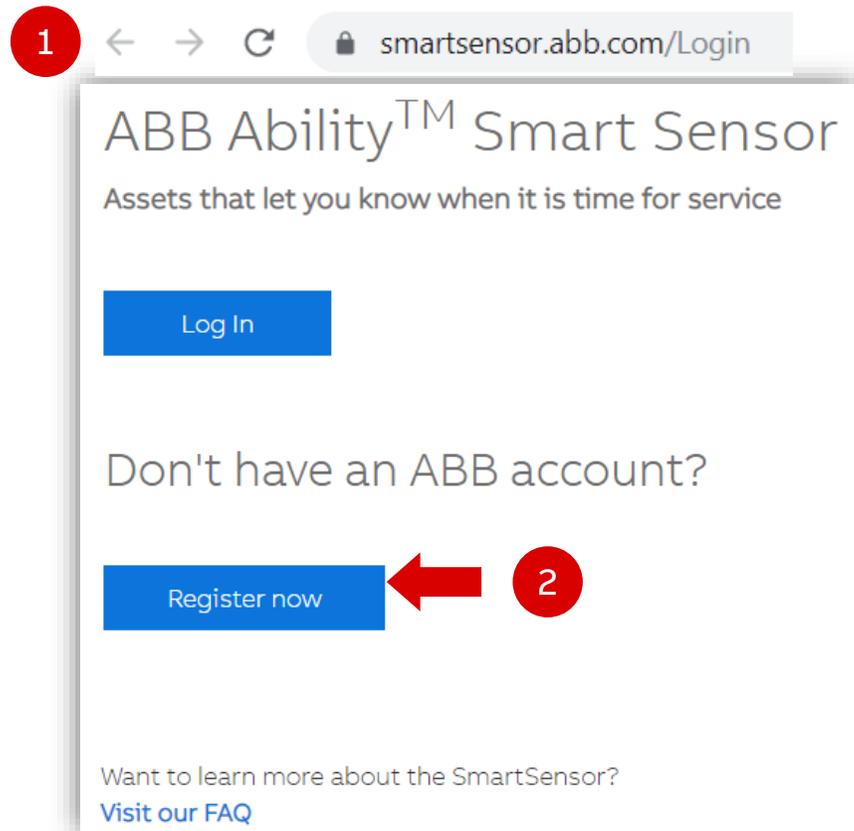
2) Click “Sign Up” on initial screen

3) Follow steps to create account

- Alternative: web portal (next slide)

# ABB account registration – web portal

Register new account in ABB system via mobile app or web portal



1) Open link in web browser:

<https://smartsensor.abb.com>

*\*Google Chrome recommended*

2) Click “Register now”

3) Follow steps to create account

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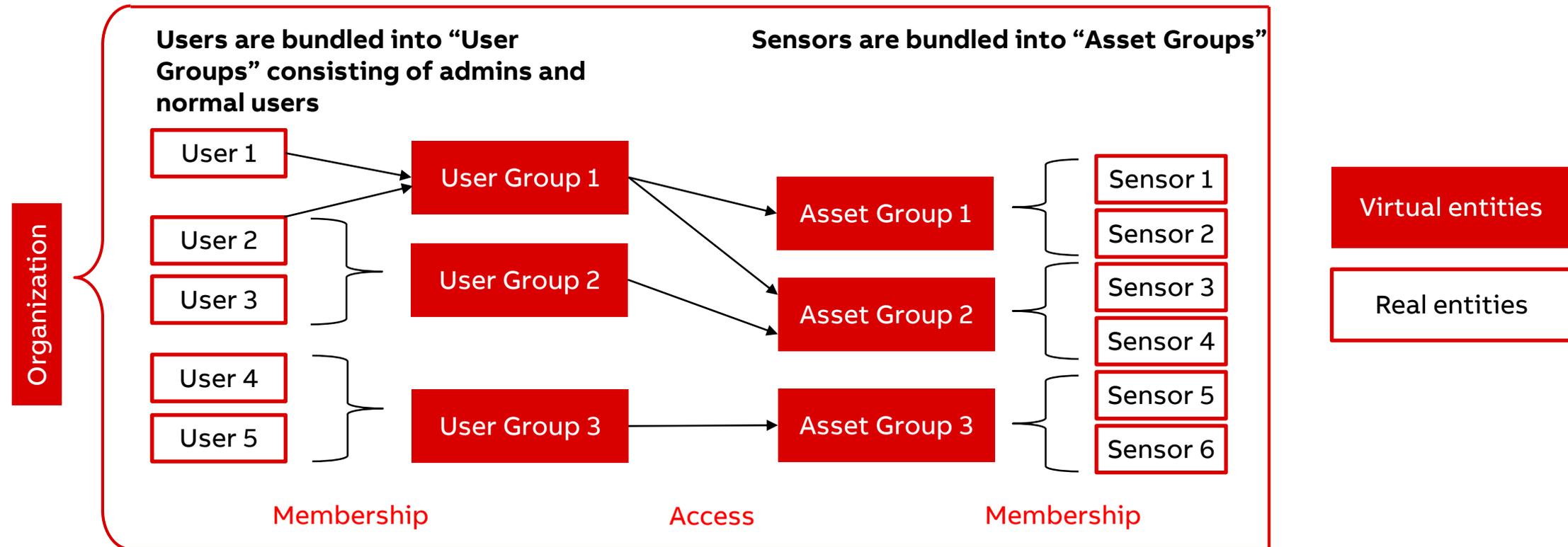
## 2. Organization management

[Back to table of contents](#)

[https://www.youtube.com/watch?v=TgBZlyX\\_hLw](https://www.youtube.com/watch?v=TgBZlyX_hLw)

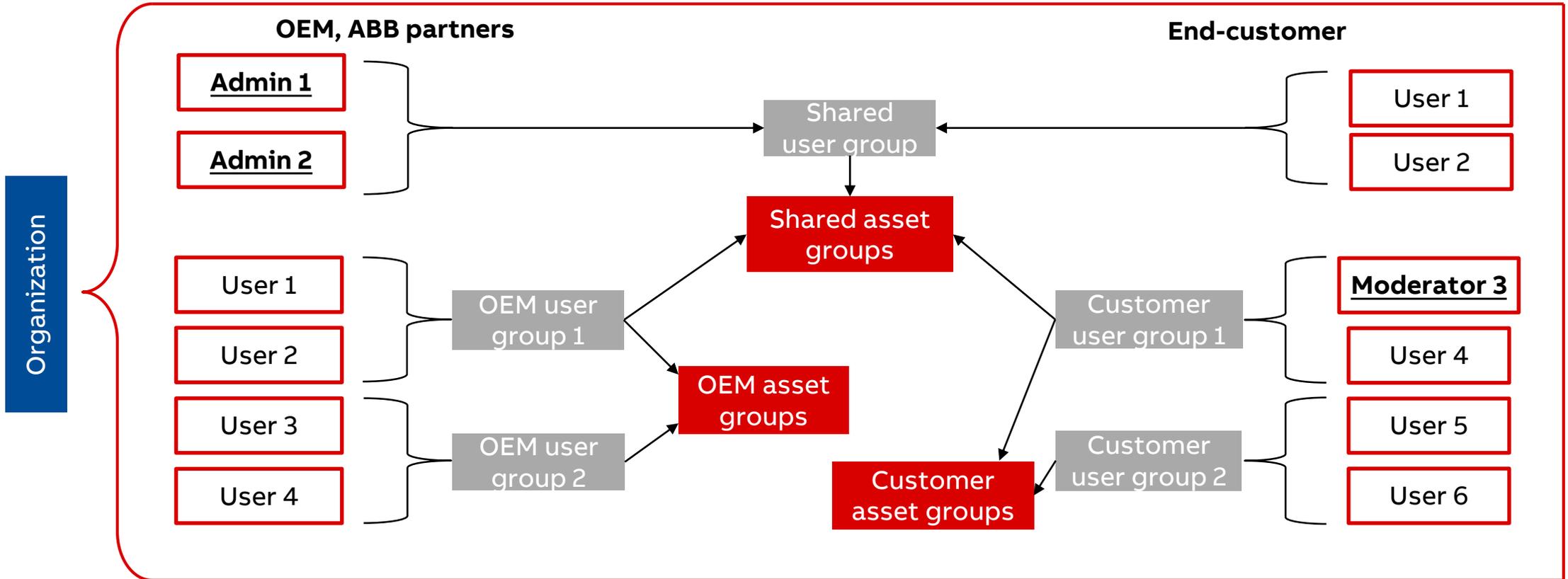
# ABB Ability™ Smart Sensor virtual organization management

Virtual environment for sensor data access configuration



# ABB Ability™ Smart Sensor virtual organization management - OEM

Example case for OEMs: you decide what your end customers see



# ABB Ability™ Smart Sensor app architecture - notes

## Organization and user/asset groups: trade-offs

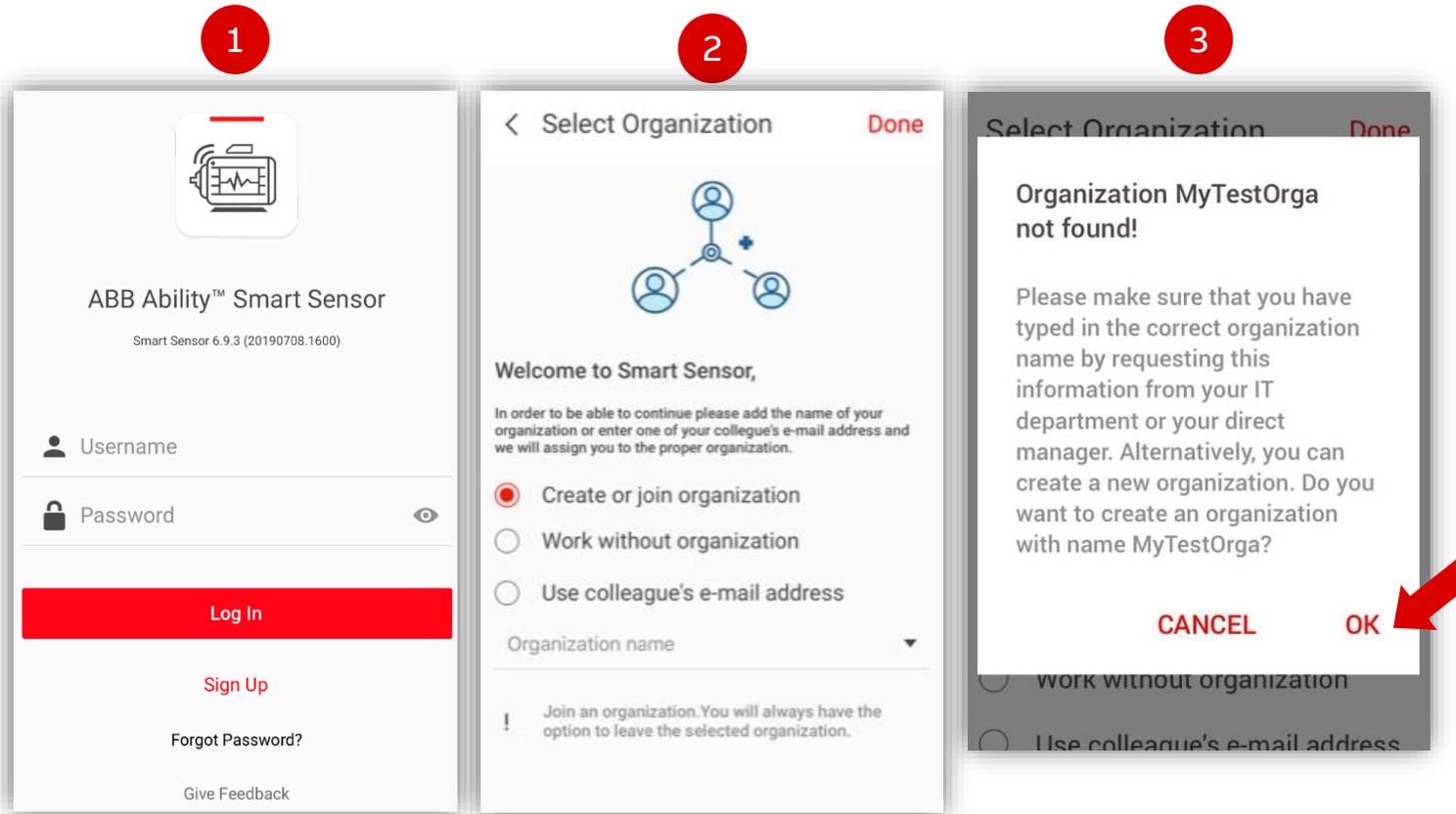
### Organization

Notes:

- 1) **Only one “layer”** of user groups and asset groups available, i.e. subgroups are **not** possible.
- 2) You can have as many “organizations” as you want.
- 3) An “organization” can represent, for example:
  - **Your whole company:**
    - Advantage: one-stop solution for all your end customers/plants and sensors (full benchmarking).
    - Disadvantage: keeping track of all sensors gets harder as the number of user and asset groups increases.
  - **A specific end-customer:**
    - Advantage: balance between number of organizations and complexity of user and asset group structure.
    - Disadvantage: decreased benchmarking capability, since only one organization can be viewed at a time.
  - **A specific plant/location:**
    - Advantage: complex group/access structures are easier to manage if isolated in one organization.
    - Disadvantage: too many organizations make benchmarking harder and may also be hard to keep track of.

# Create or join organization on the mobile app

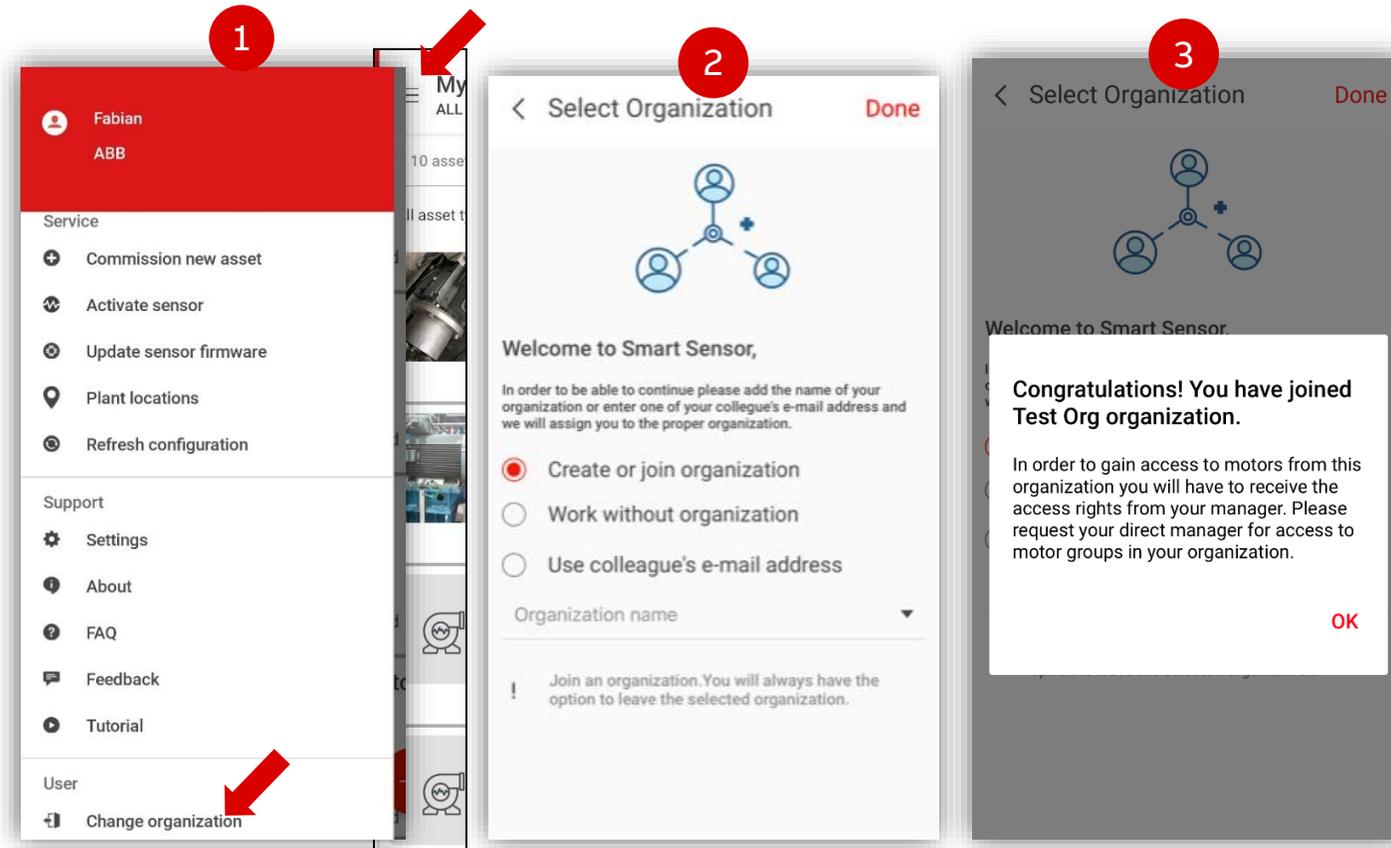
First use: create or join organization



- 1) Log in to the app using ABB credentials
- 2) Click **“Create or join organization”**
  - *Admins of an organization must grant access*
- 3) If the organization does not exist, type desired name and confirm to create a new one
  - *This can also appear due to typos when trying to join an existing organization.*
  - *Organization names are case sensitive!*
  - *If you create an organization, an asset group called “[Name]Master” is automatically created, where [Name] is the name of the organization.*

# Switch organization on the app

Moving between organizations: membership is free, but access to motors requires explicit permission



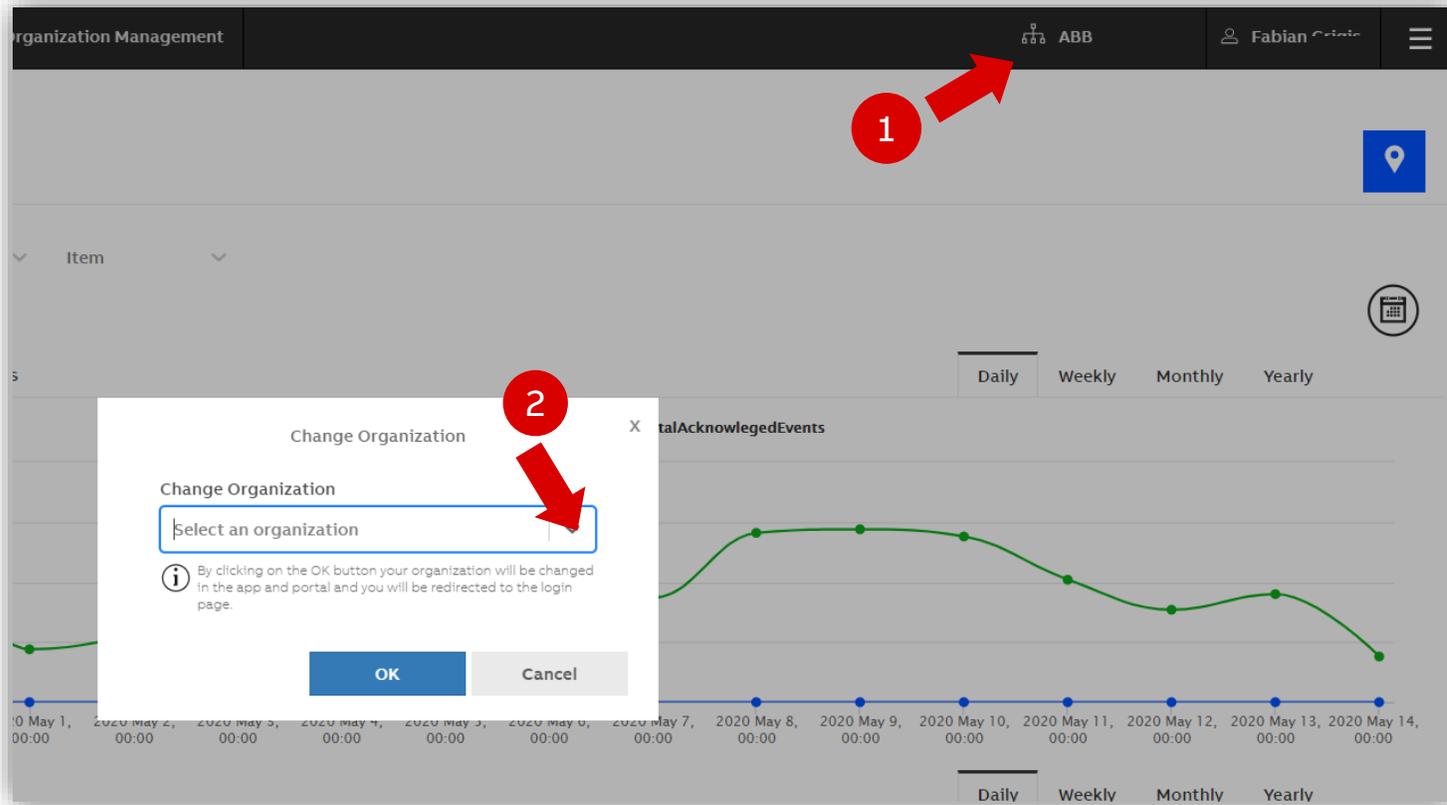
- 1) Click “**Change organization**” on main menu (top left sandwich menu of main screen)
- 2) Enter one of the following:
  - The name of the organization,
  - The e-mail address of a member, or
  - Work without organization → *not recommended!*
- 3) Click “**OK**” on pop up.
  - *Organization switches automatically on web portal*

## Notes:

- Sensor data is not visible until the User is added to a User Group with the correct access rights.
- The asset group [OrganizationName]Master is created automatically with the organization.

# Switch organization on the portal

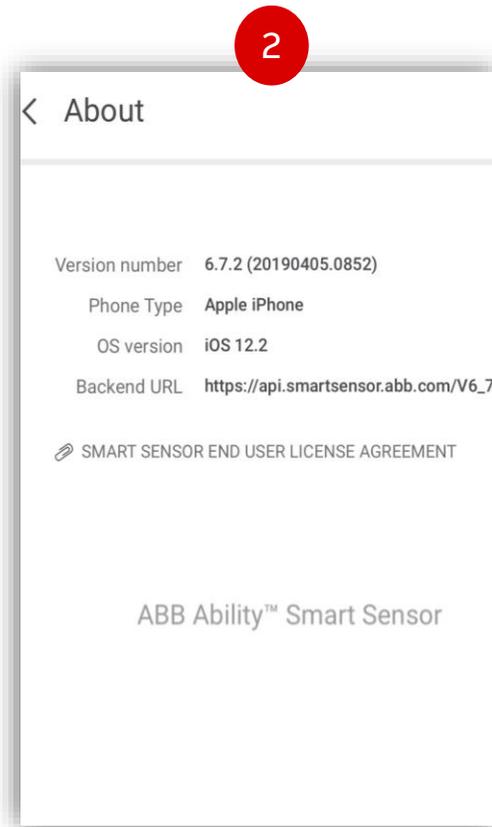
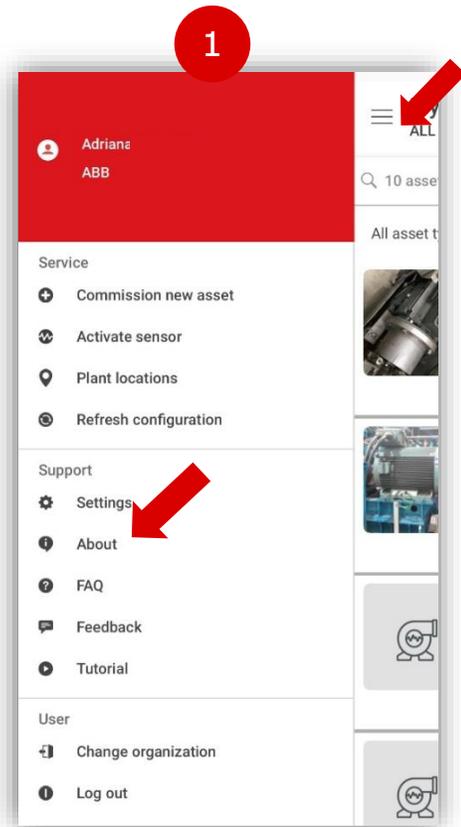
Moving between organizations: membership is free, but access to motors requires explicit permission



- 1) Click on the **organization** in the main menu (top right)
- 2) **Select organization** by name from the drop-down list and click “OK”
  - *Organization switches automatically on the app*

# Info about organization and app

Where to find the name of my current organization and other information



- 1) Click "**About**" on the main menu
  - Organization shown under user name
- 2) App, phone, back-end (cloud) API and EULA information displayed.

# User management - role types

Access management within one organization in the Smart Sensor portal

## Moderator of the "Admin" User Group (equivalent to Organization Admin)

- Can add members to the Admin User Group
- Can create new User Groups for the organization
- Can create new Asset Groups for the organization
- Can connect User Groups and Asset Groups

## Admin User Group Member

- Can create new Asset Groups
- Can connect User Groups and Asset Groups

**All users can  
commission new  
sensors**

## Normal User Group Moderator

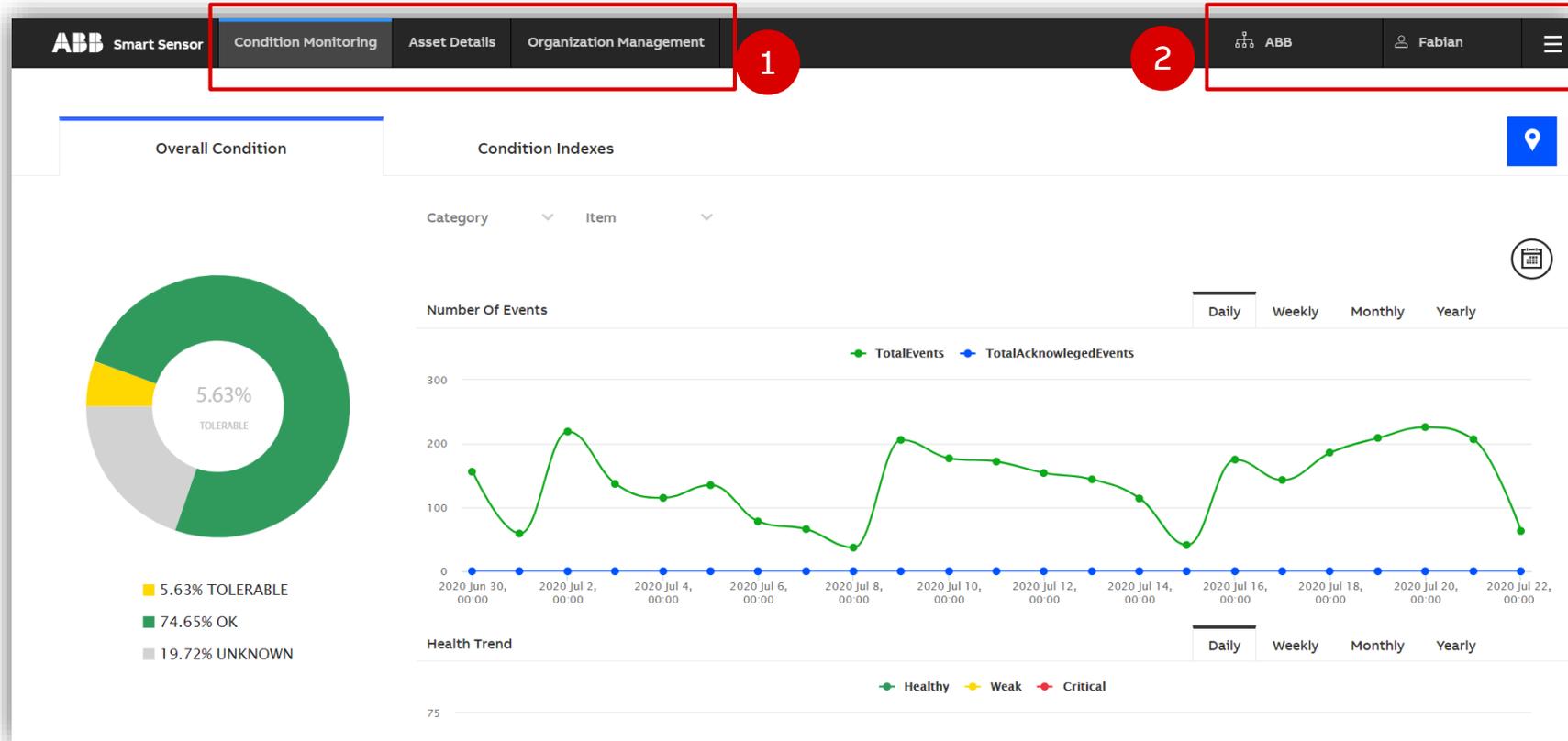
- Can add users to that particular User Group

## Normal User Group Member

- Can view asset data to which this User Group was granted access (by a member of Admin User Group)

# Portal Overview

Starting point for Condition Monitoring, Access & Organization Management



Landing Page of the Smart Sensor portal. From Here you can:

- 1) Access **Condition Monitoring** overview, go into **Asset Details** (see chapter 6.) and **Organization Management** (following slides).
- 2) Change your Organization by clicking , see personal account details  and Access FAQ, EULA, Privacy Policy and Logout via the  symbol

# Organization management

Managing Asset or User Groups in your organization, and more

The screenshot shows the 'Organization Management' tab in the ABB Smart Sensor interface. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. The user is logged in as 'Fabian'. The main content area has tabs for 'Asset groups', 'User groups', 'Plant management', 'Settings', and 'Trusted organization'. A search bar is visible with the text 'ABB Lenzburg' and a dropdown arrow. Below the tabs is a table with columns for 'Group name', 'Asset count', and 'Actions'. The table lists several asset groups with their respective counts and delete icons. A search input field with the placeholder 'Enter name' is located to the right of the table. A 'Profile' button is in the top right corner. Red arrows point from callout boxes to various elements: 'Asset groups', 'User groups', 'Plant management', 'Settings', 'Trusted organization', the search bar, the 'Profile' button, and the 'Actions' column.

Asset groups    User groups    Plant management    Settings    Trusted organization

ABB Lenzburg

Group name ▾

Group name ▾	Asset count	Actions
=LB3	54	
ABB DEMO	1	
Default Asset Group	0	
FW / Range Test	0	
Pump Exp. Big WK212	3	
Pump Exp. Small WK231	8	

Enter name × | Q

Profile

Organization you're currently logged in to

The different tabs show available organization management functionality.

In some browsers, menus are located in the upper right drop-down button.

# Organization management – Asset Groups

Manage assets in the «Asset Groups» page

The screenshot shows the ABB Smart Sensor interface with the 'Organization Management' tab selected. The 'Asset groups' sub-tab is active, displaying a list of asset groups. A text box highlights that clicking on an 'Asset Group' in this view will show sensor data for that group, with '=LB3' as an example.

Group name -	Asset count	Actions
=LB3	54	
ABB DEMO	1	
Default Asset Group	0	

# Organization management – Asset Groups

Download measurements and transfer assets from one asset group to another

The screenshot shows the ABB Smart Sensor Organization Management interface. At the top, there are navigation tabs: ABB Smart Sensor, Condition Monitoring, Asset Details, and Organization Management. Below the tabs, there is a breadcrumb trail: < =LB3. A red circle with the number 1 highlights a download icon (a downward arrow) next to the breadcrumb. The main area contains a table of assets with columns for Asset name, Serial No., Last Measurement, and Actions. A red circle with the number 2 highlights a double-headed arrow icon in the Actions column for the asset =LB3\_LU112\_AC01. A red circle with the number 3 highlights the asset name =LB3\_WK011\_AC01. On the right side, there is a sidebar titled 'Access to asset group' with a 'User Group' dropdown menu showing 'ABB DIGITAL GLOBAL Trusted Use...', 'ABB', and 'ABB'.

Asset name ^	Serial No.	Last Measurement	Actions
=LB3_LU111_AC01		2020-07-27T10:33:26	↔
=LB3_LU112_AC01		2020-07-01T09:42:53	↔
=LB3_LU151_AC11		2020-07-08T09:23:19	↔
=LB3_LU151_AC21		2020-07-27T09:39:43	↔
=LB3_LU151_AC31		2020-07-27T09:41:57	↔
=LB3_LU152_AC11		2020-07-27T09:41:17	↔
=LB3_LU152_AC21		2020-07-27T09:43:46	↔
=LB3_LU211_AC01		2020-06-29T01:27:08	↔
=LB3_WK011_AC01		2020-04-23T10:33:53	↔
=LB3_WK011_AC02		2020-07-27T09:17:41	↔

After choosing an Asset Group in your Organization:

- 1) Click arrow to **download the measurement data of all the assets** in the Asset Group. Data will be sent by email.
- 2) You can transfer assets to other Asset Groups via the double-arrow icon.
- 3) By clicking on one of the assets, you are directed to the detailed asset view where you have access to the measurements and Asset/Sensor Information.

# Portal Overview

Starting point for Condition Monitoring, Access & Organization Management

The screenshot shows the ABB Smart Sensor portal interface. At the top, there are navigation tabs: "ABB Smart Sensor", "Condition Monitoring", "Asset Details", and "Organization Management". Below the tabs, there are three dropdown menus for filter selections: "ABB I", "=LB3", and "=LB3\_WK011\_AC01". Below the filters, there are two images of the asset and the text "=LB3\_WK011\_AC01" and "ABB". Below this, there are six tabs: "Event log", "Operational parameters", "Asset properties", "Sensor properties", "Vibration FFT (Beta)", and "Notification configuration". The "Asset properties" tab is selected. The main content area is divided into two columns: "Asset Details" and "Nominal details".

Asset Details		Nominal details	
Asset ID	7261	Motor Standard	
Asset name	=LB3_WK011_AC01	Speed	
Asset type	Motor	Speed Control	
Plant name	ABB	Voltage	
Organization name	ABB	Current	
Serial number		Power	
Description	Rückkühlwerk 1 Ventilator 1	Line Frequency	
		Power Factor	
		DE Bearing	
		DE Manufacturer	

Detailed Asset view:

- 1) Filter selections: from left to right: Organization (ABB), Asset Group (=LB3), Asset (LB3\_WK011\_AC01)
- 2) Asset Name and pictures
- 3) Tabs containing further asset details, health trend, measurements, meta data etc. → Further explanation of the individual tabs and their content in chapter 6

# Organization management – Asset Groups

Give access to each Asset Group by defining User Groups

The screenshot shows the ABB Smart Sensor interface with the 'Organization Management' section active. The main view displays a table of asset groups with columns for Asset name, Serial No., Last Measurement, and Actions. A pop-up dialog titled 'Share with user group' is overlaid on the table, showing a dropdown menu for 'User Group' with options 'ABB DIGITAL', 'ABB L', and 'ABB I'. A red circle with the number '2' is placed over the 'Share with user group' button in the table. A red circle with the number '1' is placed over the 'Share with user group' button in the pop-up dialog. A blue box with the number '1' is placed over the 'Share with user group' button in the main view.

Asset name -	Serial No.	Last Measurement	Actions
=LB3_LU111_AC01	CSN09-300042	2020-05-14T15:00:15	🔗
=LB3_LU112_AC01	CSN09-300041	2020-05-14T14:45:37	🔗
=LB3_LU151_AC11		2020-05-14T14:53:04	🔗
=LB3_LU151_AC21		2020-05-14T14:58:15	🔗
=LB3_LU151_AC31		2020-05-14T14:57:41	🔗
=LB3_LU152_AC11	3GV0910345241002	2020-05-14T14:57:24	🔗
=LB3_LU152_AC21		2020-05-14T14:46:32	🔗
=LB3_LU211_AC01			🔗
=LB3_WK011_AC01			🔗
=LB3_WK011_AC02			🔗

After choosing an Asset Group:

- 1) Click bottom right button “Add User Group”
- 2) On the pop-up prompt, choose which User Group you want to give access. Data from all assets in this Asset Group are visible to the members of the User Groups that you, as a moderator, can add to it.

# Organization management – User Groups

Manage membership and access in the «User Groups» page

The screenshot displays the ABB Smart Sensor web interface. The top navigation bar includes tabs for 'Asset Details' and 'Organization Management', with the latter being the active tab. The 'Organization Management' section contains sub-tabs: 'Asset groups', 'User groups', 'Plant management', 'Maintenance mode', and 'Trusted organization'. The 'User groups' tab is selected and highlighted with a blue border. Below the tabs, there is a table with columns for 'Group name' and 'Actions'. The table lists a group named 'Users' under the organization 'ABB'. A red arrow points from the 'User groups' tab to the 'Users' group in the table. A text box with a black border and white background is overlaid on the table, containing the following text:

Under “User Groups” tab of the “Organization Management” view,  
Click on an **User Group** in the given organization.  
E.g. = **ABB Users**

# Organization management – User Groups

Manage membership and access in the «User Groups» page

The screenshot shows the ABB Smart Sensor interface for Organization Management. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. The user 'Fabian' is logged in. The main content area is titled 'Users' and contains two panels. The left panel, 'Users', has a search bar and a table with columns 'User name', 'Role', and 'Actions'. The right panel, 'Access to asset group', has a search bar and a table with columns 'Asset Group', 'Organization', and 'Actions'. A red arrow points from the 'Users' table to the 'Users' header. A text box explains the relationship between users and asset groups.

User name	Role	Actions
dzw	Member	
twei	Member	

Asset Group	Organization	Actions
=LB3	ABB	
ABB DEMO	ABB	

In this view, you can see a list of users in that User Group on the left, and a list of Asset Groups on the right.

Users on the left, belonging to this particular User Group, can see data from assets belonging to the Asset Groups on the right.

# Organization management – User Groups

Manage membership and access in the «User Groups» page

The screenshot displays the ABB Smart Sensor Organization Management interface. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. The user is logged in as 'Fabian'. The main content area is divided into two panels. The left panel, titled 'ABB', shows a list of users with columns for 'User name', 'Role', and 'Actions'. The right panel, titled 'Access to asset group', shows a list of asset groups with columns for 'Asset Group -', 'Organization', and 'Actions'. At the bottom, there are three buttons: 'Invite new user', 'Add existing user', and 'Grant access to asset group'. A callout box points to the 'Grant access to asset group' button.

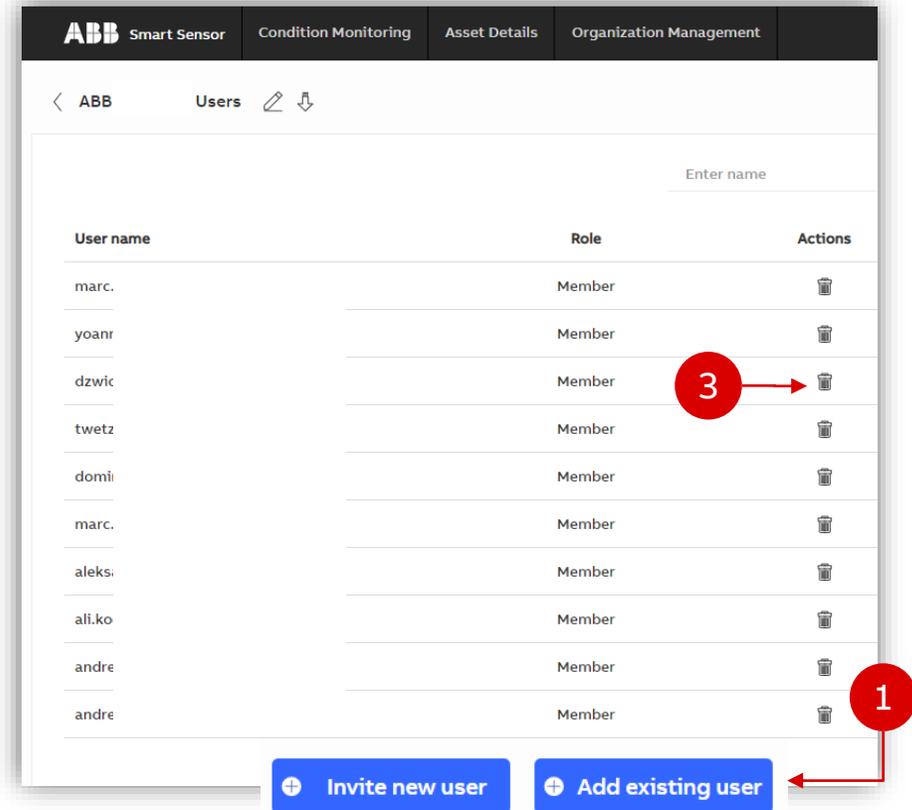
User name	Role	Actions
ac	n Member	[trash icon]
be	n Moderator	[trash icon]
	n Member	[trash icon]
	n Moderator	[trash icon]
	n Member	[trash icon]
	n Member	[trash icon]
marcc	n Moderator	[trash icon]
	n Member	[trash icon]
	n Member	[trash icon]
pat	n Member	[trash icon]

Asset Group -	Organization	Actions
=LB3	ABB	[trash icon]
ABB	ABB	[trash icon]
Defi	ABB	[trash icon]
FW,	ABB	[trash icon]
Punr	ABB	[trash icon]
Punr	ABB	[trash icon]

Press the “Grant access to asset group” button to include more Asset Groups in the access list of a particular User Group.

# Add users to User Group

Give other people visibility of your sensors



If you are moderator of a User Group, you can add users to grant them access to sensor data.

- 1) If a user is not yet a member of your Organization, click **“Invite new user”**. The user should receive an e-mail with the invitation to join the Organization and User Group.
- 2) For existing Organization members, click **“Add existing user”**. Choose user and role from the drop-down lists.

Add existing user

User name

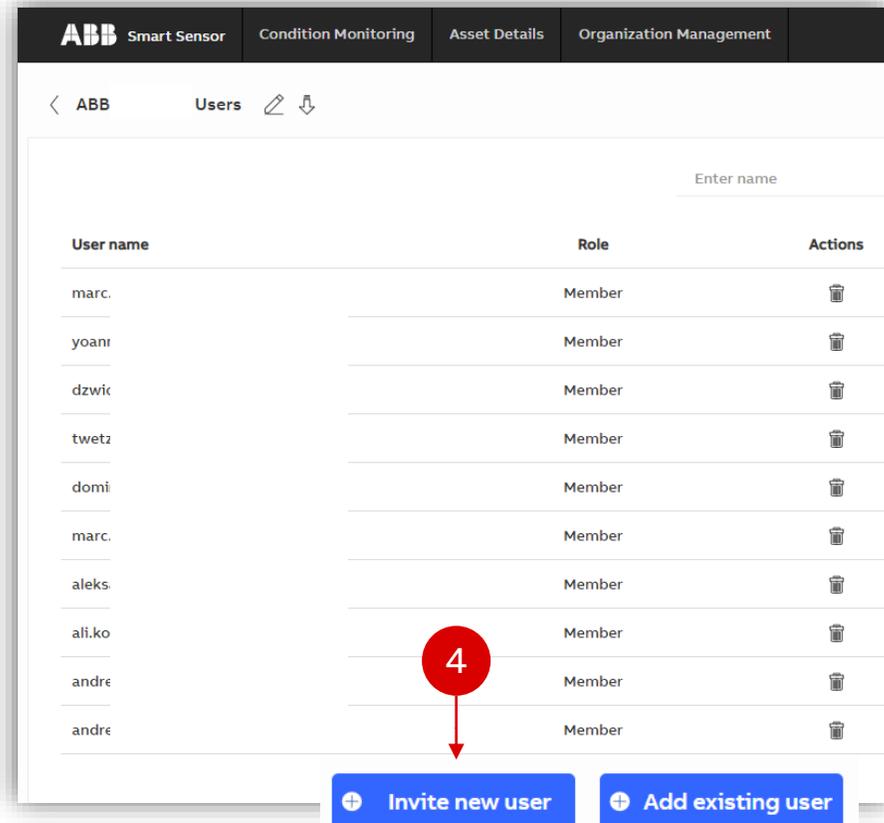
Role

Cancel Save

- 3) You can delete users if you are a moderator by clicking the trash bin.

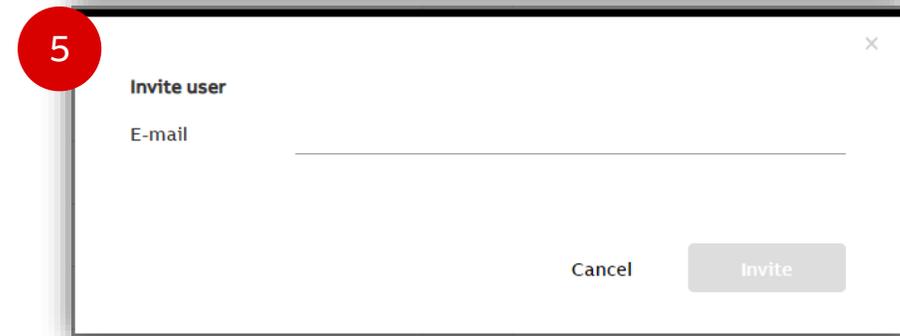
# Add users to User Group

Give other people visibility of your sensors



4) If the user is not in the organization, click “**Invite new user**”

5) Input e-mail address. New member will receive e-mail instructions to join the organization.

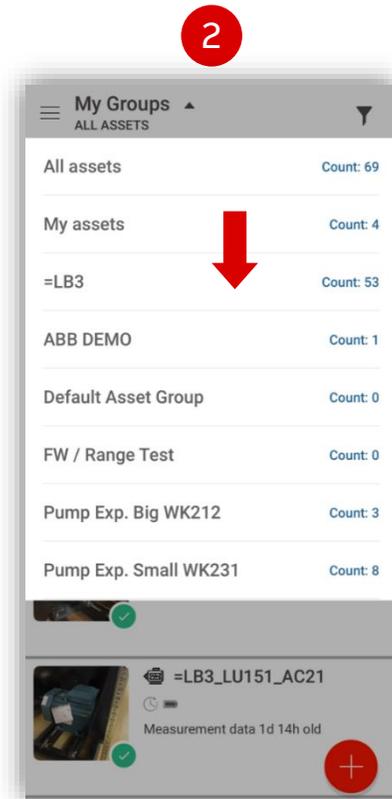
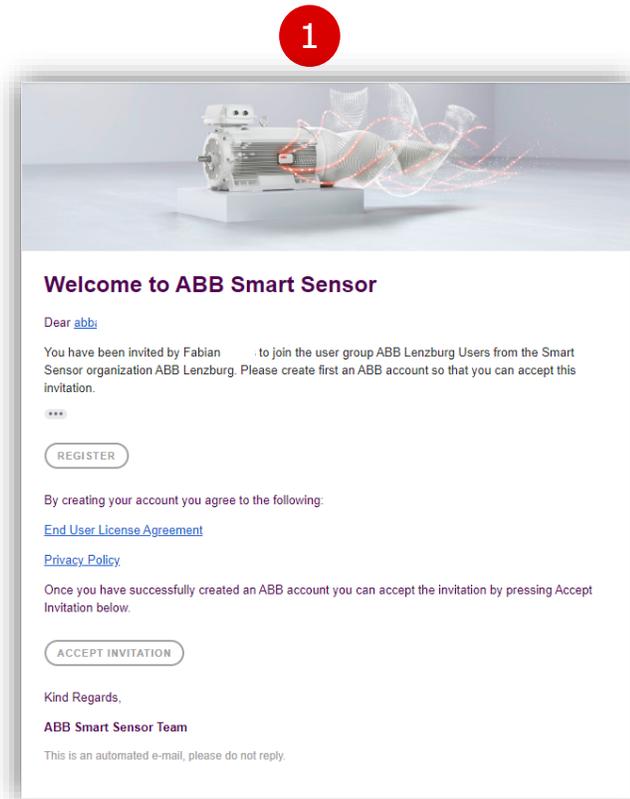


6) To change access from “**Member**” to “**Moderator**”, the user must be currently active in the organization.

- **Delete** the user from the Group and add the user again, repeating step 2, setting moderator rights from the start.

# Give access to new members

E-mail invitation: Please join my group



1) If you already have an ABB account:

- One link to **accept the invitation**
- Only 1 organization access at a time
- You can always switch organizations

If you do not have an ABB account:

- First: set up a user ID in ABB
- Second: accept the invitation

2) Refresh your app to log into the new organization and see the sensors for which your initial User Group was given access.

# Plant management – add new plant

Add a new plant to your organization

The screenshot displays the ABB Smart Sensor web interface. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', 'Organization Management', and 'Trusted organization'. The 'Organization Management' section is active, with 'Plant management' selected. A 'Create plant' button is located at the bottom left of the main content area. A modal window titled 'Create plant' is open, containing the following fields: Plant (Plant name), Country (Country name), City (City name), Address (Complete address), Latitude (Latitude value), Longitude (Longitude value), and ZIP (ZIP code). The 'Save' button in the modal is highlighted with a red circle and arrow labeled '3'. A list of plants is visible on the left, with 'ABB Lenzburg' highlighted by a red circle and arrow labeled '4'. The 'Plant management' tab is highlighted with a red circle and arrow labeled '1'. The 'Create plant' button is highlighted with a red circle and arrow labeled '2'.

Add a new plant to the organization

- 1) Go to **Plant Management**, under **Organization Management**
- 2) Click **“Create plant”**
- 3) Enter details in the pop-up prompt and **save**.
- 4) To enter a plant and manage the assets that are located at that plant, click one on the side the list. E.g.: **“ABB Lenzburg”**.

# Plant management – transfer asset to other plants

Transfer sensor from plant to plant to change location on the map

The screenshot shows the ABB Smart Sensor web interface. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. The user is logged in as 'Fabian'. The main content area displays a table of assets with columns for Name, Serial No., Last Sync, and Actions. A 'Transfer Asset' dialog box is open, showing a 'Transfer to' dropdown menu. Red circles and arrows highlight the 'Transfer' icon (1) and the 'Transfer to' dropdown menu (2).

Name	Serial No.	Last Sync	Actions
=LB3_WK211_AS01	BAC2	2020-05-12T23:50:02	↔
=LB3_WK012_AC01	3GV1311298021002	2020-05-14T02:01:07	↔
=LB3_WK013_AC02	3G1S14221407265006	2020-05-14T11:43:34	↔
=LB3_WK015_AC01	3GV-	2020-05-14T12:43:23	↔
=LB3_WK015_AS11	3GVA2110891713004	2020-05-14T12:44:11	↔
=LB3_WK014_AC02	3GV091038493006	2020-05-14T12:44:38	↔
=LB3_LU152_AC21		2020-05-14T12:45:34	↔
=LB3_WK210_AC31		2020-05-14T12:46:00	↔
=LB3_WW120_AC21		46:56	↔
=LB3_WK212_AS01		47:29	↔

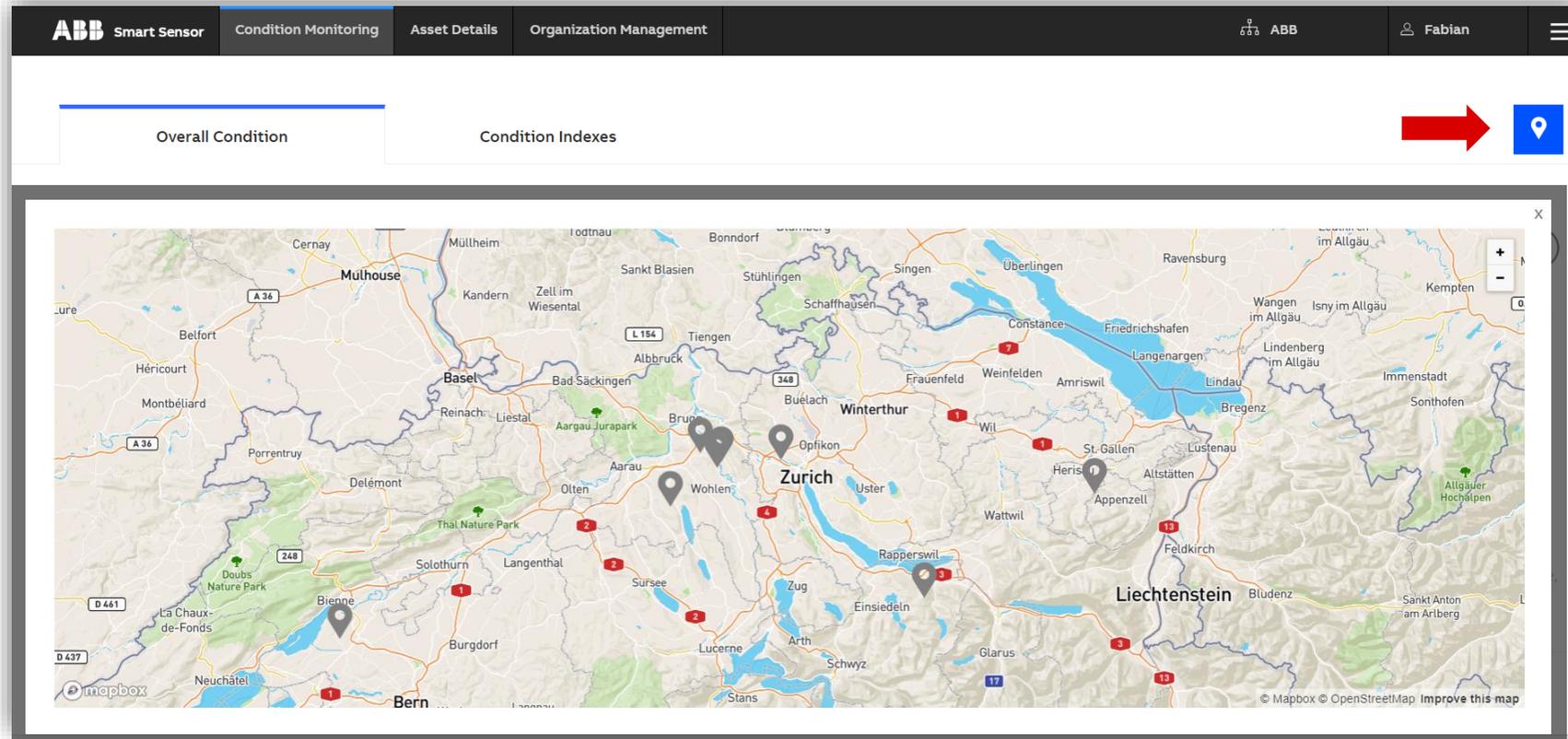
## Transfer asset to another plant:

In the “Plant Management” page, the “Plant List” is visible

- 1) Choose sensor from the plant to **transfer**, clicking on the arrows
- 2) In the pop up, **choose plant** from dropdown list and click “Save”. Your sensor will now be visible on the map at that new location.

# Plant location

Location of the plants on a world map



To see the location of your Organization's plants on a world map, navigate to **Condition Monitoring** view and click on the Map symbol 

- 1) The location is automatically saved at the moment a sensor is commissioned to a specific plant
- 2) Address can also be input manually, but will not influence the location in the map

# Organization management – Settings

## Remote firmware updates through gateway

ABB Smart Sensor Condition Monitoring Asset Details Organization Management ABB Fabian

Asset groups User groups Plant management Settings Trusted organization

Gateway maintenance 1

Day of the week: Start: Duration:

Select day ▼ 00:00 00:00

Please be aware that setting up maintenance mode will cause all gateways to prioritize the sensor firmware updates over load measurements, during the chosen interval. Updates will be performed in that time interval only if there are updates available for the sensors in range of gateways. Disabling or changing the maintenance intervals while a maintenance operation is ongoing, will have effects only after the current maintenance operation is completed

Save Reset all maintenance intervals

Automatic event dismissal 2

Automatic event dismissal period:

Disabled ▼

This period will configure after how much time an event raised by a configured alarm / alert will be dismissed automatically by the system. This is a cleaning mechanism put in place so that users do not see old information that is no longer relevant.

Save

Under the tab **Settings** in the Organization Management view

- 1) The **Gateway Maintenance** mode enables **remote sensor firmware updates**. During the configured update time, measurements are not updated, but remain saved on sensor memory.
- 2) The **Automatic event dismissal** allows to specify a time period for automatic dismissal of events that were not handled in the defined time period.

# Organization management – Trusted Organization

## Share Asset Groups with Trusted Organization

The screenshot displays the ABB Smart Sensor Organization Management interface. The top navigation bar includes tabs for Asset groups, User groups, Plant management, Settings, and Trusted organization. A red arrow points from the Settings tab to the Trusted organization tab. The Trusted organization tab is active, showing a search bar for trusted organizations, a list of available asset groups, and a list of added asset groups. The available asset groups include Pump Exp. Small WK231, Pump Exp. Big WK212, FW / Range Test, and ABB DEMO. The added asset groups list contains =LB3.

### Advantages:

- Easy access to multiple Organizations from one portal
- Powertrain capabilities from similar assets of different plants
- **Ability to certify third-party support without adding as members of Organization**

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# Trusted Organization

## Introduction

### Terminology

- **Admin:** Person that creates Organization. The Admin role is called **Moderator** in the User Group context
- **Sharing Organization:** Organization deciding which Trusted Organization to trust and share data with
- **Trusted Organization:** a support group certified by ABB and chosen by the end user to have access to hand-picked Asset Groups
- **Trusted User:** Member of “Trusted User” user group of Trusted Organization

### Notes

- User must be a Moderator from the “Admins” User Group in the Trustee Organization to view the Trusted Organization option and to “trust” their Asset Groups to the Trusted Organization.
- The user only has to be a User Group member in the “Trusted User” User Group within the Trusted Organization to view the Sharing Organization’s data (if the Sharing Organization picked that Trusted Organization to “trust”).
- Trusted User does not need to be a member in the Sharing Organization to see data from that organization, as long as the Sharing Organization Moderator has granted that access to the Trusted Organization.

# Trusted Organization

## Background info

**Sharing Organization «ABB»**

Adding an Organization to “Trusted Organizations” automatically creates a “Trusted User Group”. Users must be added to this user group in order to view assets of organizations with trust relations.

The Trusted Organization feature allows **trusted service providers or ABB personnel** to view all organizations/customers they have been selected for within the same portal.

List of **Trusted Organizations**. The **Sharing Organization «ABB»** can specify which asset groups are visible for which Trusted Organization. In this Example **«ABB DIGITAL GLOBAL»** is a **Trusted Organization**.

List of Asset Groups in **«ABB»** that are currently not shared with **«ABB DIGITAL GLOBAL»**. A click on the + symbols makes the asset groups visible to **«ABB DIGITAL GLOBAL»**

List of Asset Groups in **«ABB»** that are currently shared with **«ABB DIGITAL GLOBAL»**

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# Trusted Organization

## How to Create

1. Create Organization (will appear as normal organization)
2. Follow specific procedure to certify created organization as 'Trusted' → **please refer to your local Smart Sensor contact or support**
3. Once the organization has been trusted, a 'Trusted User' user group is automatically created.
4. The Admin of the trusted organization must manually add each user individually to the 'Trusted User' user group.
5. Request the sharing organization Admin to trust the created 'Trusted Organization'. See examples on following slides

# Trusted Organization

## How to “trust” a Trusted Organization

1

Enter name x | Q ⊕

Trusted organizations

ABB DIGITAL GLOBAL

ABB Dodge Global Support

ABB India Sm...nsor Support

Available asset groups

Pump Exp. Small WK231

Pump Exp. Big WK212

FW / Range Test

ABB DEMO

Added asset groups

=LB3

2

Organization **Admin** of the **Sharing Organization** will select the desired “Trusted Organization” to which they want to grant access. Here ABB DIGITAL GLOBAL.

Organization Admin of **Sharing Organization** will select the Asset Groups that shall be shared with the ‘Trusted Organization’. Click on + to add.

1

Please note that not all trusted organizations will be visible. You may have to know the name in advance and type it into the name field to choose it. This applies for ‘non-public’ trusted organizations

# Trusted Organization

## How to share asset data with a Trusted Organization

The screenshot shows the 'Trusted organization' tab in the ABB Smart Sensor Organization Management interface. The interface is divided into several sections:

- Trusted organizations:** A search bar with the text 'Enter name' and a search icon. Below it, a list of trusted organizations is shown, including 'ABB DIGITAL GLOBAL', 'ABB Dodge Global Support', and 'ABB India Sm...nsor Support'.
- Available asset groups:** A list of asset groups that can be added, including 'Pump Exp. Small WK231' and 'Pump Exp. Big WK212'. Each item has a plus icon to its right.
- Added asset groups:** A list of asset groups that have been added to the trusted organization. This list is highlighted with a red box and contains 'FW / Range Test', 'ABB DEMO', and '=LB3'. Each item has a minus icon to its right.

A red arrow points from the 'Added asset groups' list to a text box on the right.

Once Asset Groups have been added they will appear here and the 'Trusted Organization' will have access to them.

# Trusted Organization

How to view assets from sharing organizations while on the portal of the Trusted Organization

ABB Smart Sensor Condition Monitoring Asset Details Organization Management ABB DIGITAL GLOBAL Fabian

ABB =LB3 =LB3\_WK012\_AC01

**All Asset Groups that the sharing organization chosen to be accessible for the Trusted Organization will appear here**

Redirect to powertrain

Event log Operational parameters Asset properties Sensor properties Vibration FFT (Beta) Notification configuration Reports

Last measurement: 4 hour(s) 11 minute(s) Data loaded: 7/15/2020 - 7/22/2020

Vibration (Tangential) Speed (rpm) Vibration (Tangential) (mm/s RMS)

**All of the Sharing Organizations (here ABB) that have selected the Trusted Organization ABB DIGITAL GLOBAL and added their asset groups will appear here.**

**This is the view from the Trusted Organization ABB DIGITAL GLOBAL Accessing Assets from it's Sharing Organization ABB**

# Trusted Organization

## How to **stop sharing** asset data with a Trusted Organization

The screenshot shows the 'Trusted organization' tab in the ABB Smart Sensor interface. It features three main columns:

- Trusted organizations:** A search bar with 'Enter name' and a list of organizations including 'ABB DIGITAL GLOBAL', 'ABB Dodge Global Support', and 'ABB India Sm...nsor Support'.
- Available asset groups:** A list of asset groups with plus signs for adding them: 'Pump Exp. Small WK231', 'Pump Exp. Big WK212', and 'Default Asset Group'.
- Added asset groups:** A list of asset groups with minus signs for removing them: 'FW / Range Test', 'ABB DEMO', and '=LB3'. The minus sign for '=LB3' is highlighted with a red box and a red arrow.

If, for some reason, an asset group shall not be shared anymore, it can be removed from the 'Added asset groups', by clicking on the minus sign. This will revoke the trusted organization's access to rights and data is no longer shared (for this asset group).

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# 3. Activation – mobile app

[Back to table of contents](#)

<https://youtu.be/rcOWbXf55ec?list=PLFwq1JTSL1fh7Xv2q2YIle83Ezi0SLVFH>

# Smart Sensor for hazardous areas

Special Ex-certified Smart Sensor hardware for hazardous environments

- 1) The same app and portal are used, with practically unchanged user interface.
- 2) The set-up of the gateway for Ex environments needs a special enclosure.  
→ **Please contact your local sales unit for details on installations in Ex environments**
- 3) Improved embedded hardware

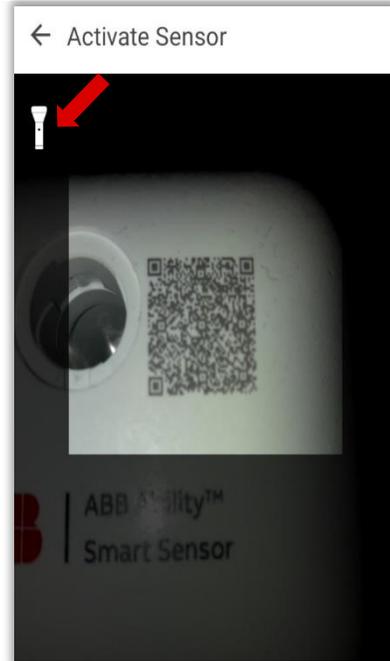


# Activate sensor

How to activate a sensor and make it visible to the app



**Attention: sensor must be in Bluetooth range** 



The activation method differs between the standard and Ex versions.

For the standard Smart Sensor, use the vibration or flipping method.

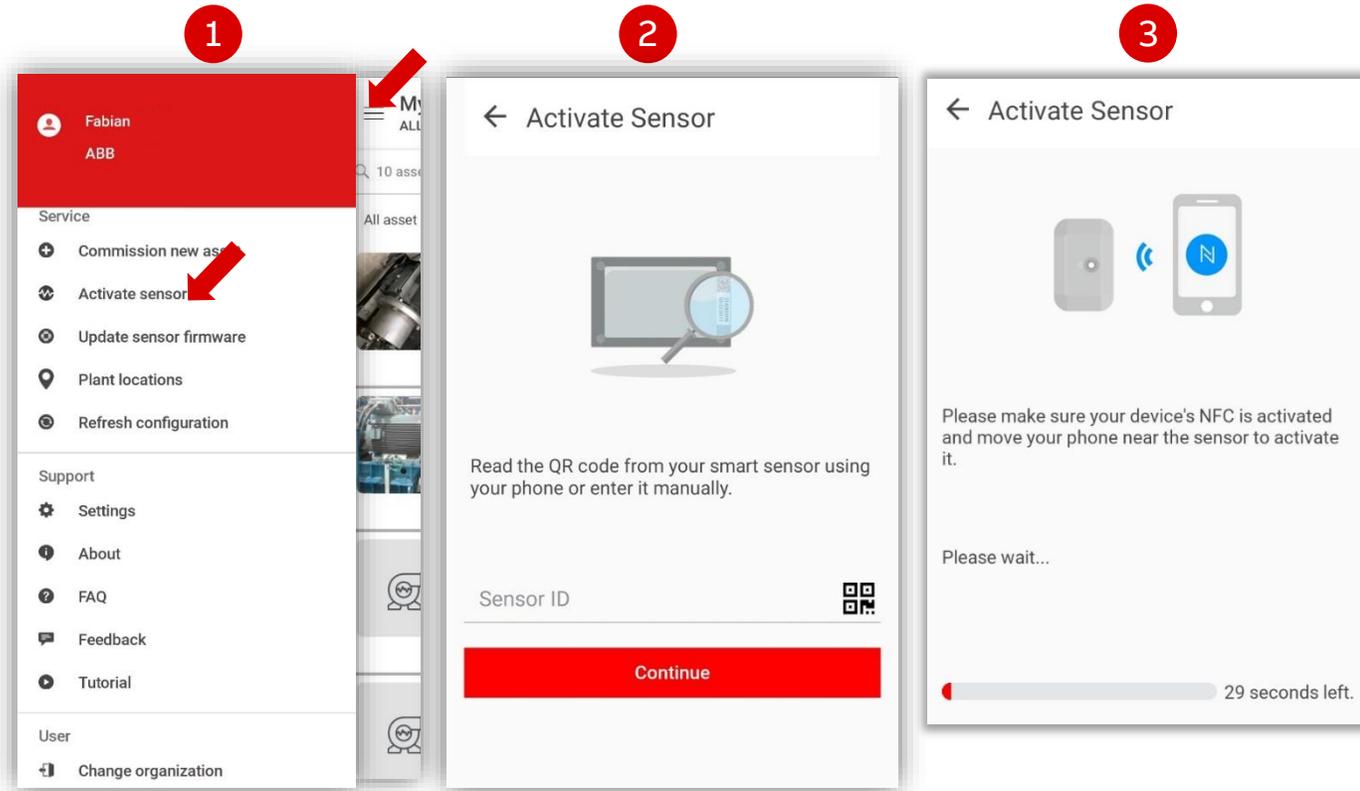
For the Ex version, use the NFC antenna. Please check your device's documentation for information on the NFC antenna location.

For activation of sensors located in a Ex zone, an Ex certified Smartphone is needed. Alternatively, the sensor must be activated in a safe area, before installation in the Ex zone.

If you have trouble reading the QR code, activate your flash with the icon in the top left corner of the corresponding screen.

# Activate the high performance Ex Smart Sensor

How to activate a high performance Ex Smart Sensor



- 1) Click “**Activate Sensor**” (main menu).
- 2) Read the **QR code** with the camera
- 3) Move your NFC antenna close to the indicated area for 5 seconds.

**Attention: NFC and Bluetooth must be activated on your smartphone.**

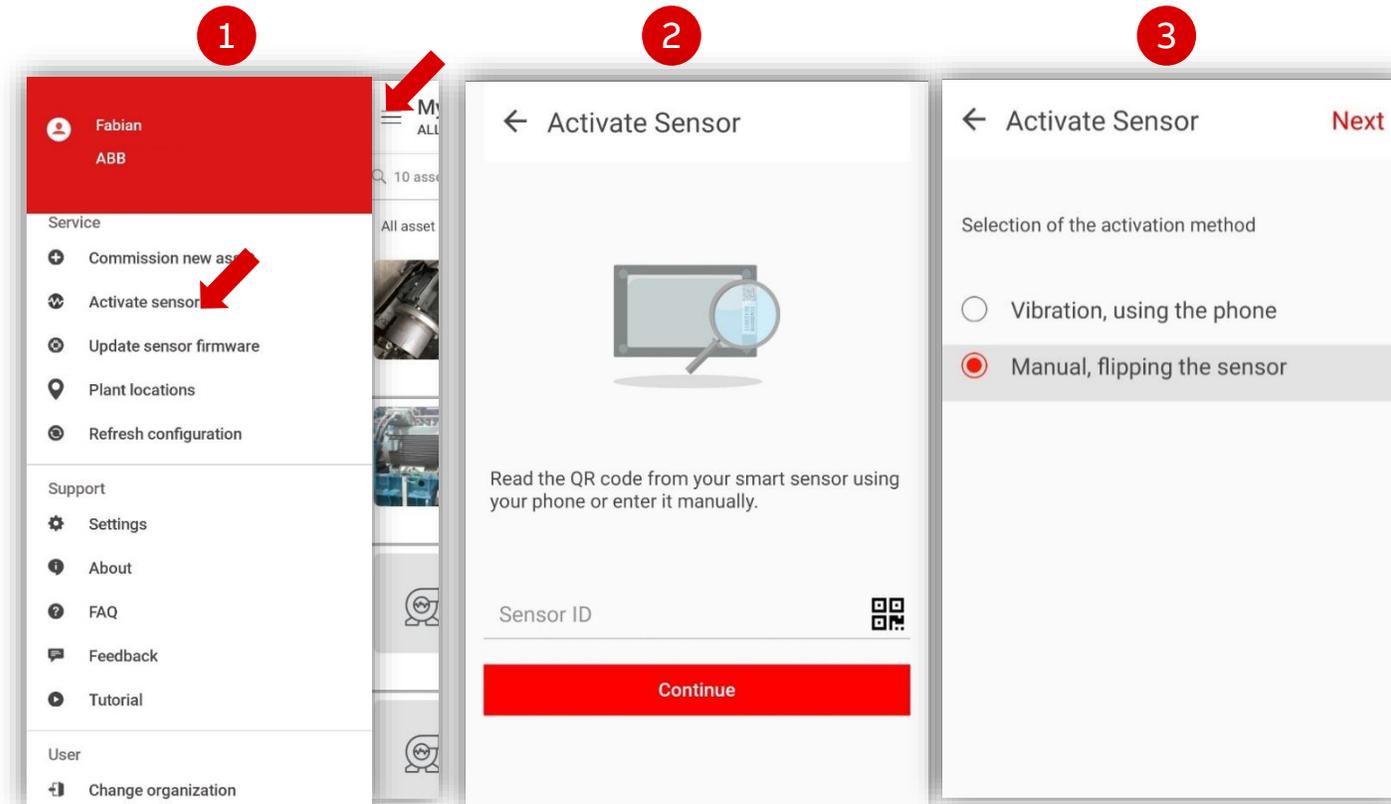
**Sensor must be in Bluetooth range**



After successful activation, the sensor identifier is visible via Bluetooth and the sensor is ready for commissioning.

# Activate the standard Smart Sensor

How to activate a standard sensor and make it visible to the app



Make sure your mobile device's Bluetooth is activated and that it is connected to the Internet.

- 1) Click “**Activate Sensor**” (main menu).
- 2) Read the **QR code** with the camera
- 3) Use one of the following methods:
  - a) Method 1: vibration\*
  - b) Method 2: flipping

\*Back plate of sensor has to be in **direct contact** with the mobile phone.

After activation, sensor is ready for commissioning to an organization.

**Attention: sensor must be in Bluetooth range** 

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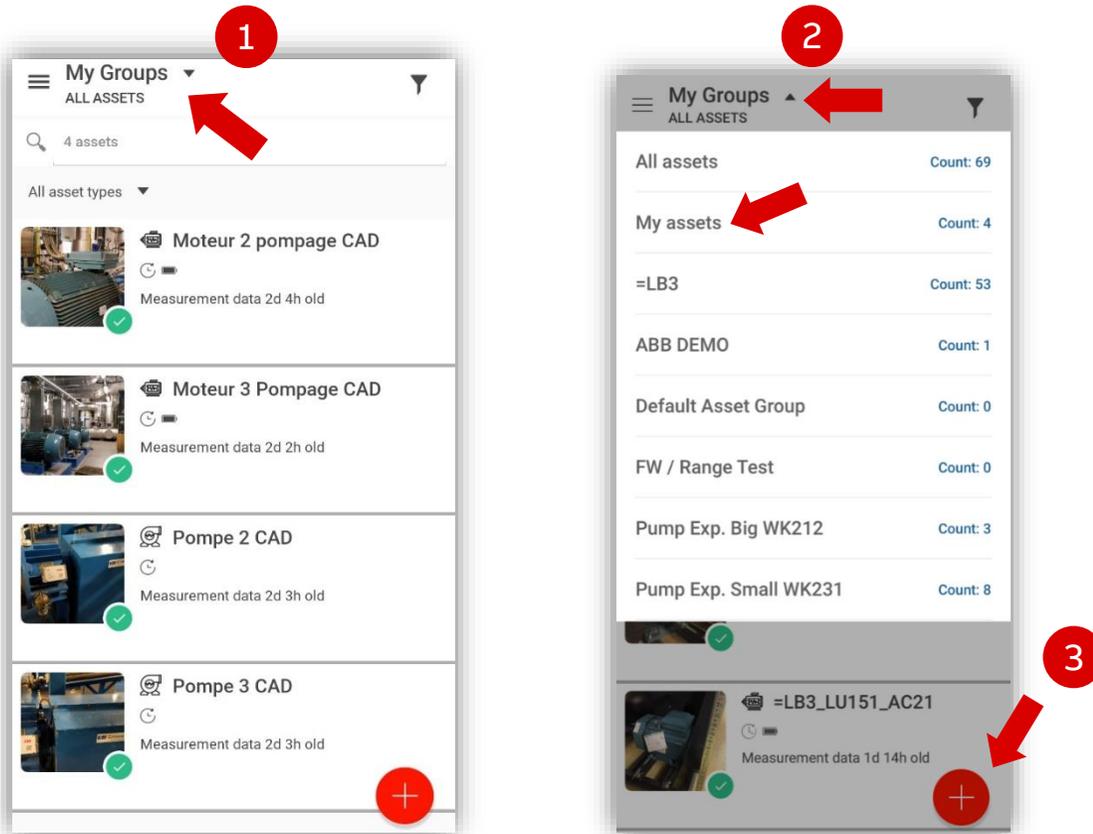
## 4. Commissioning – mobile app

[Back to table of contents](#)

<https://youtu.be/rcOWbXf55ec?list=PLFwq1JTSL1fh7Xv2q2YIle83Ezi0SLVFH>

# Commissioning - add sensor to organization

Adding activated sensors to asset groups via the app



1) Default starting screen: **“All Assets”**

- This initial screen shows you all assets in the organization

2) Access **“My Groups”** view:

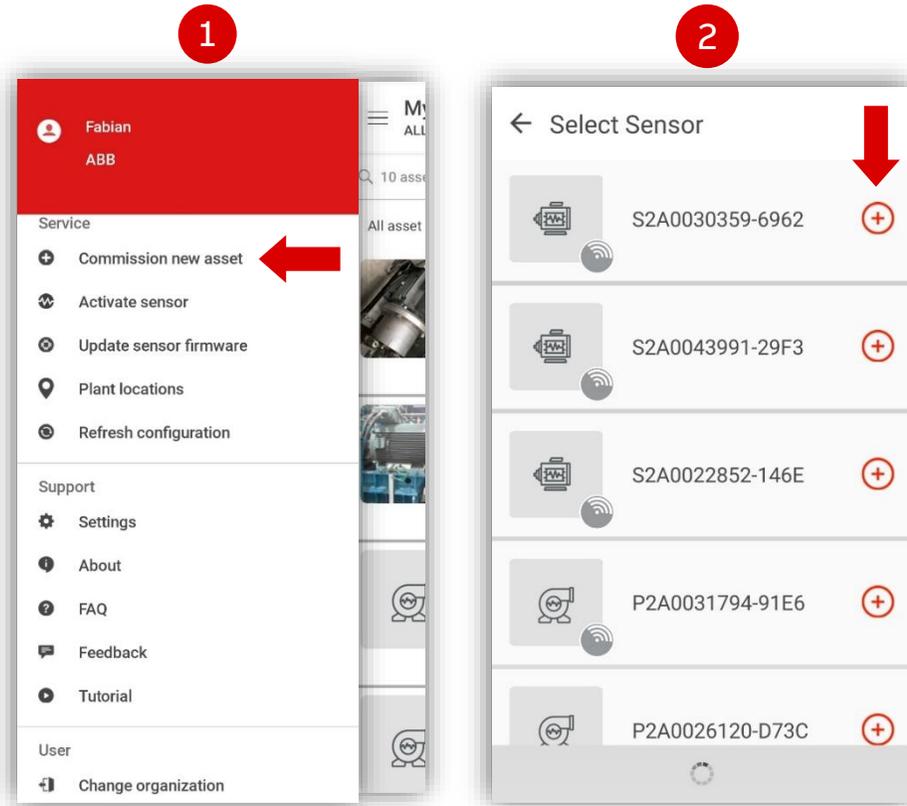
- All authorized asset groups are shown in drop-down
- Initially, the only group is **“My Assets”**  
*\*This group is private, every user has one and no assets should be here, please transfer all assets to another asset group*

3) Add a sensor to commission it by clicking **+** or add it from the main menu (next slide)

**Attention: sensor must be in Bluetooth range** 

# Commissioning: add sensor

Viewing your sensor on the app



Serial number



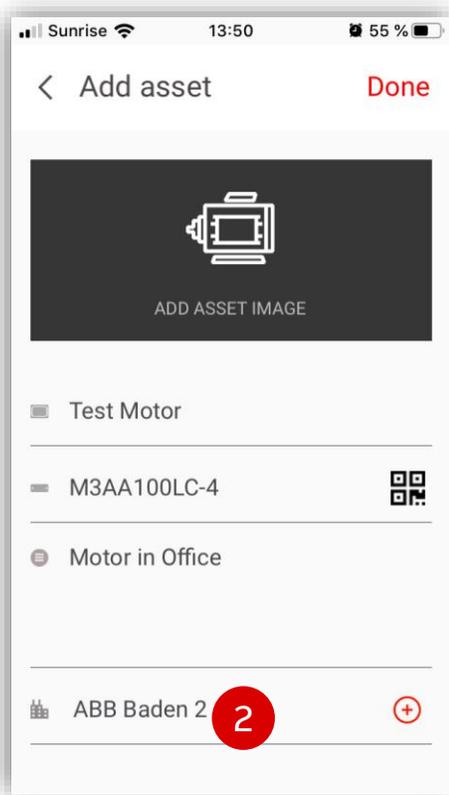
- 1) Click “**Commission new asset**” on the main menu
- 2) Choose sensor according to serial number (SN) by clicking on the + next to it. You find the SN in the sticker of the sensor.

*Sensor must be activated first! If the sensor is not found, make sure you are in Bluetooth range and try again.*

**Attention: sensor must be in Bluetooth range** 

# Commissioning: nameplate configuration

Enter initial settings



## 1) Configure **initial settings**

Asset name, description and serial number

→ **Attention: not the sensor serial number**

Optional: add a picture of the asset

## 2) Enter plant by selecting from dropdown or create a new plant:

- To create a new plant, tap on the “+”
- Turn on GPS in your mobile device
- Tap on “**Done**” in the upper right corner

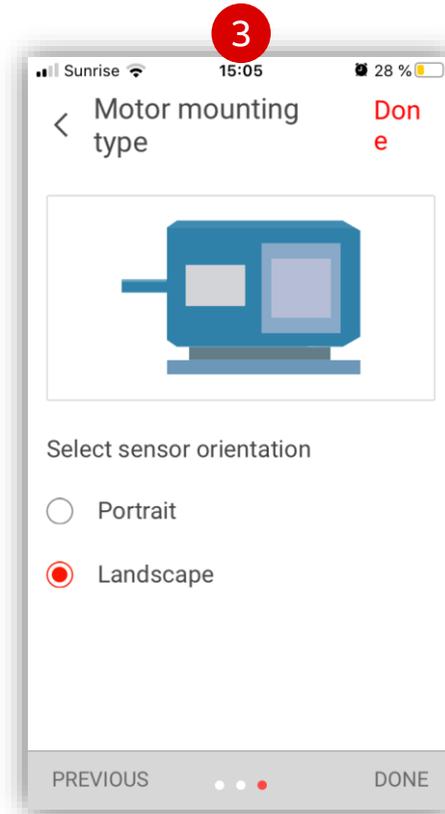
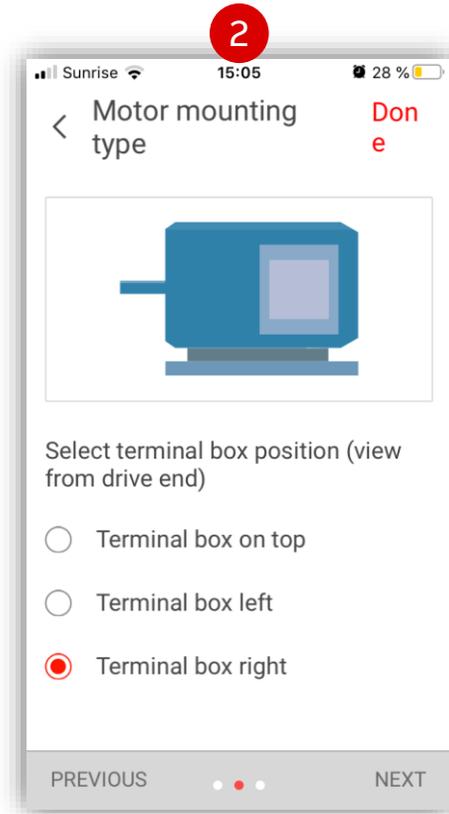
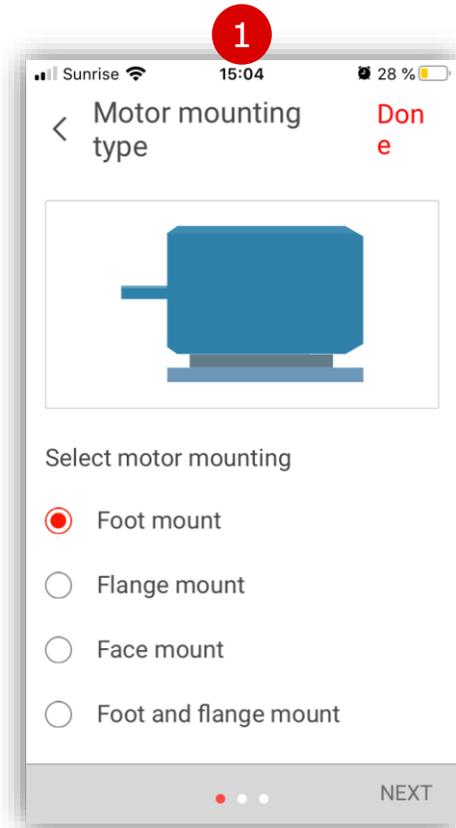
**Attention:** sensor must be in Bluetooth range 

**Important:** accurately configuring your asset’s nameplate on the sensor is necessary for correct operation.

**Important:** the same process is valid for the Smart Sensor for pumps and mechanical products, only the inputs differ.

# Commissioning: fixation and mounting

Mandatory info about the fixation of of the motor and sensor mounting

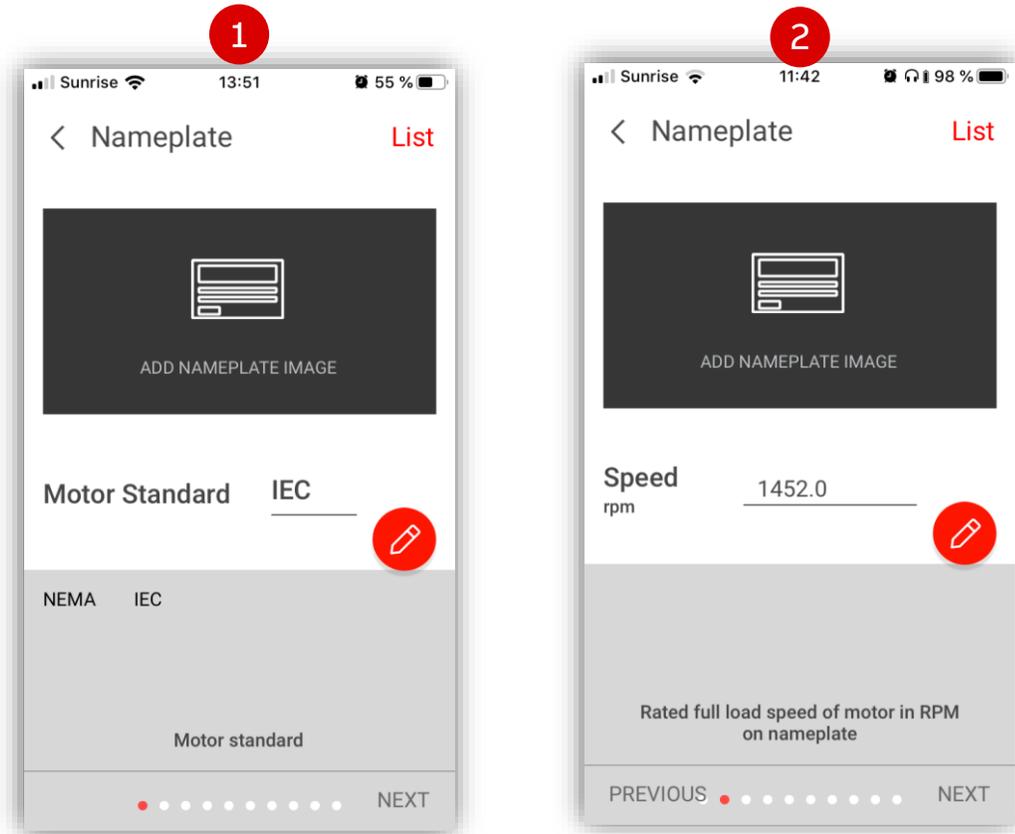


**Attention: sensor must be in Bluetooth range** 

- 1) Motor Mounting
- 2) Terminal Box Position
- 3) Sensor Orientation

# Commissioning: nameplate configuration

Mandatory nameplate details, example: motor sensor



## 1) Motor standard

For LV motors either NEMA or IEC

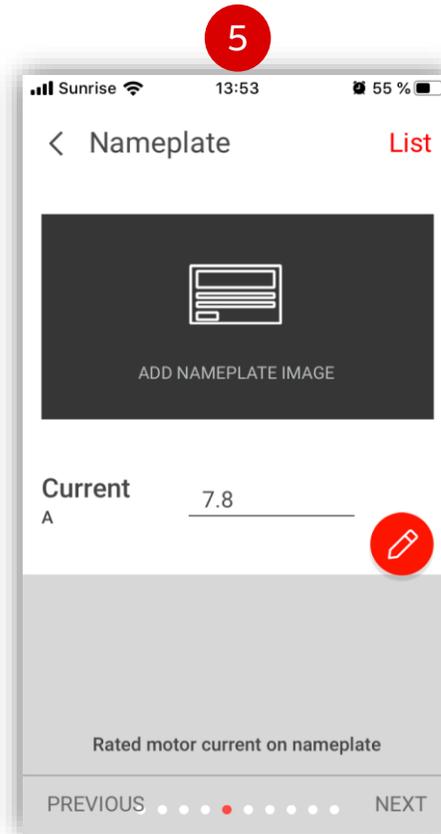
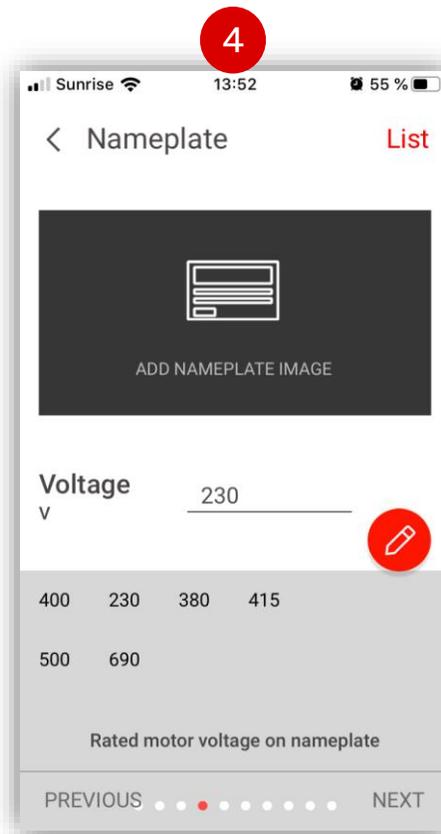
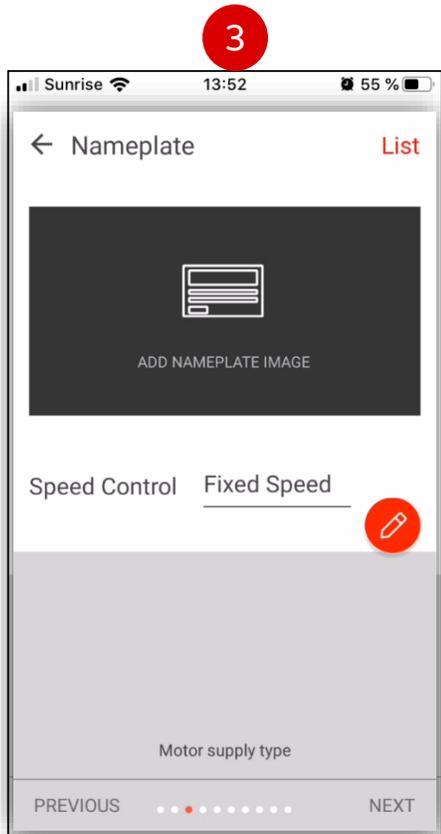
## 2) Nominal motor speed

rated full load motor speed in rpm

**Attention: sensor must be in Bluetooth range** 

# Commissioning: nameplate configuration

Mandatory nameplate details, example: motor sensor



Rated nameplate quantities:

### 3) Speed Control

- Either Fixed Speed or variable speed drive

### 4) Motor voltage

- Rated motor voltage

### 5) Motor current

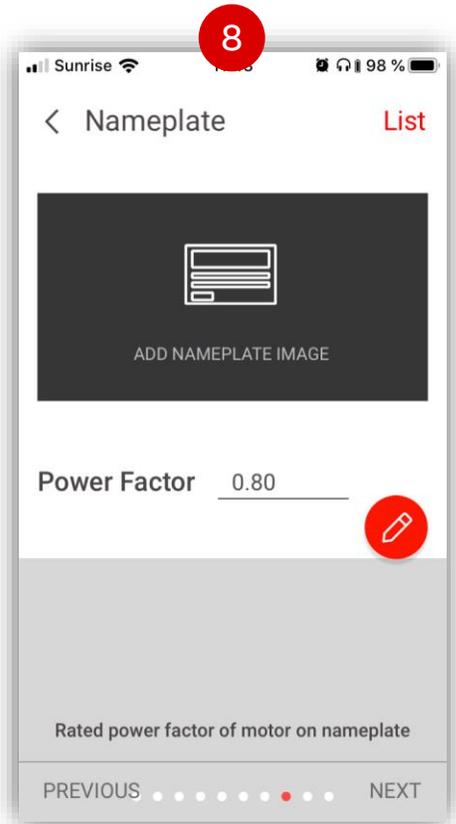
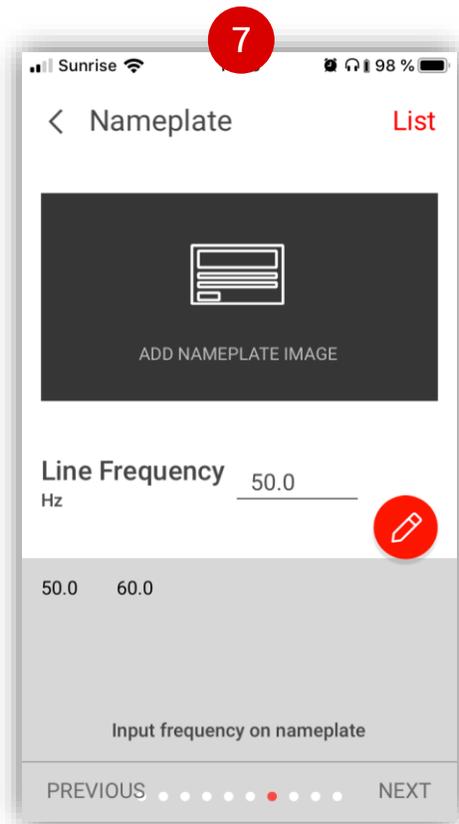
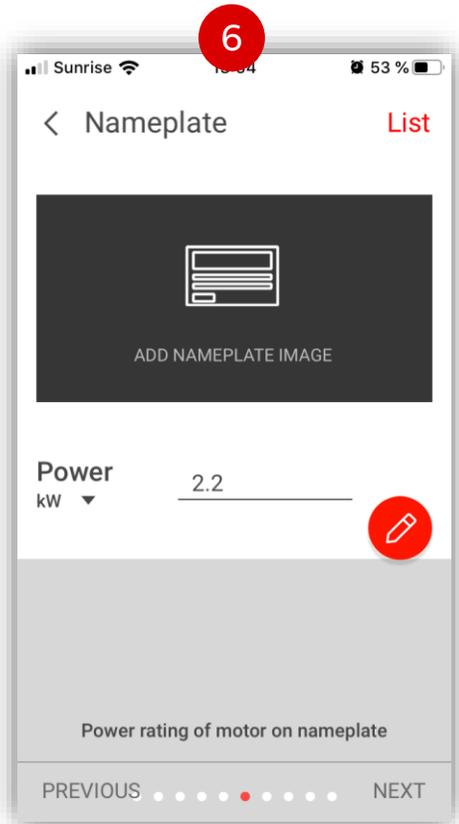
- Nominal current at the rated voltage

**Attention:** sensor must be in Bluetooth range



# Commissioning: nameplate configuration

Mandatory nameplate details, example: motor sensor



Rated nameplate quantities:

## 6) Motor nominal power

- Power rating on nameplate in kW

## 7) Line frequency

- Input frequency on nameplate

## 8) Power factor

- Power factor on nameplate

**Attention:** sensor must be in Bluetooth range 

# Commissioning: nameplate configuration

## Bearing information input



9

← Nameplate List

ADD NAMEPLATE IMAGE

DE Bearing 6308

FAG ▼

Sealed  Non sealed

Drive end bearing number.  
Do not forget to select a manufacturer for bearing.

PREVIOUS ..... NEXT

10

← Nameplate List

ADD NAMEPLATE IMAGE

NDE Bearing 6308

FAG ▼

Sealed  Non sealed

Non drive end bearing number.  
Do not forget to select a manufacturer for bearing.

PREVIOUS ..... DONE

### 9) Drive-End (DE) Bearing

- Select if Sealed/Non sealed
- Choose Manufacturer from drop down ▼
- Enter bearing number

### 10) Non Drive-End (NDE) Bearing

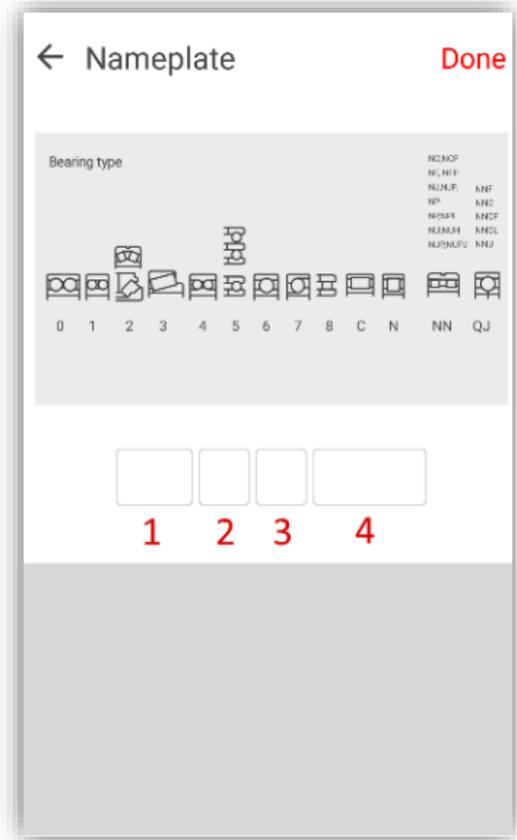
- Same as 9)

**Attention: sensor must be in Bluetooth range**



# Commissioning: nameplate configuration

## Bearing information input



### 11) Bearing code input

- Bearing code has to be in SKF format
- Input basic designation (no prefixes or suffixes)
  1. Bearing type
  2. Radial width / thrust height
  3. Diameter series
  4. Bore diameter size (d/5)
- E.g. accepted codes: 6303, NU2224

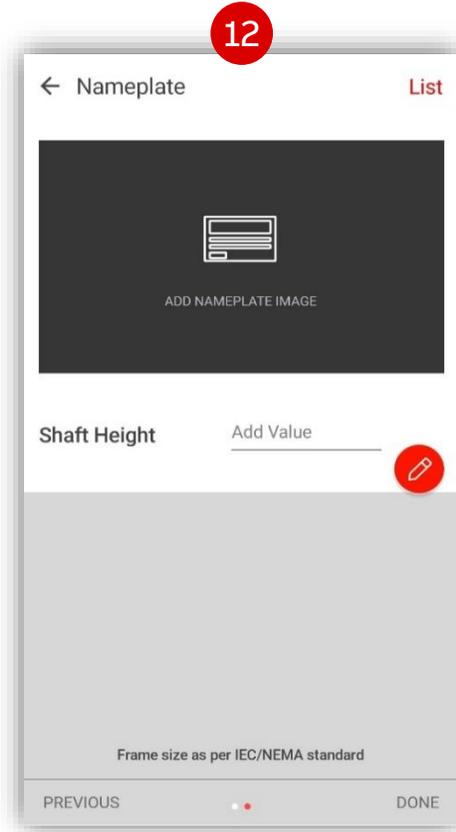
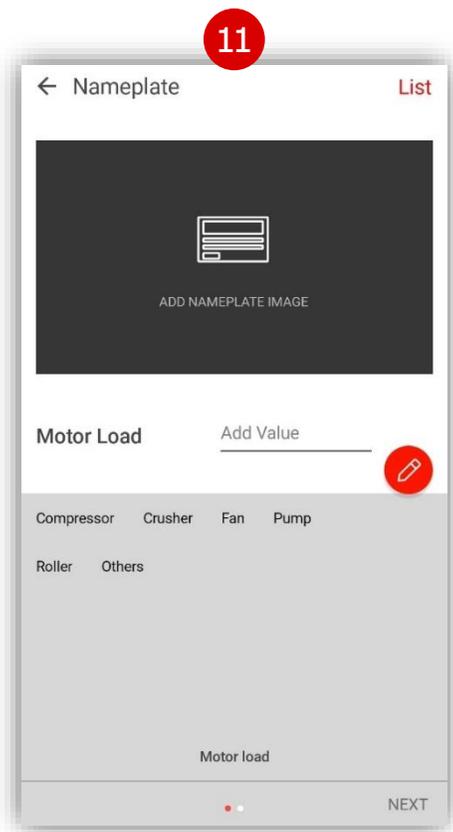
**Attention: sensor must be in Bluetooth range** 

If your bearing code is not accepted, please contact

[support.smartsensor@abb.com](mailto:support.smartsensor@abb.com)

# Commissioning: nameplate configuration

Optional nameplate details, example: motor sensor



Optional inputs (recommended for data labeling and future advanced analytics):

## 11) Motor load

- Application being driven by the motor

## 12) Shaft height

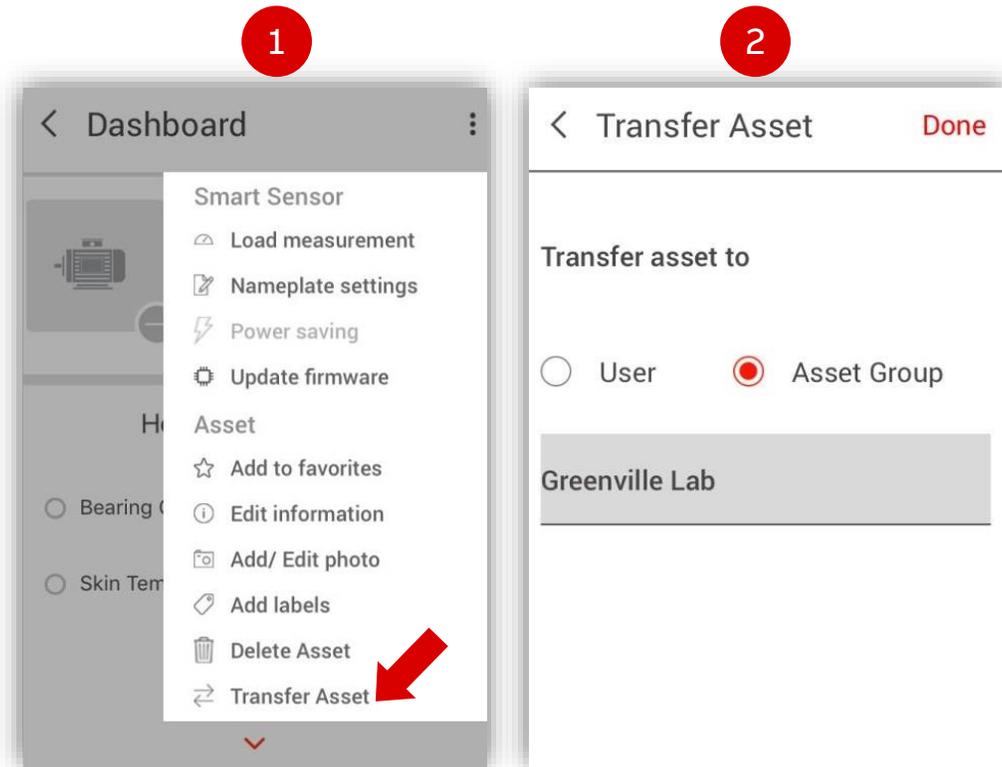
- According to IEC / NEMA standard

**Attention:** sensor must be in Bluetooth range



# Commissioning: transfer asset

Transferring an asset to specific asset group



1) Upper right corner menu or immediately after commissioning:

**"Transfer Asset"** (You must have admin rights)

2) Define access to the sensor/asset

- Tick **"Asset Group"** to choose one, or
- Tick **"User"** and enter an e-mail address

*In step 2b), granting access to a user would cause **only that user** to have access to the sensor in their "My Assets" group.*

**Attention: sensor must be in Bluetooth range** 

- Note: It is not possible to transfer assets outside of the current organization. If you need to do this, delete the asset and re-commission it while active in the new desired organization.*

# Configuration and commissioning

## Summary



### Create account

- Become part of the Smart Sensor user base and enable predictive maintenance for your assets.

You now have access to the Smart Sensor Platform app and to the [Digital Powertrain](#) and [Smart Sensor](#) portals.

1

### Create your organization

- Create organization via app.
- Create User and Asset Groups via the Portal.
- Connect User/Asset Groups.
- Invite users to an Organization.
- Add users to User Groups.

You are ready to activate and commission your sensors.

2

### Activate your sensor

- Activate the Sensor using the mobile app.

*Recommendations:*

1. *Do not commission sensor before previous steps.*
2. *Gather nameplate information beforehand to commission your sensors from the comfort of your office.*

You can now add sensors to Asset Groups.

3

### Configure and deploy!

- Find sensor with mobile app.
- Add sensor to the desired Asset Group.
- Enter nameplate data for the monitored asset.
- Transfer to an Asset Group.
- Mount sensor on the asset.

Load measurements with the app or wait for the gateway, and view trend data online!

4

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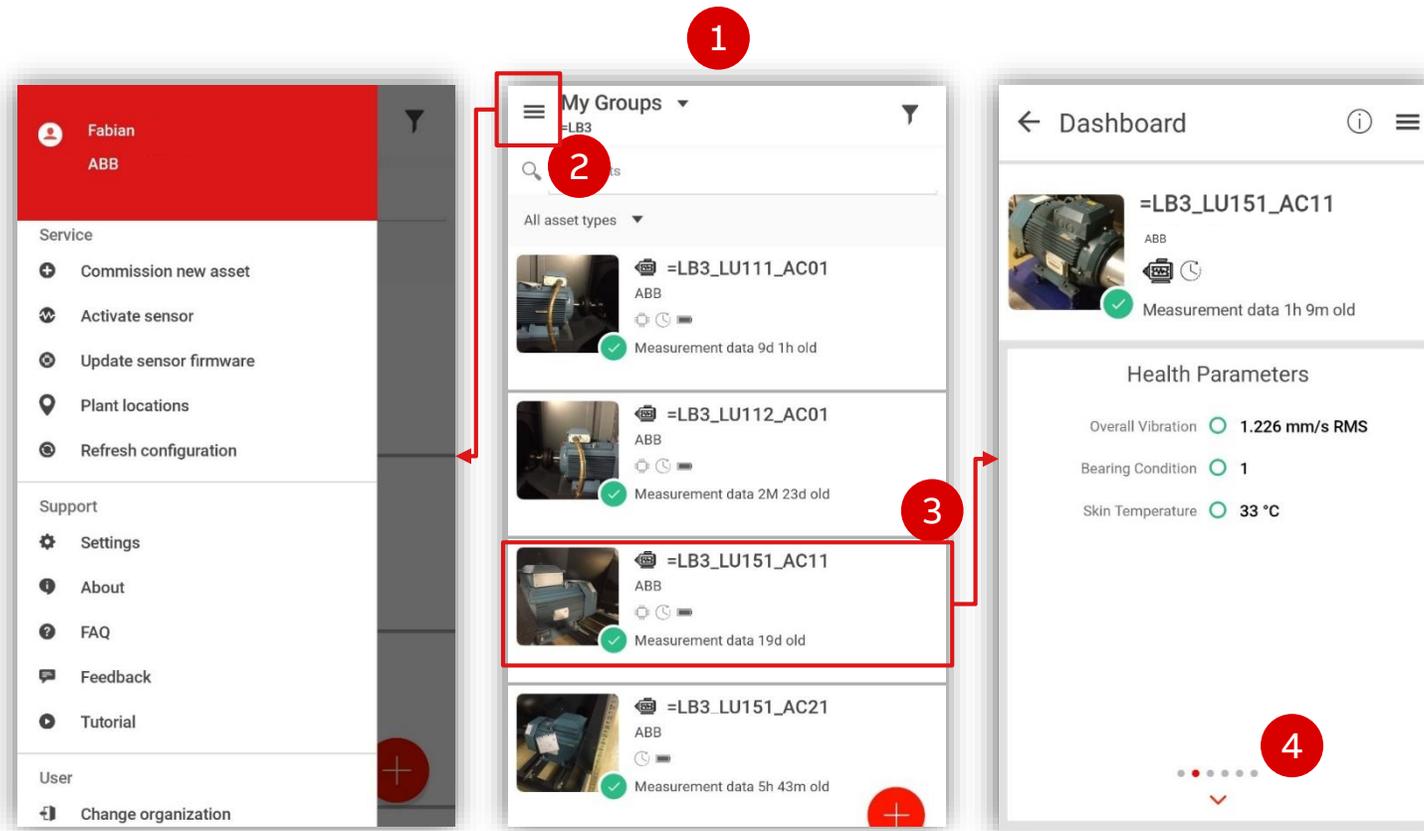
# 5. Smart Sensor app general functionalities

[Back to table of contents](#)

Download app to tablet or cellphone with iOS or Android

# Landing page of the app

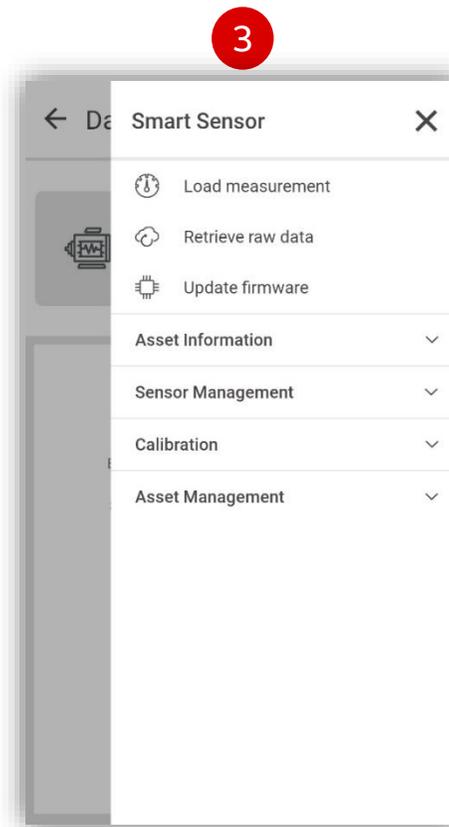
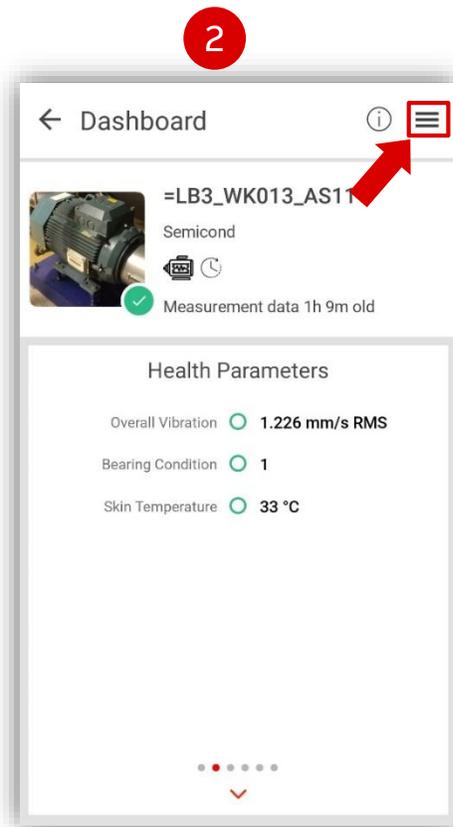
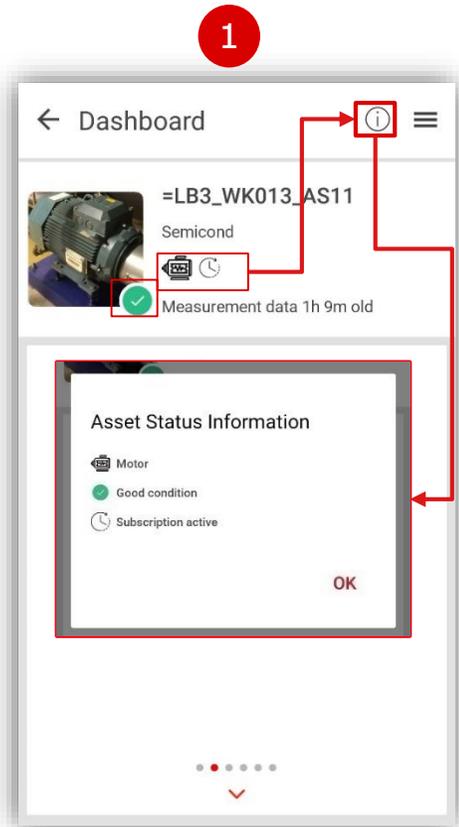
Organization, Asset Group and Asset views



- 1) Landing page. Clicking on the top left icon leads you to the main menu (☰).
- 2) The active organization is visible below your name. You can commission, activate and update Sensors, request support and change your organization .
- 3) Clicking on an asset shows the detailed view for that particular asset.
- 4) Swiping left or right on the information card shows you additional information such as events and health status.

# Landing page of the asset

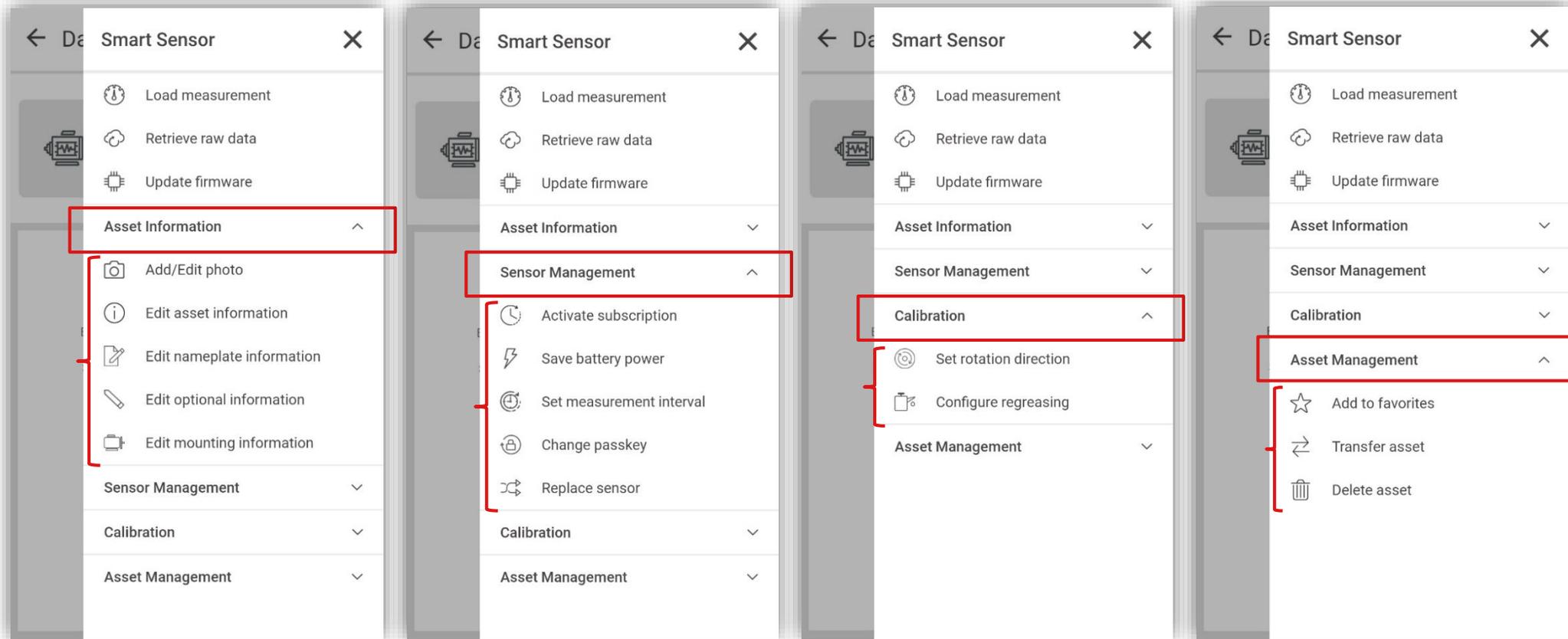
Organization, Asset Group and Asset views



- 1) Click on the information icon ⓘ on the top left for an explanation of the pictograms.
- 2) Click the **menu** button to access further functionalities.
- 3) Several functionalities available:
  - a) **Load measurements**
  - b) **Retrieve raw data** (must be requested to support team)
  - c) **Update firmware** (only visible if firmware is not newest)
  - d) Further functions on next slides.

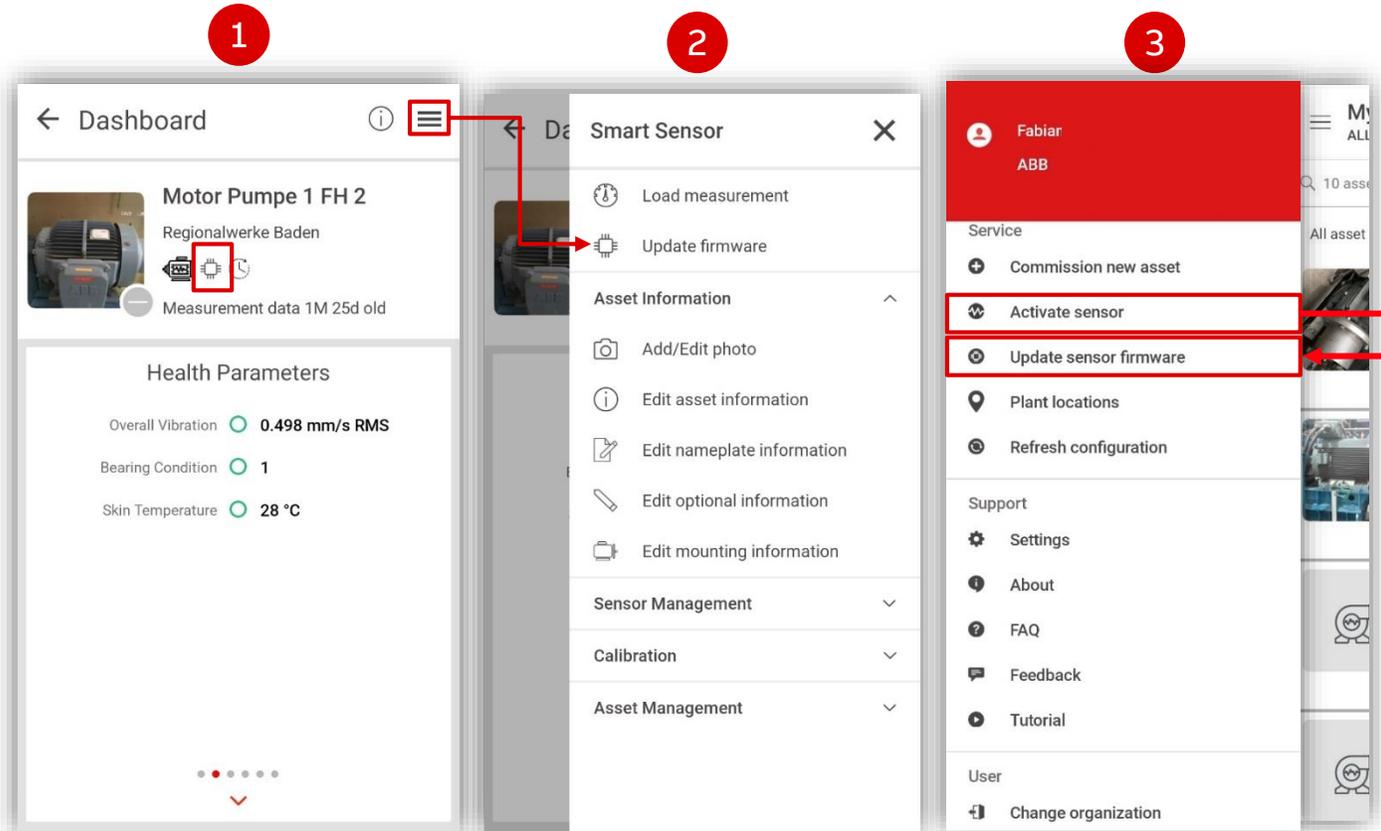
# Functionality menu of the asset

## Asset views and Asset management



# Update firmware

How to keep your sensor up-to-date

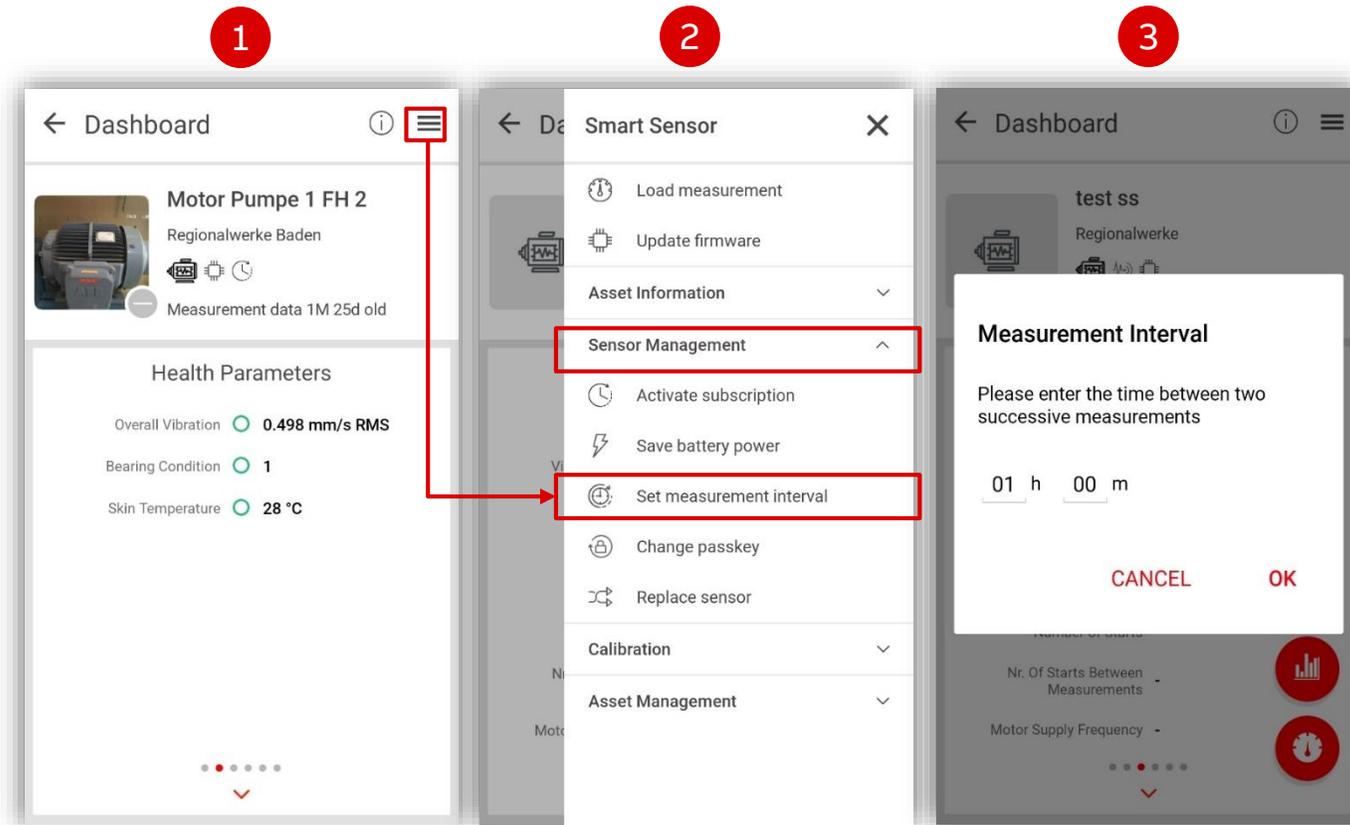


- 1) If your commissioned sensor needs a firmware update, you will see the “**microchip**” pictogram under the asset name.
- 2) Open the asset menu at the top right corner and click “**Update firmware**”.
  - Follow the instructions on the screen
  - Average update time approx. 15 minutes.
- 3) **To update the firmware before commissioning,** activate the sensor then use the main menu functionality.

**Attention: sensor must be in Bluetooth range** 

# Measurement interval

Adjust the measurement interval



Sampling interval: 1 h by default.

Max. Interval: 12 h

Min. Interval: 15 min

Memory: 720 measurements

Estimated battery life: 5 years.

Shortening the interval decreases the battery life and the length of internal history proportionately.

**Attention: sensor must be in Bluetooth range** 

E.g. 1h interval:

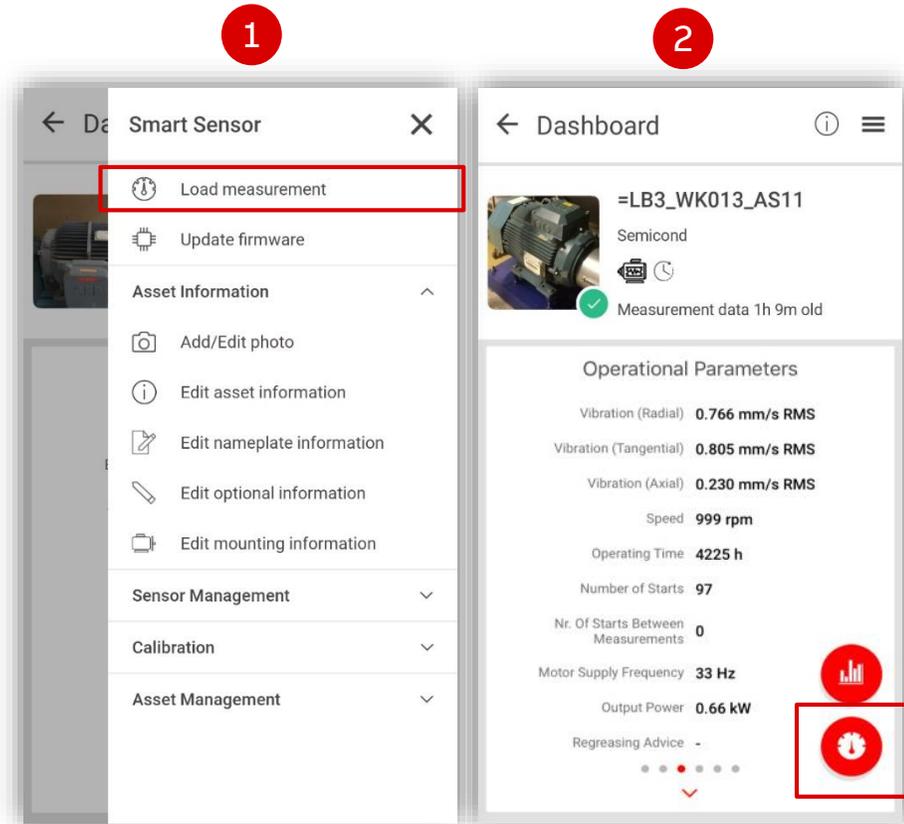
- $720 / 24h = 30$  days in memory

E.g. 30min interval:

- Battery life est. 2.5 years
- 15 days data in memory

# Load measurement

## Smart Sensor Platform mobile app



Load measurements from the asset detail view:

- 1) Tap **“load measurement”** from the asset menu to load from sensor’s memory.
- 2) From the **“operational parameters”** asset card, click on gauge button to trigger a new measurement on-demand.

Measurements are loaded to the cloud (app and portal)

The measurement is triggered immediately, outside of the fixed schedule.

**Attention: sensor must be in Bluetooth range**



# Load measurement offline (weak or no mobile internet)



1 → 2

**Move towards better mobile connectivity**

3

Dashboard

Test Motor  
ABB Baden 2  
Measurement data 2m old

Measurements were added successfully!

OK

Skin Temperature 23 °C

My Groups  
MY ASSETS

Test

All asset types

Syncing

Synchronizing changes

- ✓ Update sensor features for Test Motor
- ✓ Add measurements Test Motor
- ✓ Get asset groups
- ✓ Get asset types
- ✓ Get plants
- ↓ Get assets

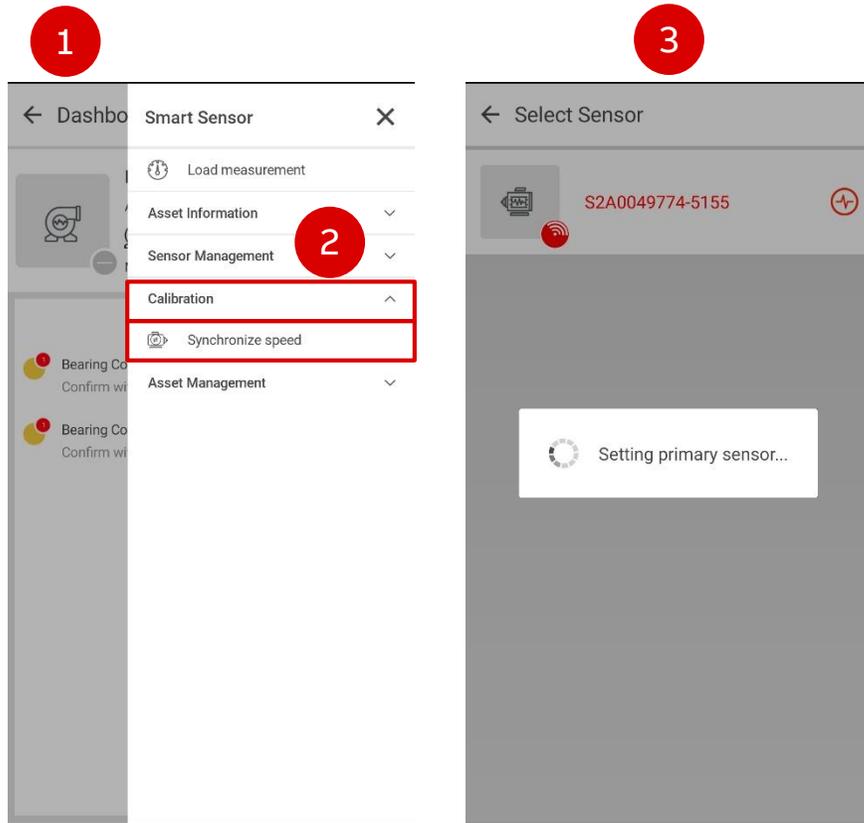
With weak or no internet connection:

- Log in to Smart Sensor app and to your organization
  - Put phone in flight mode (except Bluetooth)
- 1) Load data (from sensor to mobile device via Bluetooth).
  - 2) Move to better coverage area, turn flight mode off.
  - 3) Swipe down on the app to sync with the cloud.

You should see “Add measurements <Asset Name>” in the sync prompt.

**Attention: sensor must be in Bluetooth range** 

# Synchronize motor and pump sensor



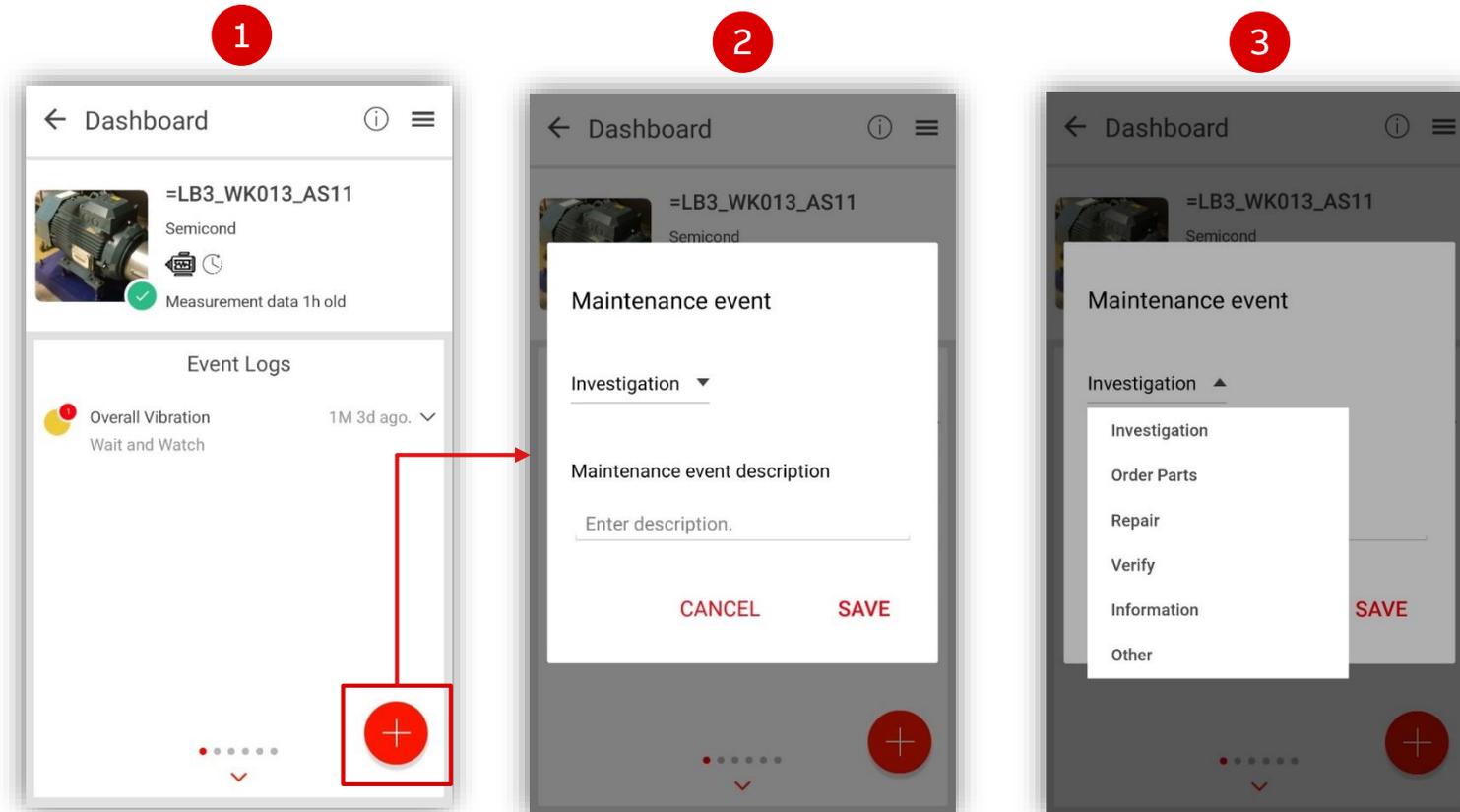
You can now enhance the pump sensor's precision by synchronizing it with a motor sensor via the mobile app.

- 1) Navigate to **PUMP SENSOR** asset view.
- 2) Choose **Synchronize speed** from the "Calibration" submenu.
- 3) Pick a **MOTOR SENSOR** from the list of sensors in range.
- 4) Check the relation between sensors on the **ASSET CARD**

**Attention:** sensor must be in Bluetooth range 

# Add maintenance event

Add maintenance event in the app



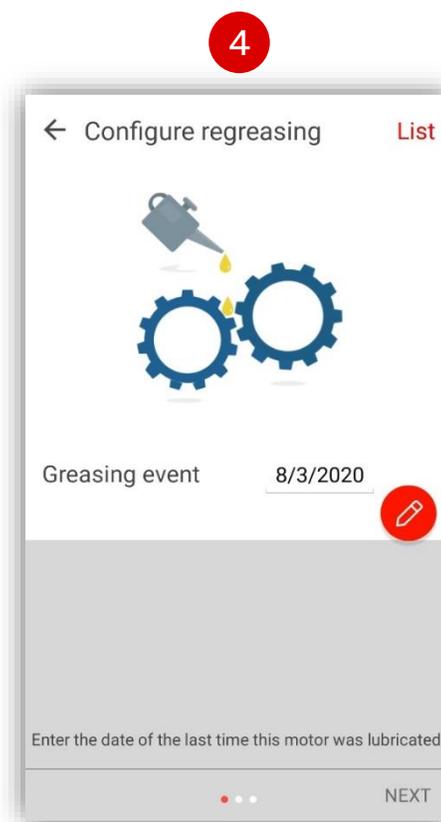
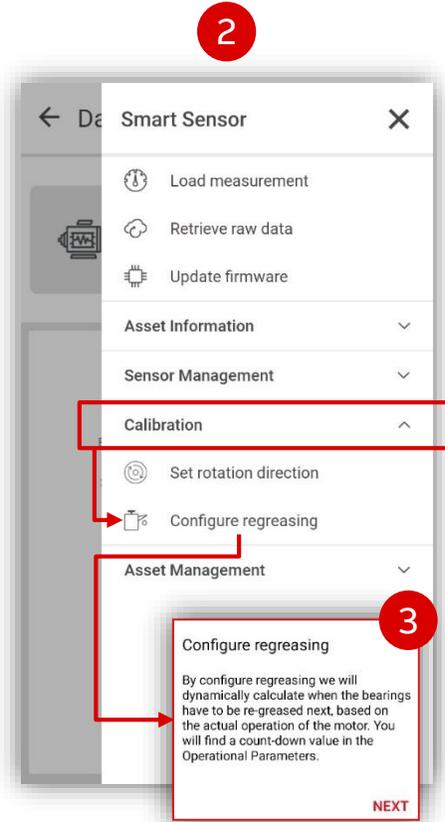
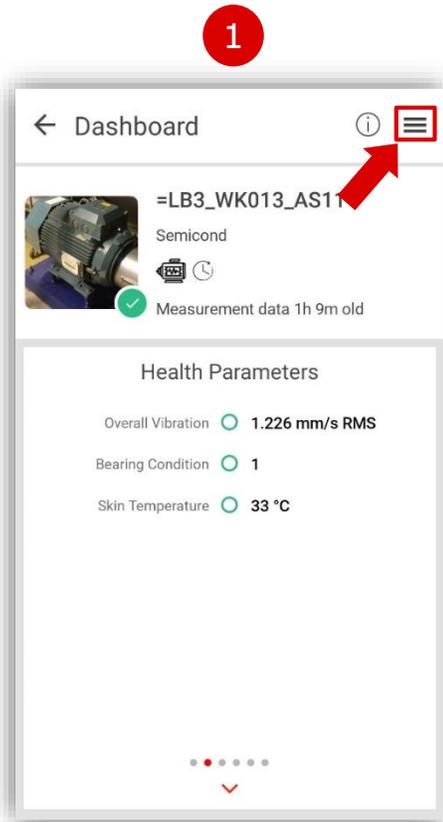
To add new maintenance event, click on an asset in the app.

- 1) In the event log of the asset, click **+** to **add new** maintenance event
- 2) Write a description
- 3) Choose **type of maintenance** from the dropdown list and Save

*\*This feature is currently only possible from the app.*

# Other functionalities – regreasing event

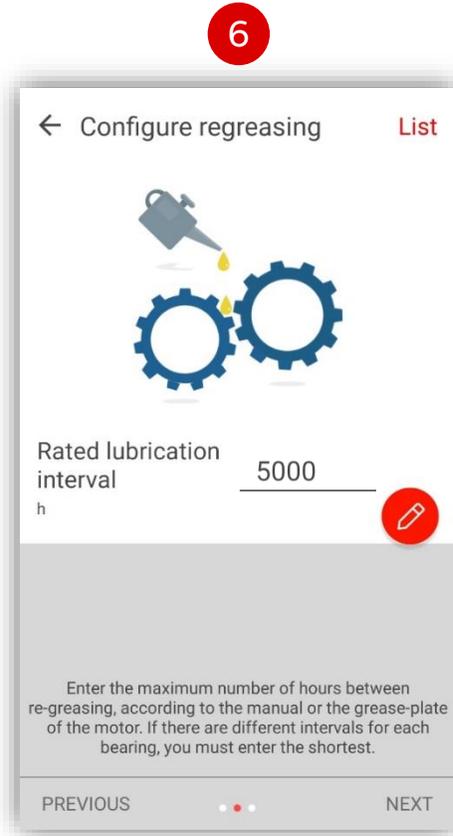
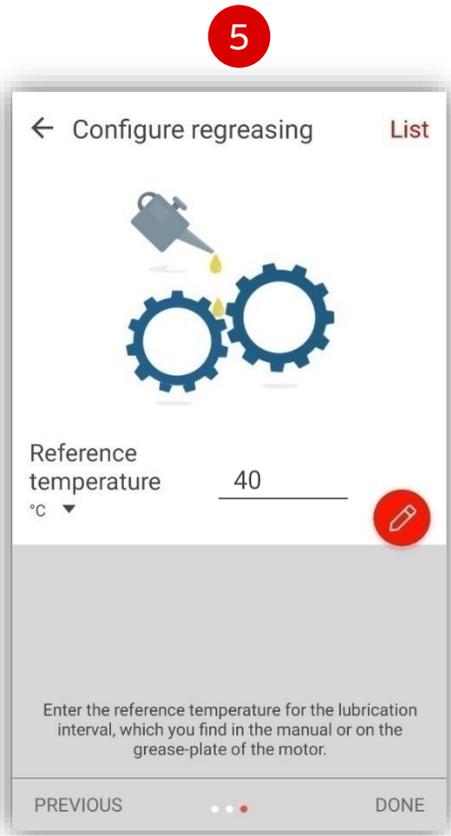
Configure a regreasing event



To configure regreasing:

- 1) Click the **menu** button in the top right corner of the asset detail view
- 2) Under "Calibration" in the asset menu, click "**Configure regreasing**" button.
- 3) Read the info box and click **next**
- 4) Set the last greasing event

# Other functionalities – regreasing event



To finish configuring regreasing:

5) Set the rated temperature

6) Set the relubrication interval

Example of regreasing instructions on ABB motor nameplate:

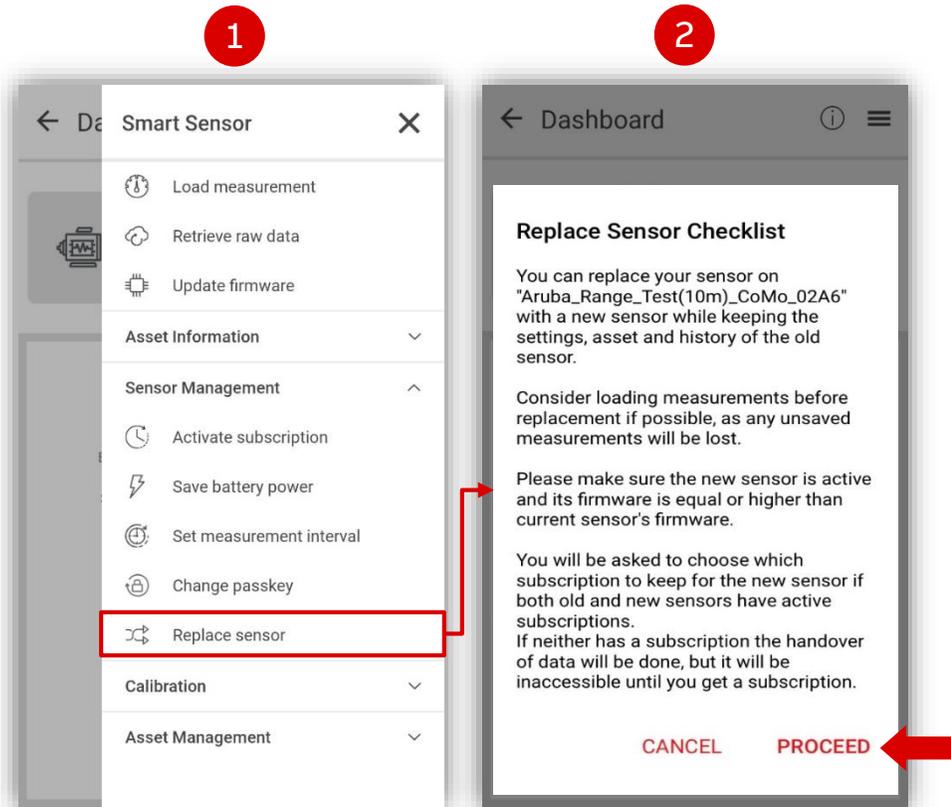
ABB REGREASING INSTRUCTIONS					
Bearings	6322/C3	6316/C3			
Amount of grease	70 g	40 g			
Greased in factory with MOBIL UNIREX N2					
Mounting	AMB.	1800	1500	1000	0-900
	temp.	r/min	r/min	r/min	r/min
Hor	25	4200	6000	10000	13000
Hor	40	2100	3000	5000	6500
Vert	25	2100	3000	5000	6500
Vert	40	1050	1500	2500	3250
Do not exceed the motor max. speed					
The following or similar high performance grease can be used:					
Mobil	Unirex N2 or N3	Shell	Gadus S5 V 100 2		
Total	Multis Complex S2 A	Mobil	Mobilith SHC 100		
Kluber	Kluberplex BEM 41-132	FAG	Arcanol TEMP110		
Regreasing interval in duty hours 1216843-2					
See respective "Motor manual"					

ABB							
CE		IE2		IEC60034-1			
3- Motor		M3BP 355SMC 6 IMB3/IM1001		2016			
1216843-2							
No. 3G1F1630351019							
V		Hz		kW		Ins. cl. F IP 55	
690	Y	50	250	993	266	0.82	S1
400	D	50	250	993	460	0.82	S1
415	D	50	250	994	454	0.80	S1
IE2-95.7%(100%)-95.7%(75%)-95.0%(50%)							
Product code 3GBP353230-ADG							
		Nmax 2000		r/min			
6322/C3		6316/C3		1820 kg			

# Replace sensor

Replacing a sensor for the same asset



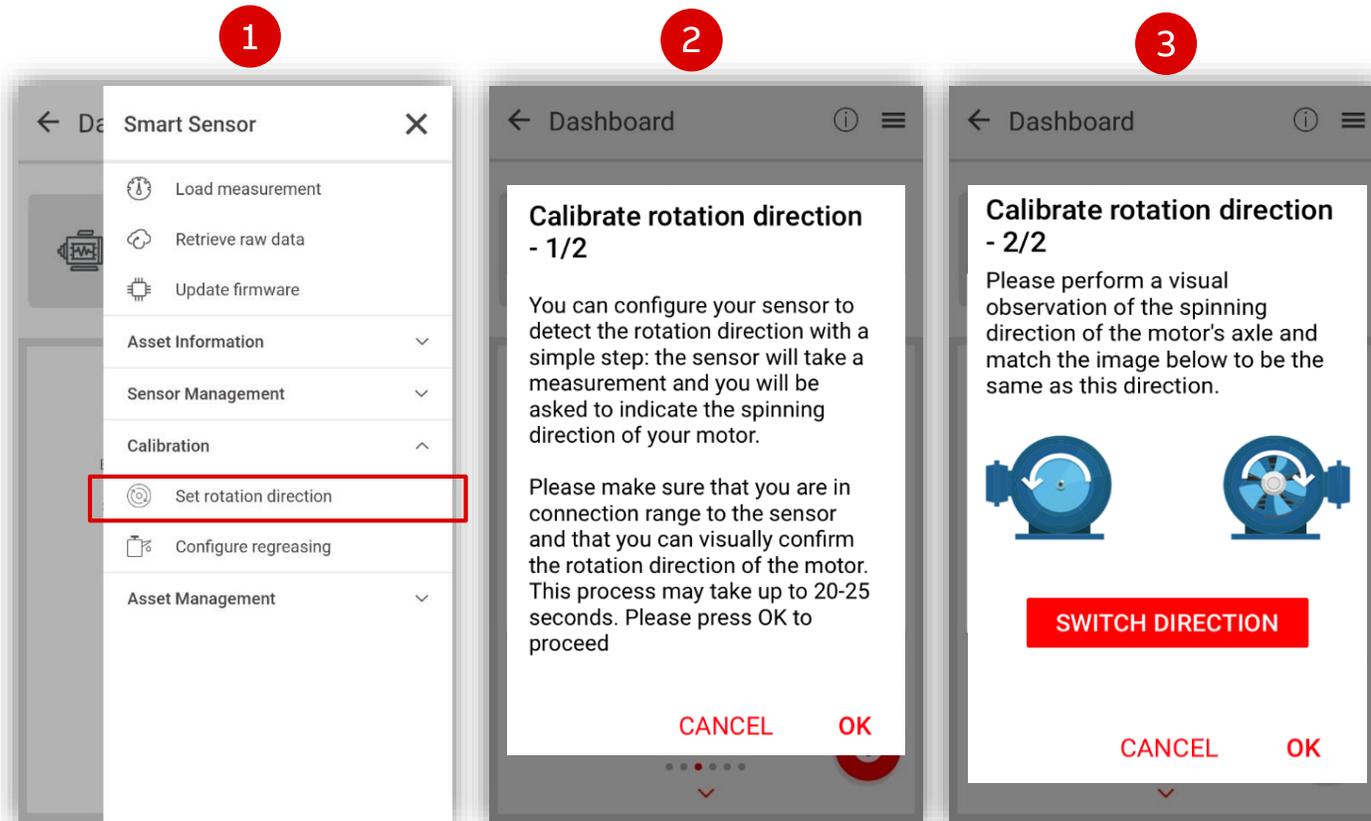
When exchanging the sensor for an asset and replacing it with a new sensor, follow the steps:

- 1) **Activate** new sensor in Bluetooth range
- 2) Select asset and click on **“Replace Sensor”**
- 3) Click **“PROCEED”**
- 4) Select new sensor from the list
- 5) Commissioning happens automatically

From now on, historical data as well as nameplate details and picture are carried over to continue with the new sensor’s data.

# Set rotation direction

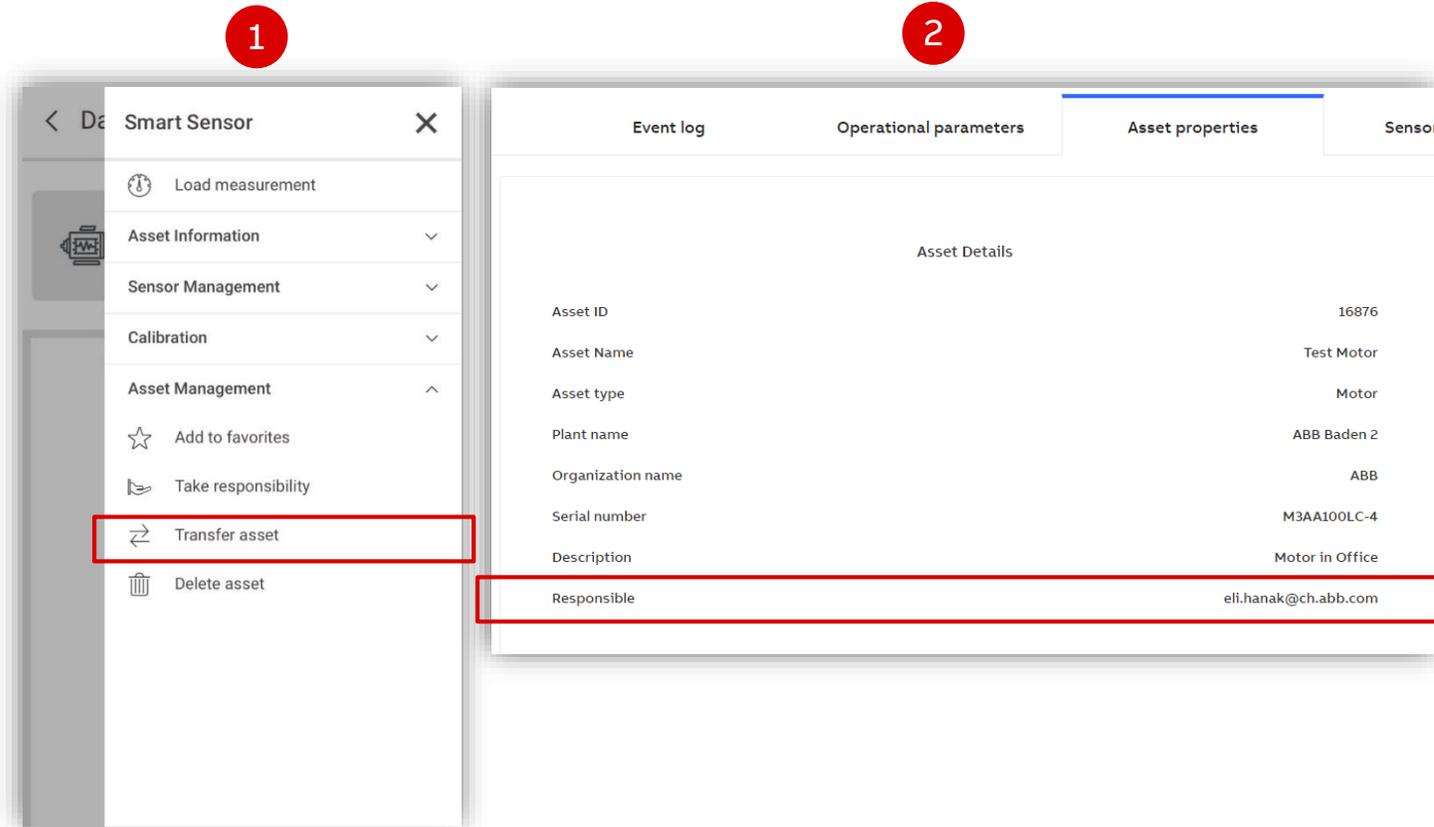
Configuring sensor to detect direction of rotation



- 1) Use your sensor to calibrate the direction of rotation by tapping **„set rotation direction“**
- 2) Read the instructions on the screen
- 3) Visual observation of the rotation speed.
  - Click on **„Switch Direction“** until the arrows in the visualization indicate the direction of rotation that you observed on the shaft.

# Take responsibility

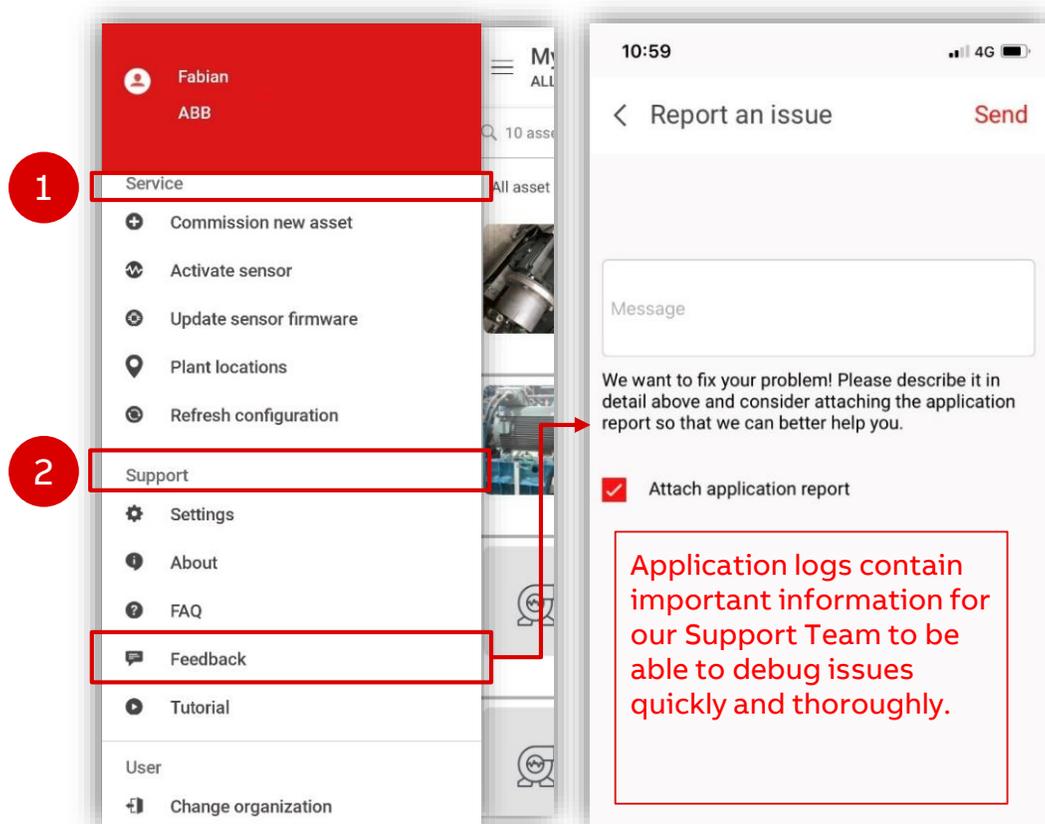
Assigning responsibility for an asset to user



- 1) By tapping „take responsibility“ with the app the sensor will be assigned to the user.
- 2) It will be shown in the **Smart Sensor portal** "Asset Properties" tab under the "Asset Details" area who the responsible user is. This makes the user reachable to members of the organization with access to that asset's data.

# Main Menu – Services and Support functions

Smart Sensor Platform mobile app: main menu



From the main menu, you can:

1) **Services** that allow you to:

- Commission new assets
- Activate Sensors
- Update Sensor Firmware (after activation, before commissioning)
- See plant locations on a map
- Refresh configuration (sync app with the back-end)

2) **Support functions:**

- **Settings:** Define measurement units, language etc.
- **About:** App information
- **FAQ:** Frequently Asked Questions (link to the web page)
- **Feedback:** Report an issue directly to the Support Team. In order to get the best possible support, attach the application reports.
- **Tutorial:** Asset activation instructions

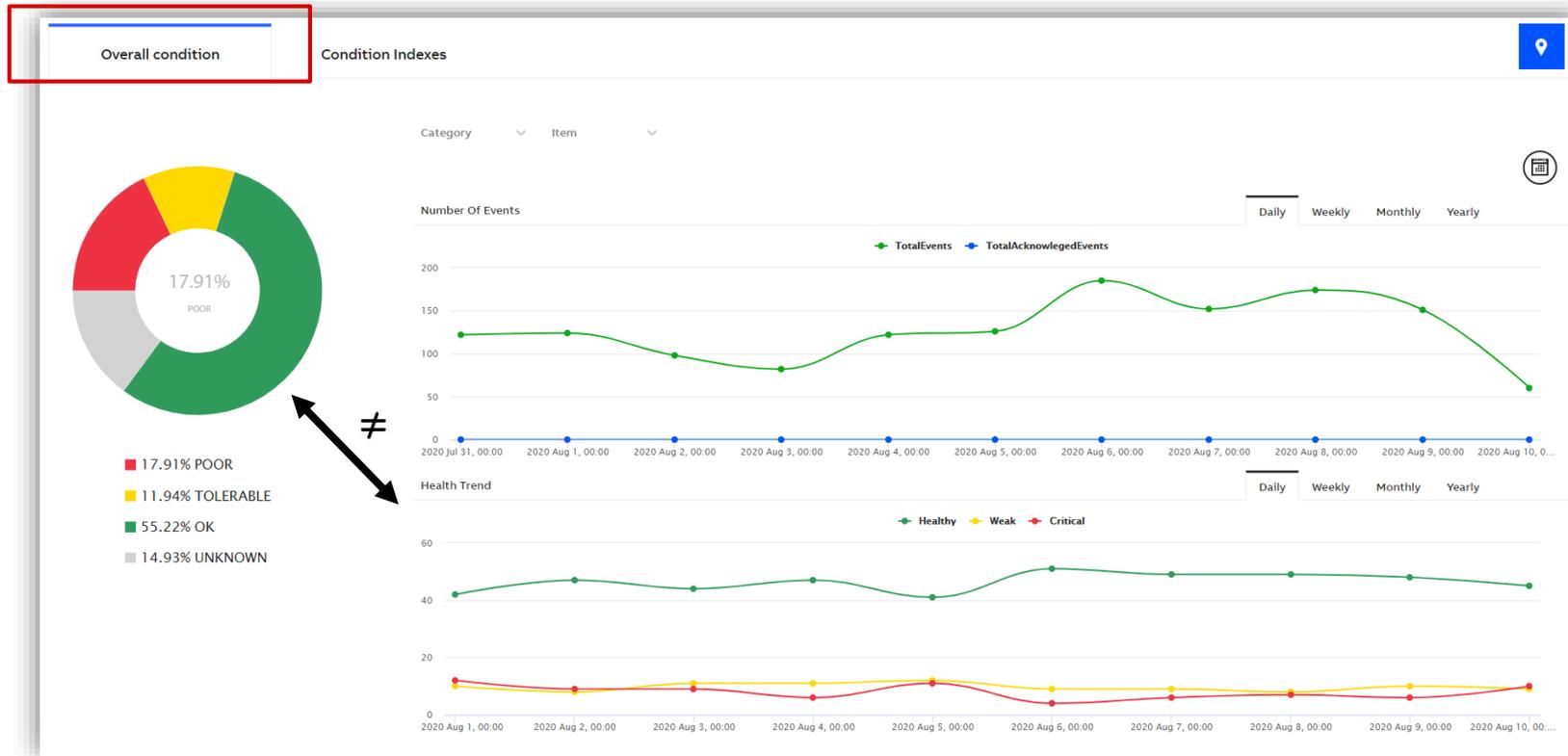
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## 6. Smart Sensor web portal

[Back to table of contents](#)

# Dashboard – overall condition index

Overall condition «donut»: calculated from separate Condition Indexes over a period of time



The **overall condition** represented by the donut is calculated over a **period of time**, out **several KPIs**.

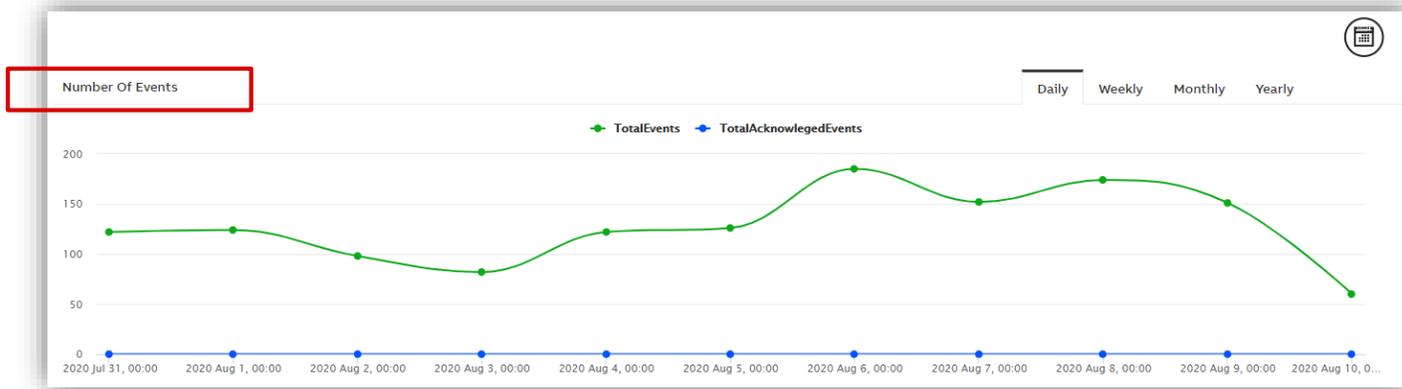
The first line graph shows **events** you have received for the fleet per unit of time (see next slide for explanation on events).

The second graph shows the history of **health status** of each asset in your fleet (see next few slides for differentiation of health status and condition index).

*The line graphs do not correspond to the donuts; **this page will be redesigned.***

# Dashboard – Number of Events & Health Trend

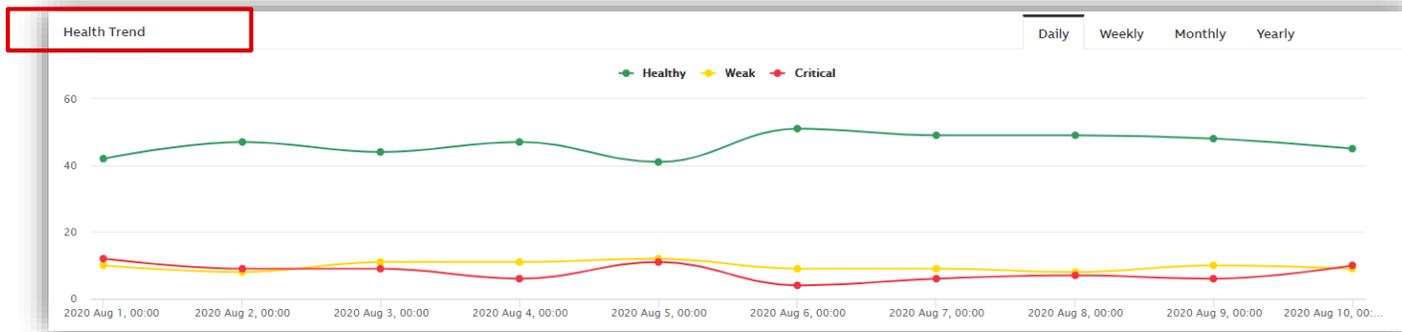
The three types of events



## Number of Events

The **green line** shows the development of the daily total number of alarms and alerts combined.

The **blue line** shows the number of acknowledged alarms and alerts



## Health Trend

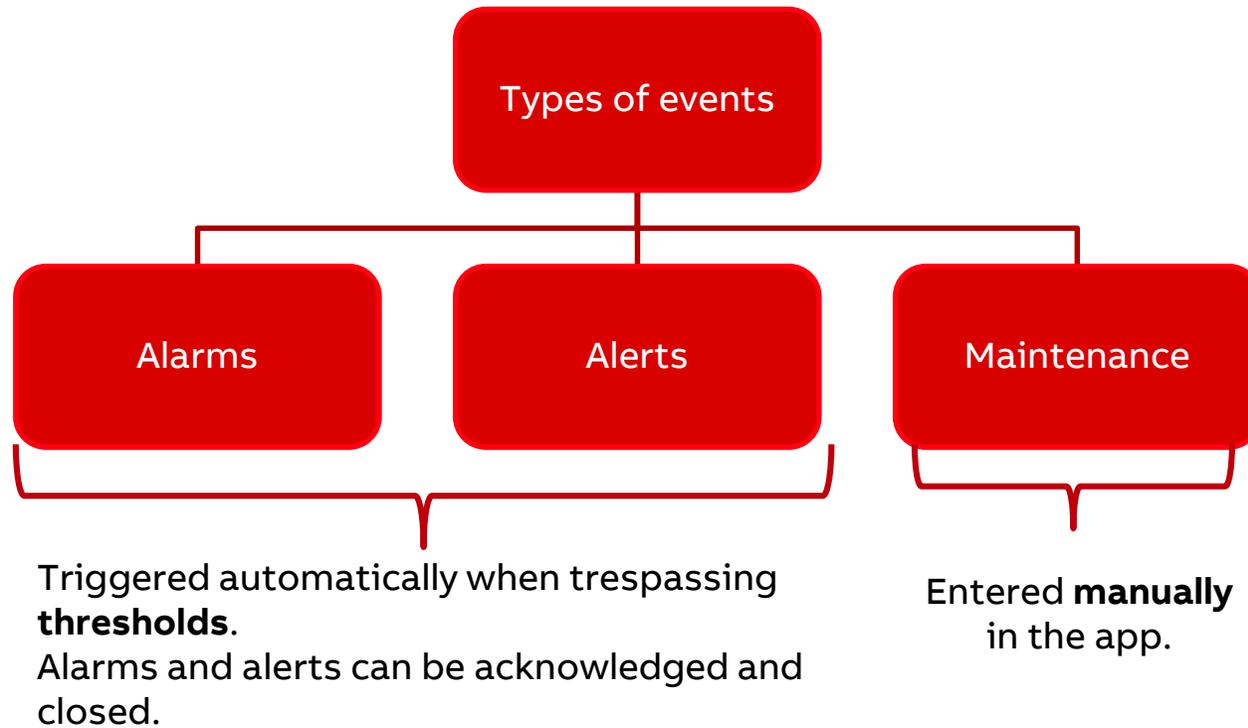
Shows daily total of **green** (healthy) **yellow** (weak) and **red** (critical) assets.

**Note:** the health trend indicator shows the status based on the last measurement.

The condition indexes (donuts) are based on the last 7 days.

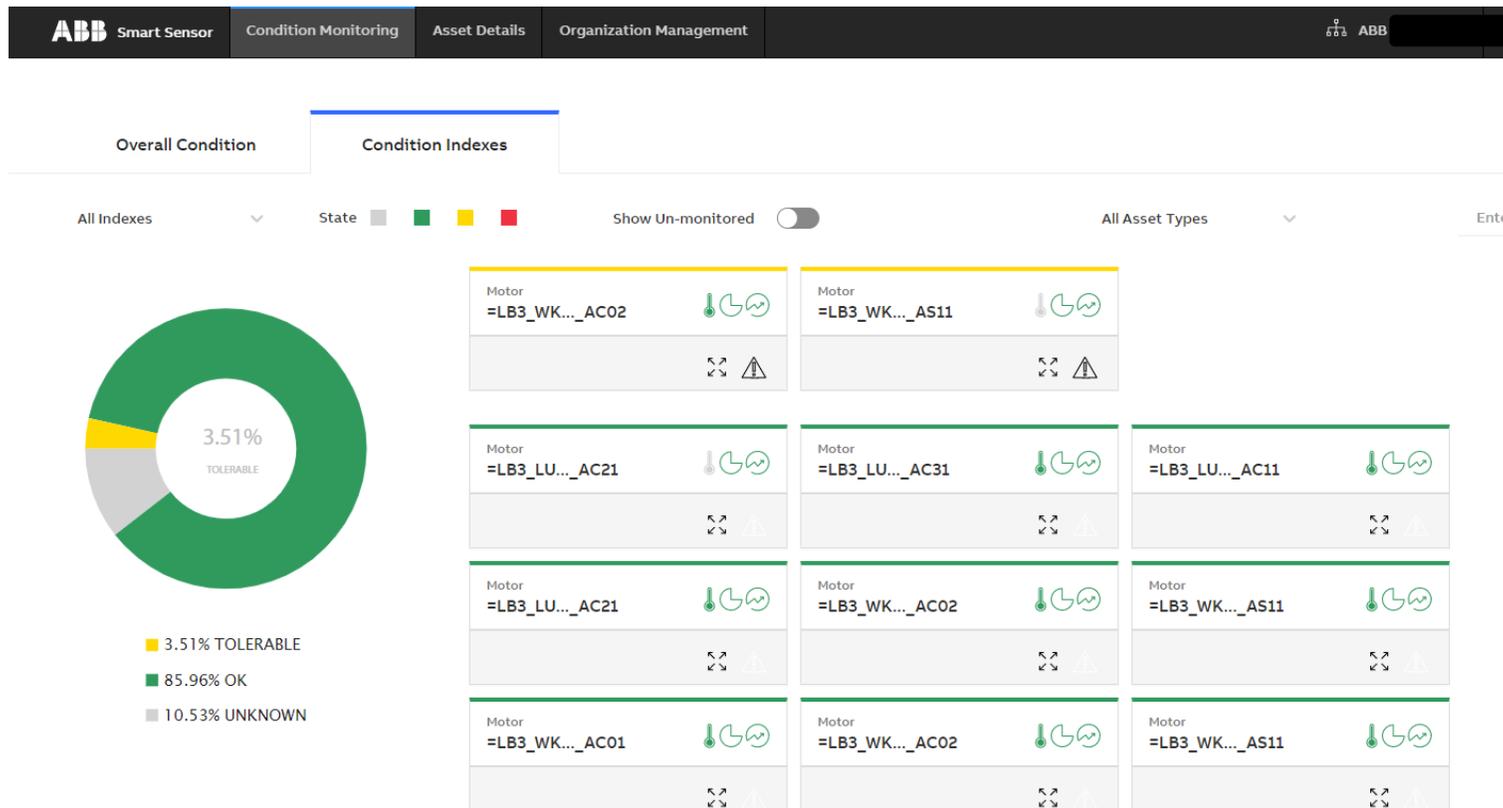
# Dashboard – Events

The three types of events



# Dashboard – Condition Indexes

Indicators calculated over long periods of time from several KPIs



→ "Condition Indexes" are an aggregation of several KPIs over several days.

Assets can be filtered by type of condition index, status or asset type.

The condition indexes are defined as below:

- **Environmental stress:** Vibration and temperatures while machine is stopped.
- **Operational stress:** Vibration and temperatures while machine is running.
- **Total stress:** aggregates **operational** and **environmental** stress.
- **Reliability:** Bearing condition, other KPIs
- **Overall health:** aggregates **total stress** and **reliability** indexes

**NOTE: CONDITION INDEXES ARE NOT MEANT TO MATCH THE STATUS OF INDIVIDUAL KPIs!**

# Health Indicator vs. Condition Index

Differences between health indicators and condition indexes

**Health Status Indicator** under Asset Details are based on the last measurement

**Health parameters**

Overall Vibration	1.073 mm/s RMS	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️
Bearing Condition	1	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️
Skin Temperature	33 °C	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️

**Health parameters**

Overall Vibration	1.073 mm/s RMS	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️
Bearing Condition	1	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️
Skin Temperature	33 °C	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️

**Operating parameters**

Vibration (Radial)	1.073 mm/s RMS	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️
Vibration (Tangential)	1.035 mm/s RMS	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️
Vibration (Axial)	0.996 mm/s RMS	📉 ⓘ ⬇️ ⬆️ ⬇️ ⬆️

PORTAL

**Condition Indexes** are calculated over time and aggregate several KPIs

**Overall Condition**

**Condition Indexes**

All Indexes State Show Un-monitored

5.63% TOLERABLE  
74.65% OK  
19.72% UNKNOWN

Motor =LB3\_LU...\_AC01  
Motor =LB3\_WK...\_AC02  
Motor =LB3\_LU...\_AC21  
Motor =LB3\_LU...\_AC31  
Motor =LB3\_WK...\_AC02  
Motor =LB3\_WK...\_AS11  
Motor =LB3\_WK...\_AS11  
Motor =LB3\_WK...\_AC01

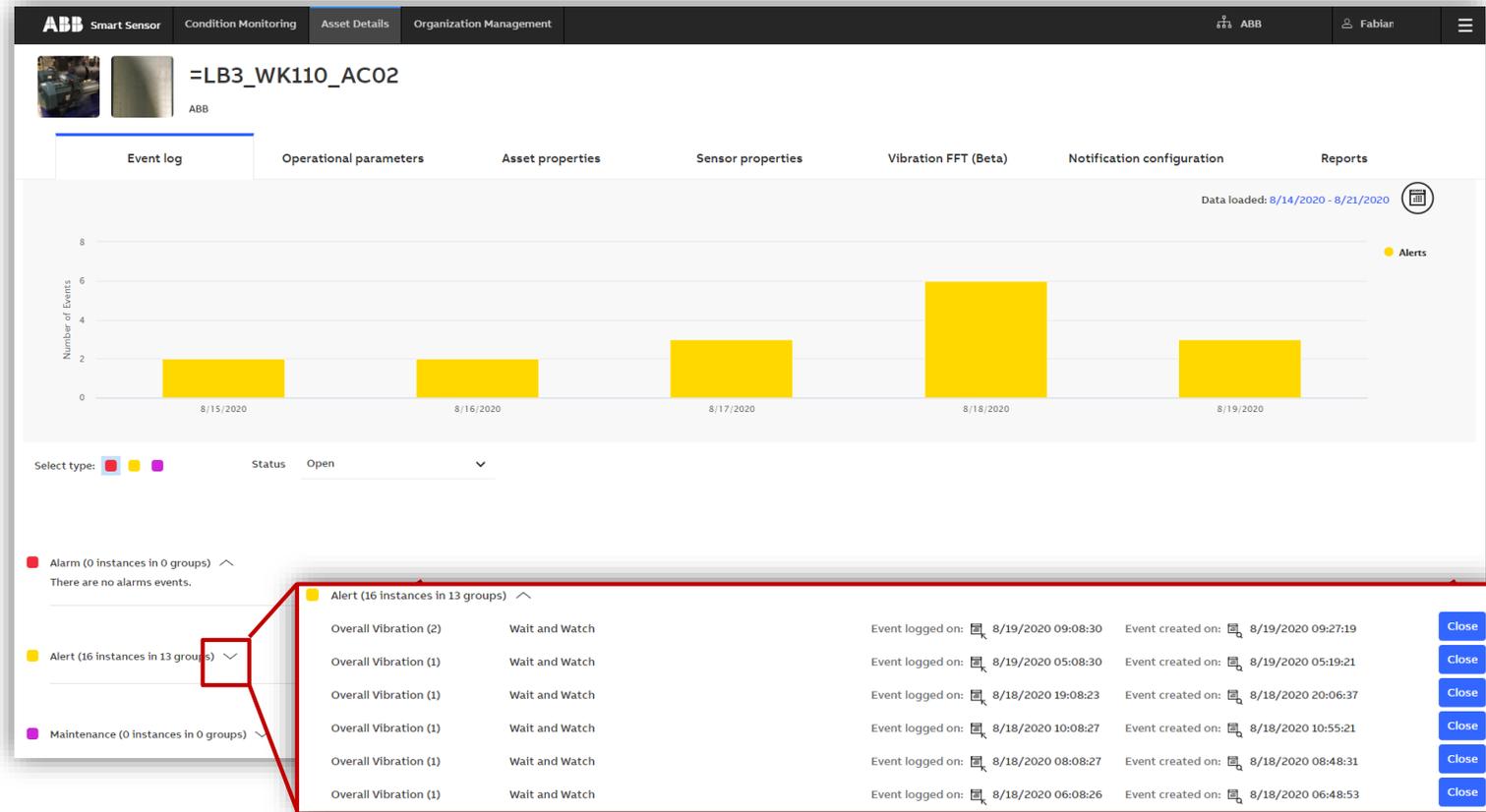
My Groups ALL ASSETS

App

PORTAL

# Asset Details view – Event Log

Events on the portal



The Event Log is a list of events:

- **Alarms**
- **Alerts**
- **Maintenance**

Within the selected time frame you can see the history of events.

By clicking on the dropdown, a list events of that type is shown.

You can see the recommended action, close the event and, by clicking on an event, add comments.

Maintenance events can be added manually in the mobile app (see slide “Add maintenance event» in the previous section)

# Asset Details view – Event Log

## Closing an event

The screenshot displays the ABB Smart Sensor interface. The main view is the 'Asset Details' for '=LB3\_WK110\_AC02'. The 'Event log' tab is active, showing a bar chart of event counts and a table of events. A modal dialog titled 'Acknowledge event.' is open, requiring a comment and a closing reason. The closing reasons are 'Dismissed', 'False alarm', and 'Corrected'. A red box highlights the 'Close' button on the event log table.

Event Type	Status
Alert (16 instances in 13 groups)	Open
Overall Vibration (2)	Wait and Watch
Overall Vibration (1)	Wait and Watch
Overall Vibration (1)	Wait and Watch
Overall Vibration (1)	Wait and Watch
Overall Vibration (1)	Wait and Watch
Overall Vibration (1)	Wait and Watch

**Acknowledge event.**

Insert a comment (maximum of 500 characters)

Select a closing reason:

Dismissed

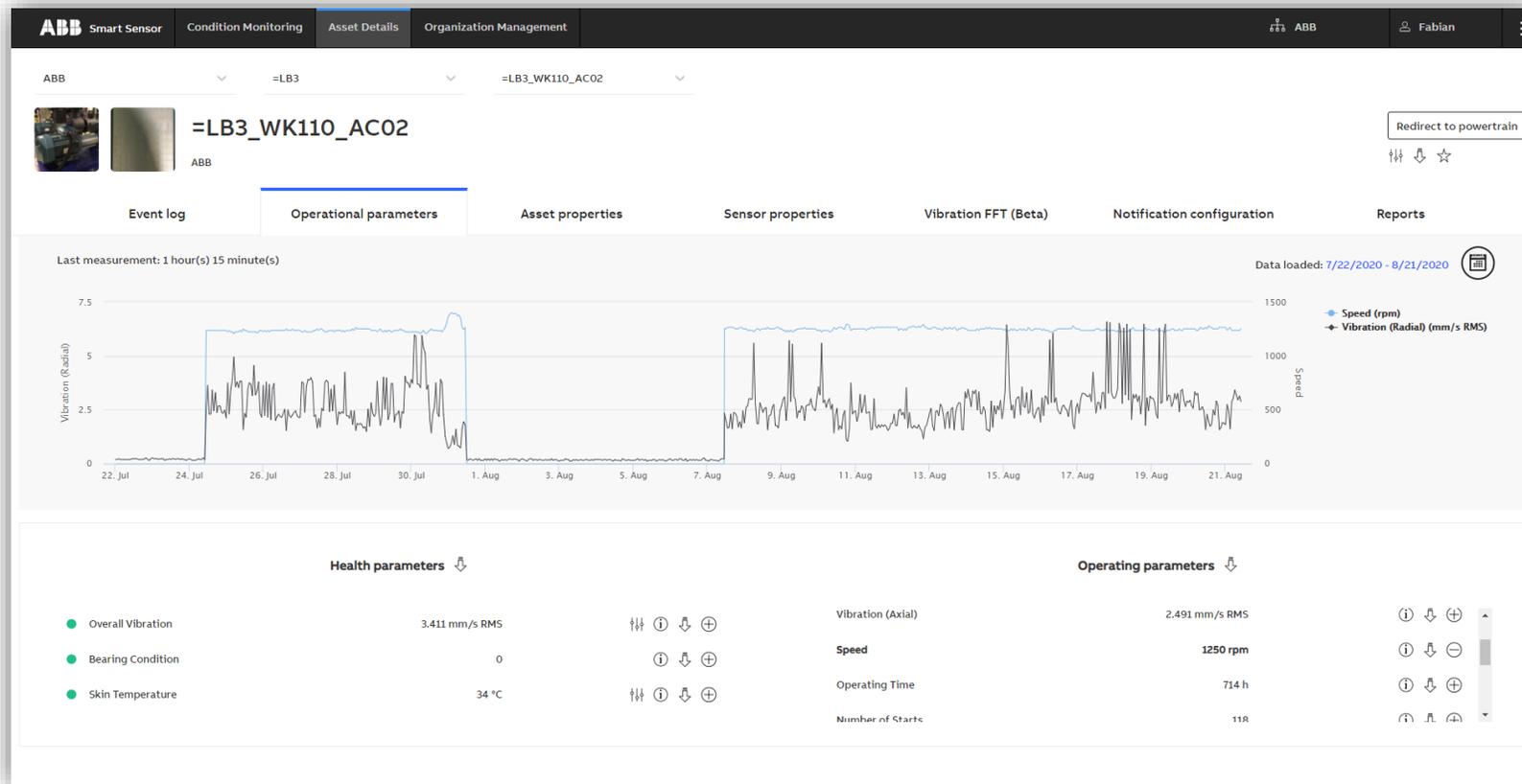
- Dismissed** / The technician decides that this notification does not need to be displayed. It has not been corrected.
- False alarm** / The technician has investigated and decided that the value was incorrectly measured/assessed by the sensor.
- Corrected** / The technician has investigated the issue and taken the necessary corrective action.

Cancel Save

When closing an alarm or alert, provide a closing reason and a comment

# Asset Details view – Operational parameters

View the data trends of your assets



The **Operational Parameters** tab in the **Asset Details** view visualizes trend data.

You can add and remove KPIs by clicking on the + and – symbols respectively.

- Click ⓘ for further information on parameters.
- Click ⚙ to adjust alarm and alert levels for the health parameters.
- Click ↓ to receive an e-mail with an export of the measurements.

# Asset Details view – Operational parameters

## Adjusting Alarm and Alert levels

The image shows a screenshot of the ABB Smart Sensor Asset Details view. The main view displays the asset name "=LB3\_WK110\_AC02" and a graph of Vibration (g) over time. Below the graph, there is a table of Health parameters:

Health parameters	
Overall Vibration	3.411 mm/s RMS
Bearing Condition	0
Skin Temperature	34 °C

A red box highlights the adjustment icon (three vertical bars with arrows) next to the Overall Vibration parameter. A red arrow points from this icon to a larger, detailed view of the "Alert/Alarm Level Configuration" dialog box. The dialog box shows the following settings:

- Overall Vibration**
  - Alert from: 4.5
  - Alert notifications: ON
  - Alarm from: 11.2
  - Alarm notifications: ON
- Skin Temperature**

Buttons for "Suggest", "Save", "Cancel", and "Save all" are visible at the bottom of the dialog box.

Click  next to the Health KPI to adjust the alarm and alert levels.

**Vibration** limits are set in [mm/s RMS] and **Skin temperature** levels in [°C].

KPIs without this option are scaled proportionally to signal energy values and therefore have no physical unit.

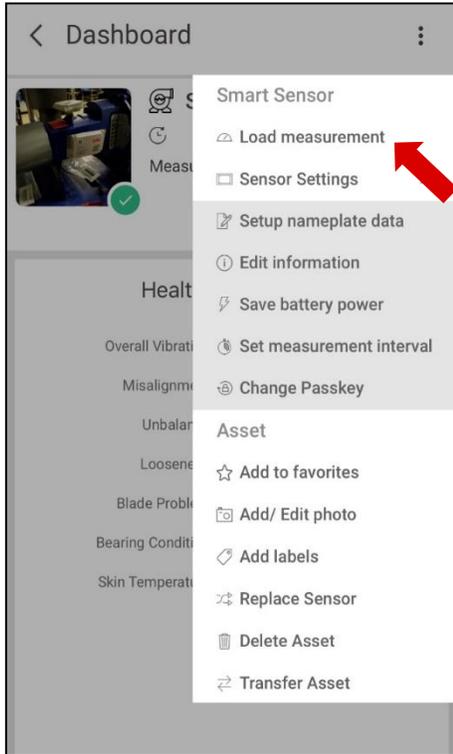
A suggestion is calculated by the portal based on previous measurements and other aspects.

You can also turn on/off notifications from this screen.

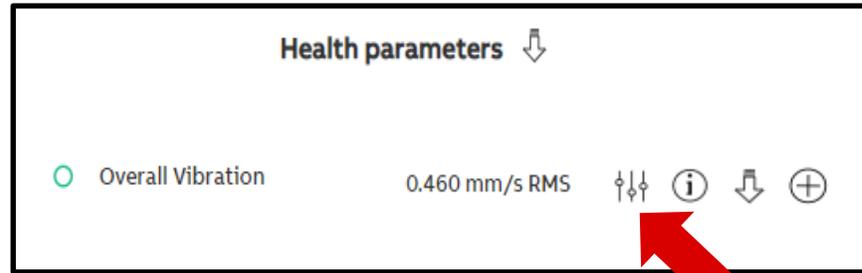
For more information on the recommended alarm and alert levels, click .

# Manually determine alert/alarm thresholds

## APP – trigger measurement



## WEB PORTAL – set thresholds



In order to determine optimal thresholds :

1. Using the mobile app (see previous section), manually trigger measurement from an asset **under smooth operating conditions.**
2. Note the [mm/s RMS] vibration and the [°C] temperature values.
3. Ensure thresholds are above those values.
  - a) If necessary, perform step 1 again under operating conditions recognized as a desired «alert» or «alarm» state.
  - b) Note those values and use them to set the specific thresholds.

# Asset Details view - Asset and Sensor Properties

Information about your machine and the sensor monitoring it

The screenshot displays the ABB Smart Sensor interface. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. The main content area shows the asset details for '=LB3\_WK110\_AC02'. The 'Asset properties' tab is selected, and the 'Sensor properties' tab is also visible. Two red arrows point to the 'Asset properties' and 'Sensor properties' tabs. The 'Asset properties' section is divided into 'Asset Details' and 'Nominal details'.

Asset Details		Nominal details	
Asset ID	8005	Motor Standard	IEC
Asset name	=LB3_WK110_AC02	Speed	1480.0 rpm
Asset type	Motor	Speed Control	Variable Speed
Plant name	ABB Lenzburg	Voltage	400 V
Organization name	ABB Lenzburg	Current	55.00 A
Serial number	3GV0910380003001	Power	30.00 kW
Description	Kaltwasser 5/11-C Pumpe 2	Line Frequency	50.0 Hz
		Power Factor	0.84
		DE Bearing	6312
		DE Manufacturer	SKF
		NDE Bearing	6210
		NDE Manufacturer	SKF
		Motor Load	Pump
		Shaft Height	200

Asset information is visible under "**Asset Properties**".

Sensor-related information is found in the "**Sensor Properties**" tab next to Asset Properties.

# Asset Details view - Notifications

Turn on different kinds of notifications for selected assets

The screenshot shows the 'Notification configuration' tab for asset '=LB3\_WK110\_AC02'. The page has a navigation bar with 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. Below the navigation bar, there are breadcrumb links: 'ABB', '=LB3', and '=LB3\_WK110\_AC02'. The main content area has tabs for 'Event log', 'Operational parameters', 'Asset properties', 'Sensor properties', 'Vibration FFT (Beta)', and 'Notification configuration'. A descriptive text states: 'This functionality is used for configuring the ways Smart Sensor can notify you of actions happening in the platform.' Below this is a table with columns for 'Notification', 'E-mail', and 'Push'. The table lists various notification types with their corresponding E-mail and Push notification status (indicated by toggle switches). Two rows are highlighted with red boxes: 'Asset condition change' and 'Parameter Alarm'.

Notification	E-mail	Push
Asset Nameplate Data Edited	<input type="checkbox"/>	<input type="checkbox"/>
Asset condition change	<input type="checkbox"/>	<input type="checkbox"/>
Asset returned to normal operation	<input type="checkbox"/>	<input type="checkbox"/>
Load Measurement Notification	<input type="checkbox"/>	<input type="checkbox"/>
Low battery capacity	<input type="checkbox"/>	<input type="checkbox"/>
Parameter Alarm	<input type="checkbox"/>	<input type="checkbox"/>
Parameter Alert	<input type="checkbox"/>	<input type="checkbox"/>
Smart Sensor Memory Full	<input type="checkbox"/>	<input type="checkbox"/>

Configure the notification mode for each asset under “Asset Details”.

**Attention:** this applies only for the user currently logged in the portal.

Click the “info” button for more details about each notification type.

## Note:

→ **Parameter alert / alarm notifications** are triggered for all [individual KPI threshold violations](#): short-term, detailed monitoring.

→ **Condition change notifications** happen when a [Condition Index](#) status changes: longer term, overview monitoring.

---

## 7. Instant Asset Report; On Demand Raw and Trend Data

[Back to table of contents](#)

# On Demand Load Measurement

Request a trend measurement manually

The screenshot shows the ABB Smart Sensor portal interface. The top navigation bar includes 'Asset Details', which is highlighted with a red box. Below the navigation, the asset name '=LB3\_LU111\_AC01' is displayed, with the asset group '=LB3' and sensor '=LB3\_LU111\_AC01' selected in dropdown menus, also highlighted with red boxes. The 'Sensor properties' tab is selected and highlighted with a red box. A 'Load measurement' button is highlighted with a blue box. A modal dialog titled 'On demand load measurement' is open, showing a warning icon and the text: 'The information will be visible once your request has been processed, that can take up to 30 minutes. Make sure to refresh the page in 30 minutes to see the update.' The request status is 'Not requested', and there are 'Cancel' and 'Request' buttons.

Sensor details	
Sensor identifier	S2A0017328-2DD9
Sensor type	Smart Sensor For Motors
Firmware version	9.1
Hardware revision	F
Subscription type	ABB Ability™ Smart Sensor Subscription
Subscription expiration date	09/07/2022 12:00:0 AM
MAC	50:31:AD:00:48:B0
Chip ID	24AE2107598A2D2C
Gateway name	ABB Lenzburg
Gateway MAC	CC:1B:E0:E0:92:84
Gateway manufacturer type	Cassia X1000
Gateway online status	Online

Sensor features	
Power Saving Mode	Disabled

- 1) Navigate to **Asset Details** on the main menu bar on top.
- 2) Select asset group.
- 3) Choose sensor.
- 4) Click **Load measurement**.
- 5) Read the notification.  
It can take up to 30 min until the requested load measurement is visible on the portal.
- 6) Click **Request**.

# On Demand Raw Data Collection

Request a raw data measurement from a specific sensor

The screenshot shows the ABB Smart Sensor web interface. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. The user is logged in as 'Fabian'. The main content area displays the 'Asset Details' for the asset '=LB3\_LU111\_AC01' (ABB Lenzburg). The 'Sensor properties' tab is selected, showing a table of sensor details. A modal dialog titled 'On demand raw data collection' is open, providing instructions and a 'Request' button.

Sensor details	
Sensor identifier	S2A0017328-2DD9
Sensor type	Smart Sensor For Motors
Firmware version	9.1
Hardware revision	F
Subscription type	ABB Ability™ Smart Sensor Subscription
Subscription expiration date	09/07/2022 12:00:0 AM
MAC	50:31:AD:00:48:B0
Chip ID	24AE2107598A2D2C
Gateway name	ABB Lenzburg
Gateway MAC	CC:1B:E0:E0:92:84
Gateway manufacturer type	Cassia X1000
Gateway online status	Online

**On demand raw data collection**

You requested a smart sensor measurement with upload of raw data. Uploading the raw data of one smart sensor measurement will allow you to see a full vibration spectrum. This action will cost two months of battery life or more. Only do it if you suspect problems and need to do deeper analyses.

The information will be visible once your request has been processed, that can take up to 30 minutes. Make sure to refresh the page in 30 minutes to see the update.

Request status: **Not requested**

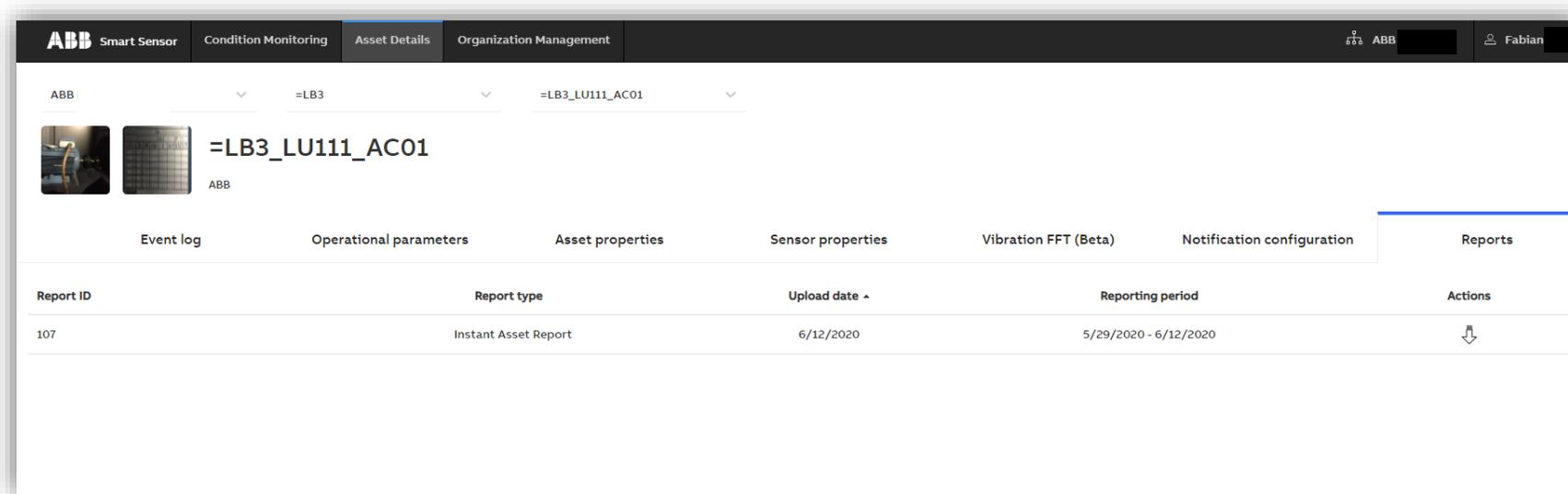
Cancel Request

- 1) Navigate to **Asset Details**.
- 2) Select asset group.
- 3) Choose sensor.
- 4) Click **Raw data collection**
- 5) Read the notification.  
**Raw data measurements affect the battery life.** Click **Request**.

**Note: This feature is only available for moderators of the organization's Admin user group**

# Asset Details view – Vibration FFT

Get a vibration FFT plot for your assets



The screenshot shows the ABB Smart Sensor interface. The top navigation bar includes 'ABB Smart Sensor', 'Condition Monitoring', 'Asset Details', and 'Organization Management'. The user is logged in as 'Fabian'. The main content area shows the asset details for '=LB3\_LU111\_AC01'. Below the asset name, there are several tabs: 'Event log', 'Operational parameters', 'Asset properties', 'Sensor properties', 'Vibration FFT (Beta)', 'Notification configuration', and 'Reports'. The 'Reports' tab is active, displaying a table of reports.

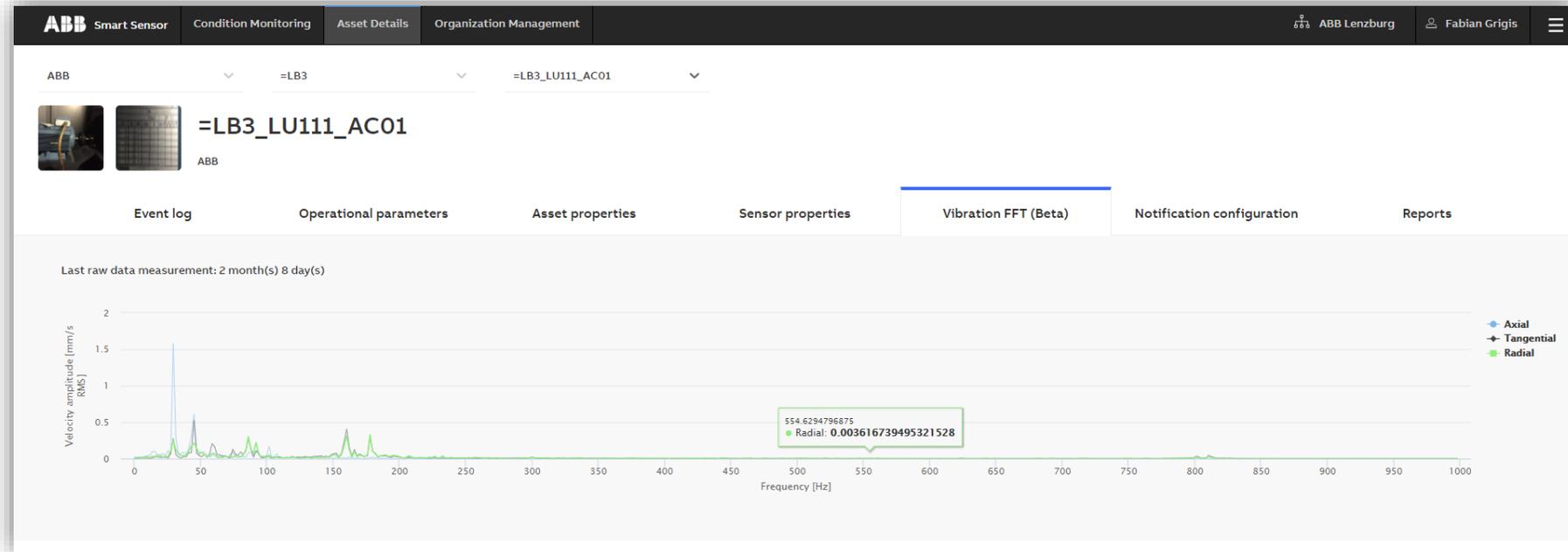
Report ID	Report type	Upload date	Reporting period	Actions
107	Instant Asset Report	6/12/2020	5/29/2020 - 6/12/2020	Download

After successful raw data collection, you will be notified via e-mail.

The automatic / instant asset reports based on your raw data collections are visible in the **Reports** tab of the **Asset Details** view.

# Asset Details view – Vibration FFT

Get a vibration FFT plot for your assets



In the **Vibration FFT** tab of the **Asset Details** view, the velocity vibration spectrum is visible for your latest raw dataset that has been successfully triggered and transferred to the cloud.

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# 7. Visualization and interpretation of data

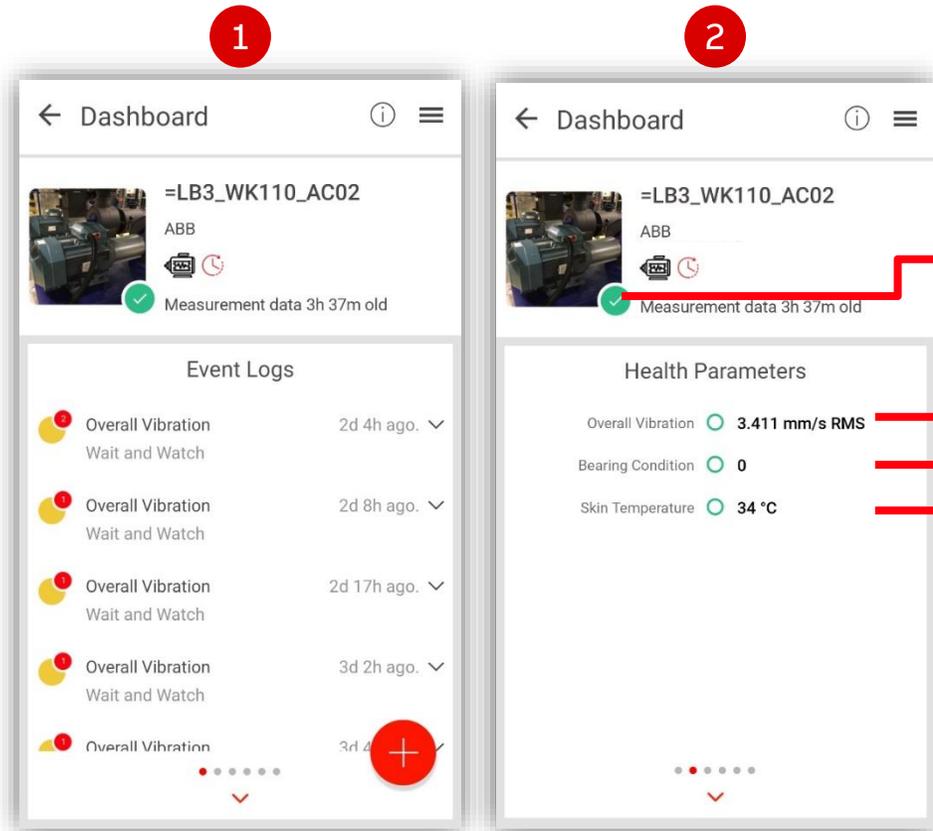
[Back to table of contents](#)

App: <https://www.youtube.com/watch?v=49wgY6nX5Ls>

Portal: <https://www.youtube.com/watch?v=lacBttIARko>

# Data visualization on the mobile app

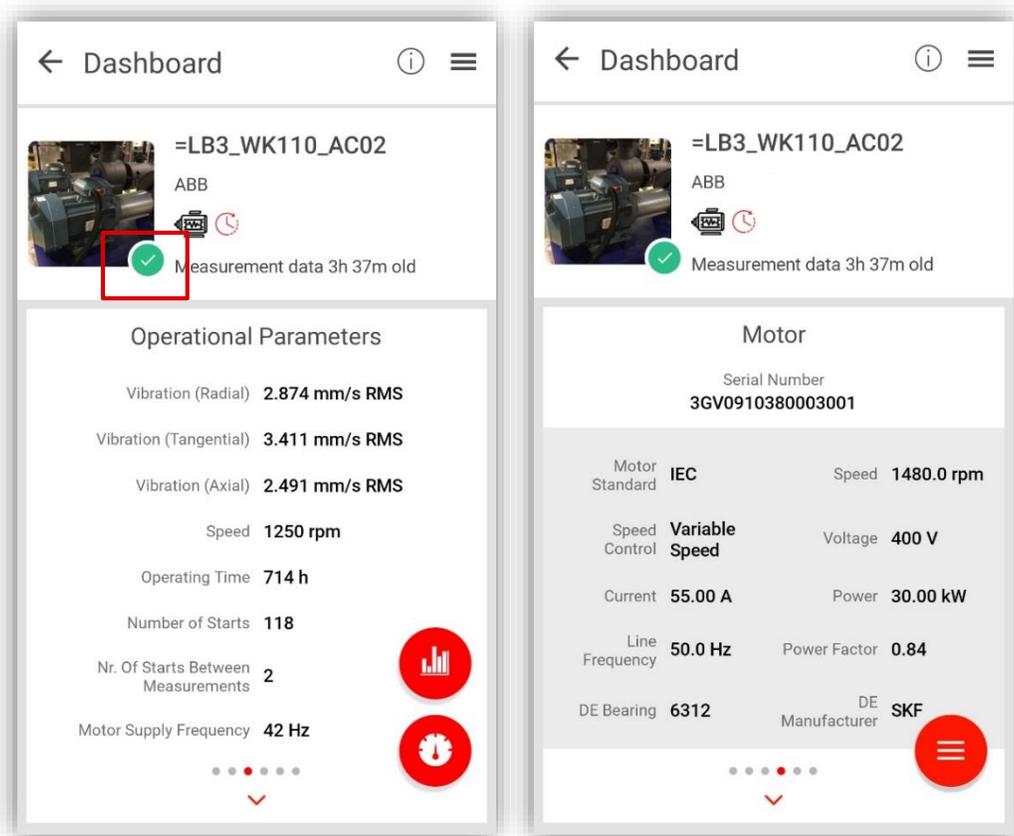
Viewing data on the mobile app



- 1) **“Event Logs”** card: individual, momentary limit violations.
  - Switch panels by swiping the screen left and right.
- 2) **“Health Parameters”** card: KPIs influencing condition indexes.
- 3) **This is the overall condition index / indicator.**
  - Aggregates health parameters (KPIs) over the last 7 days.
  - This is why it does not follow a single health KPI’s status.

# Data visualization on the mobile app

## Viewing data on the mobile app



The **Condition Index** indicator at the bottom right corner of the asset thumbnail aggregates all KPIs over a 7-day period.

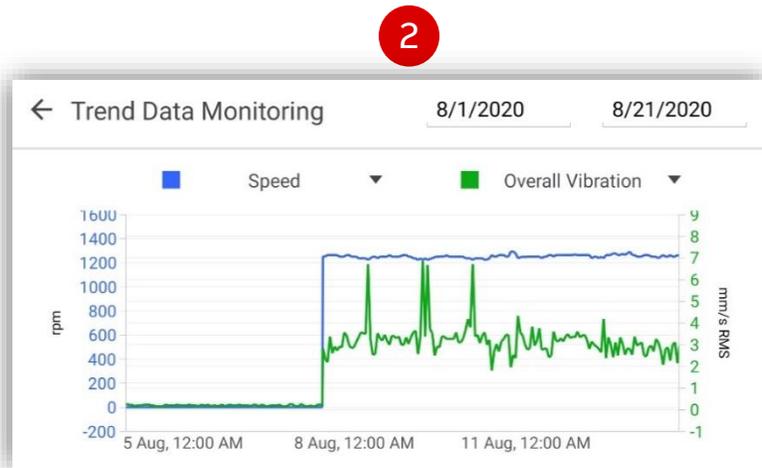
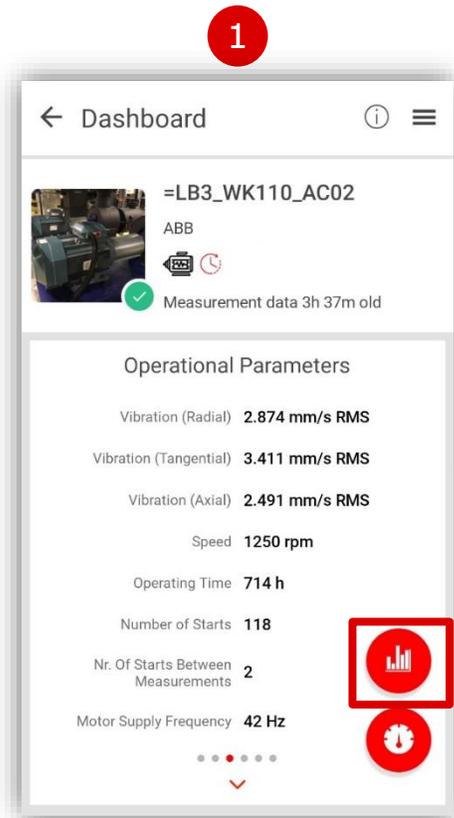
- **Green** when everything is fine
- **Yellow** when some KPIs have been occasionally above their thresholds in the 7-day period.
- **Red** when alarm limits have lately been violated more often than recommended and equipment condition is deteriorating.

### Other panels include:

- Latest operational parameters
- Asset nameplate data

# Trend data monitoring on the mobile app

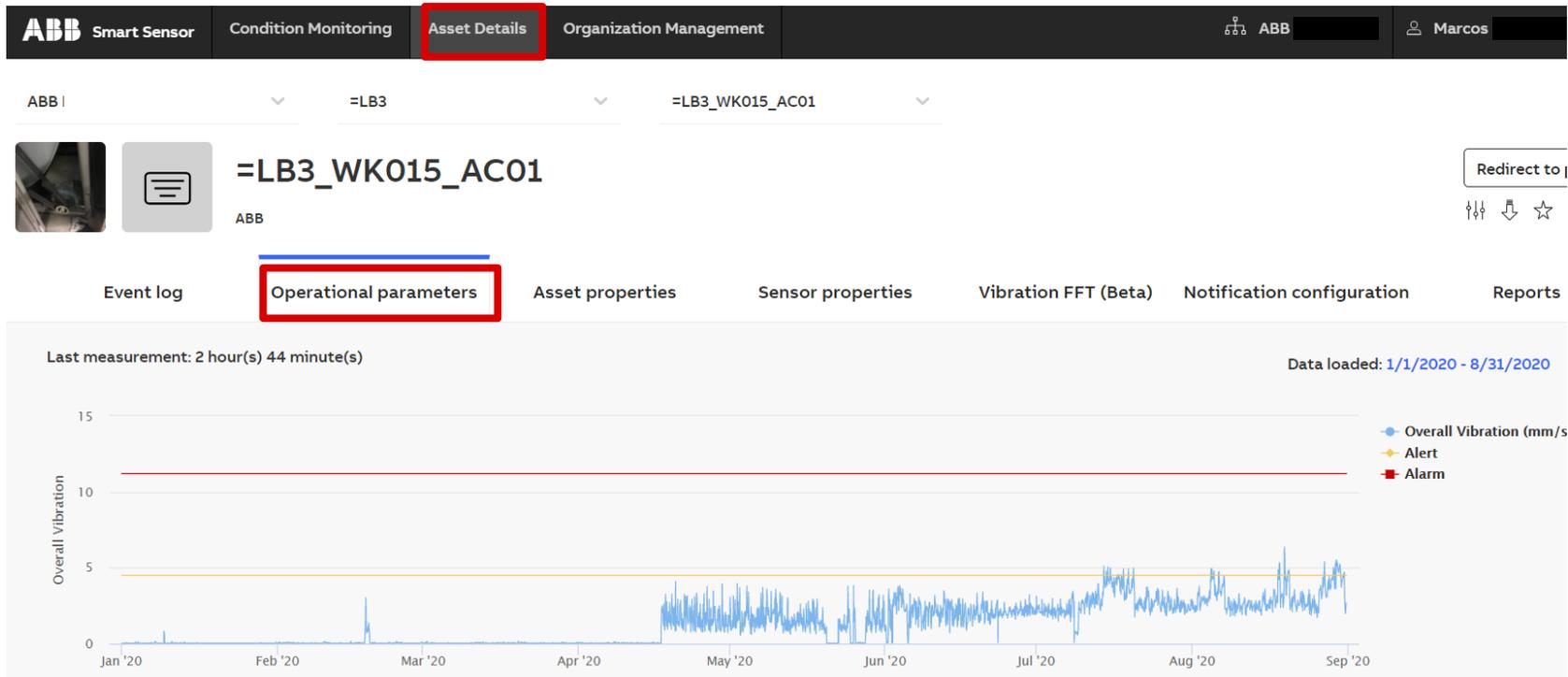
Viewing data on the mobile app



- 1) On the “Operational Parameters” screen, click the trend button on the lower right corner
- 2) Choose **the time period** and up to **two KPIs** to superimpose on the graph view

# Trend data monitoring on the portal

## Portal view “Asset Detail”: “Operational Parameters”



This view shows **individual KPIs** over time for each asset in turn.

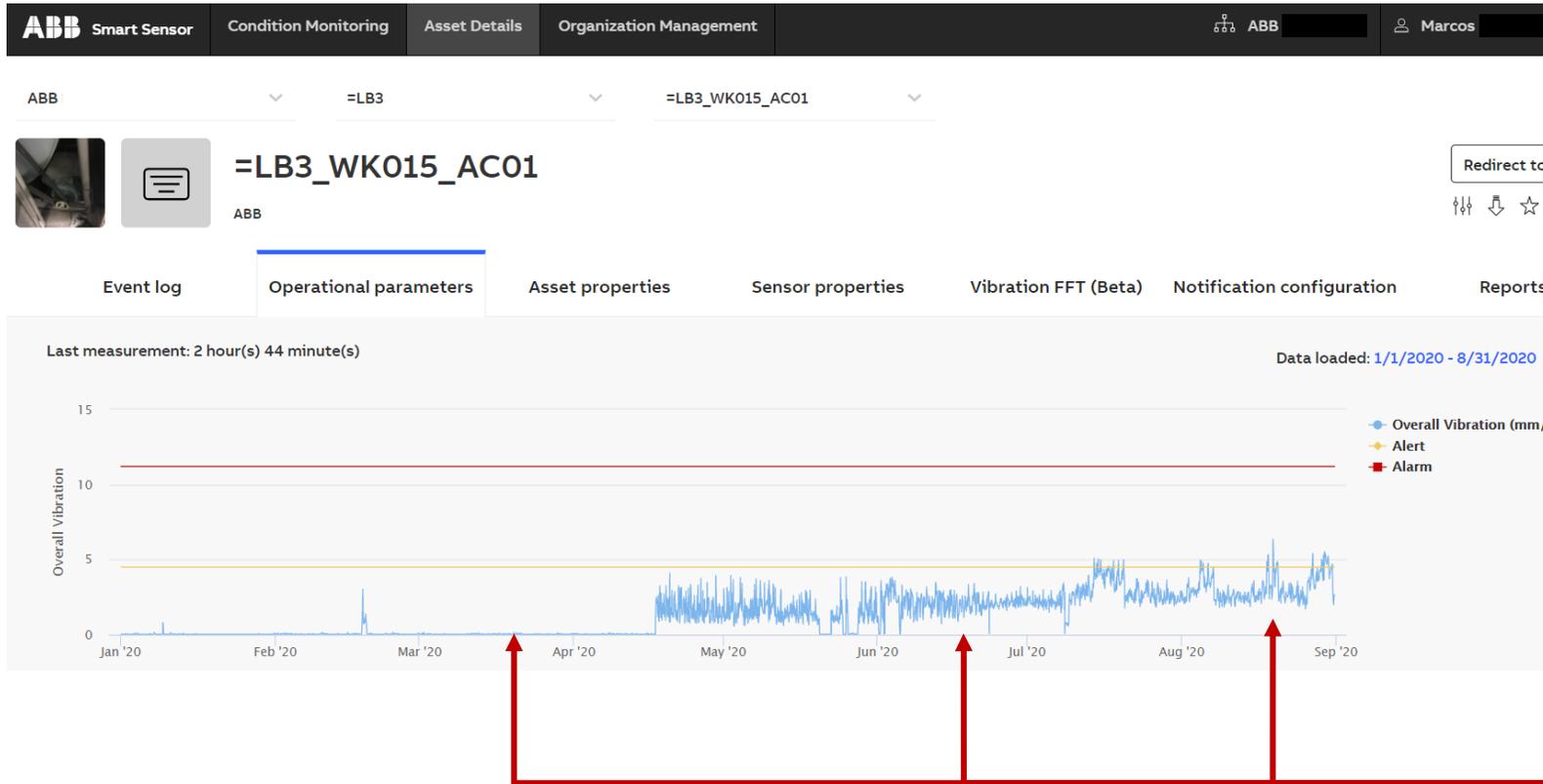
You can choose to be [notified](#) on any individual, momentary violation.

For a more conservative view, use the [condition indexes](#) on the landing page of the portal.

The **evolution of data trends over time** may indicate a deterioration in the equipment condition.

# Trend data monitoring on the portal

## Portal view "Asset Detail"



For a closer look at an asset's health symptoms, go to «Asset Details» view.

For maintenance decisions, refer to the Condition Index "donuts" on the portal landing page.

These measurements are more important as a trend that is becoming worse over time than as individual statements!

This is why the Condition Indexes exist: to prevent excessive notifications on every threshold violation.

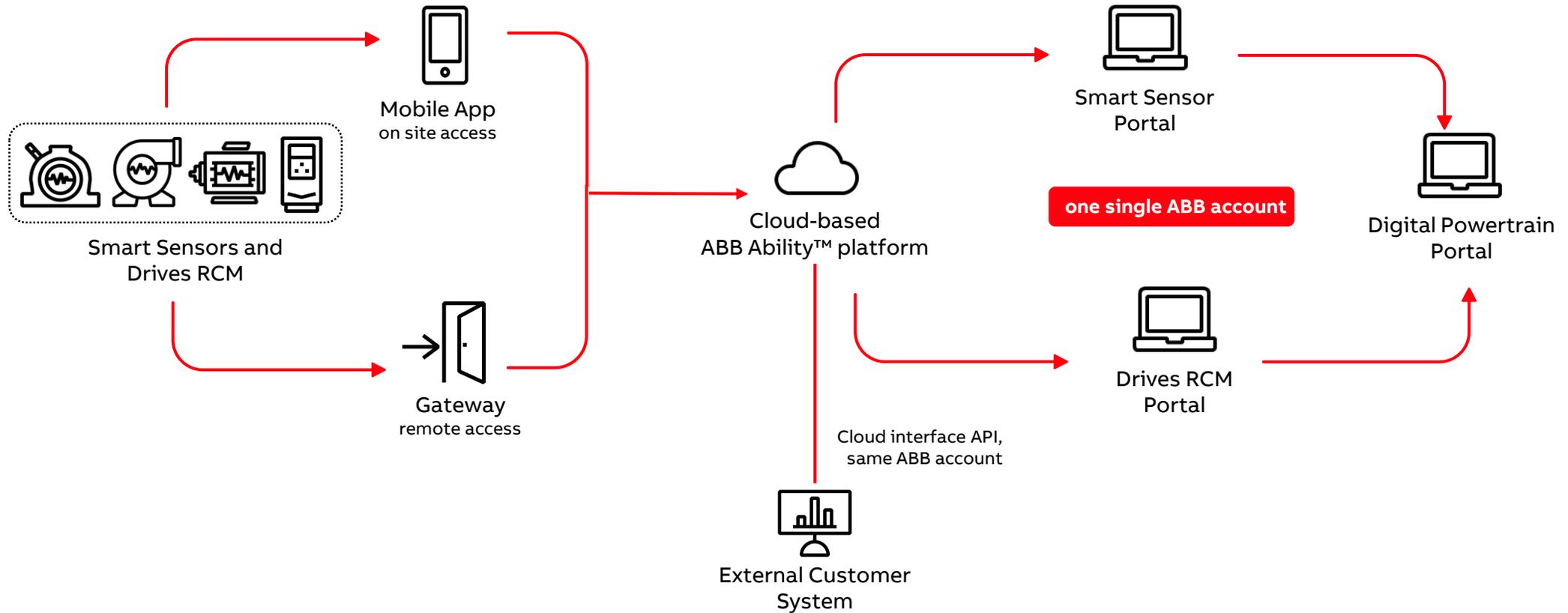
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## 8. Digital Powertrain portal

[Back to table of contents](#)

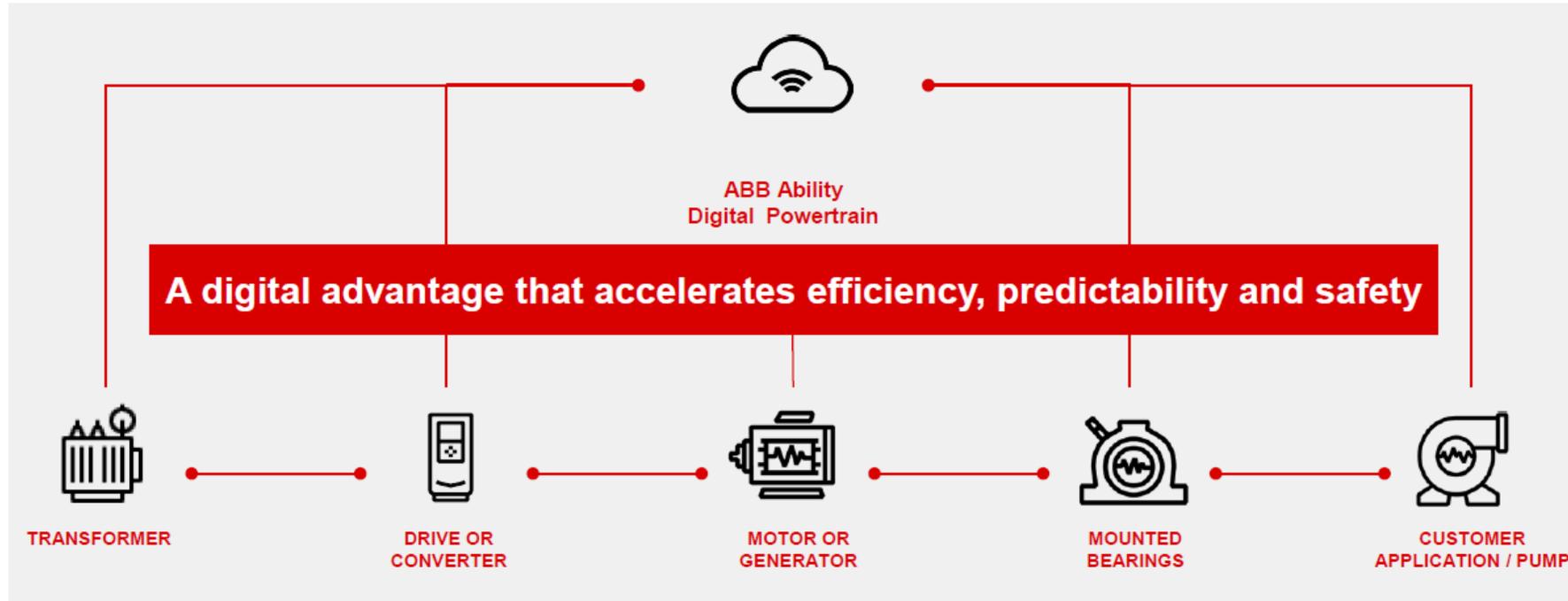
# System architecture

## Interfaces of the Digital Powertrain portal



# What is a Digital Powertrain?

An intelligent powertrain equipped with **sensors** and **cloud connectivity**. It can include motors, pumps, drives, bearings, couplings and gearboxes, and other applications like fans and compressors.



It is a combination of 2 existing web interfaces:

- **Smart Sensor** portal for motors, pumps and mounted bearings;
- RCM portal for **drives**.

You can build a digital powertrain out of multiple monitored assets in the Powertrain portal.

# Why Digital Powertrain?

So that customers can monitor their entire process / powertrain or benchmark performance across similarly rated assets, e.g. motors rated for the same power or speed.



Our digital powertrain **combines connectivity and data analytics** with our expertise to make your operations efficient, predictable and safe.

# Creating a powertrain step by step

## Preparation steps

0

The Powertrain Portal puts together the following assets:

- From the **Drives portal**:

- Drives

- From the **Smart Sensor Portal**:

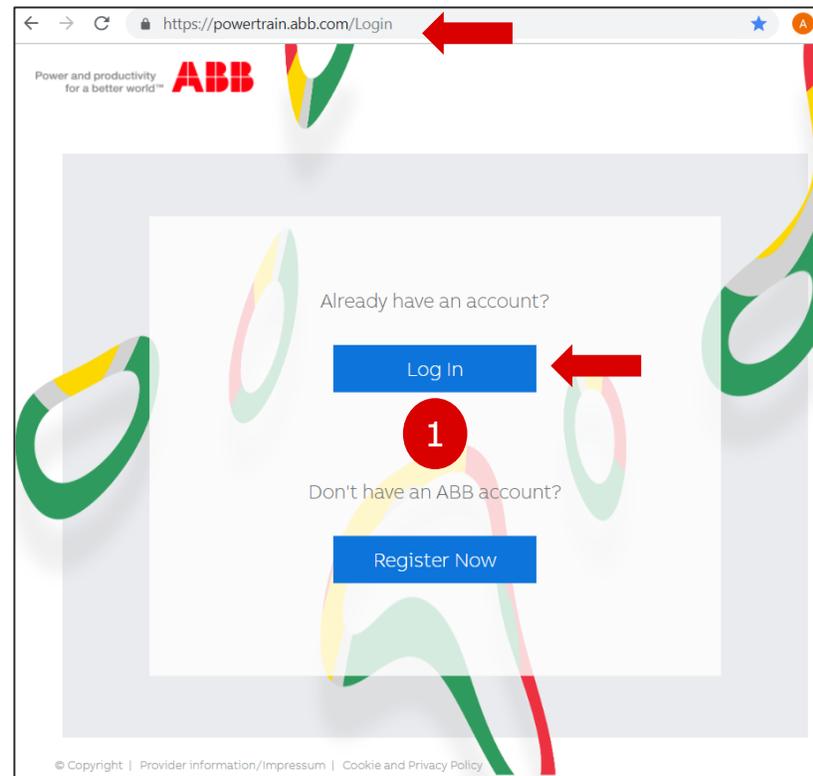
- Motors

- Pumps

- Mounted bearings

- ...

**Access to the monitored assets on both portals is a pre-requisite.**



Log in to the portal:

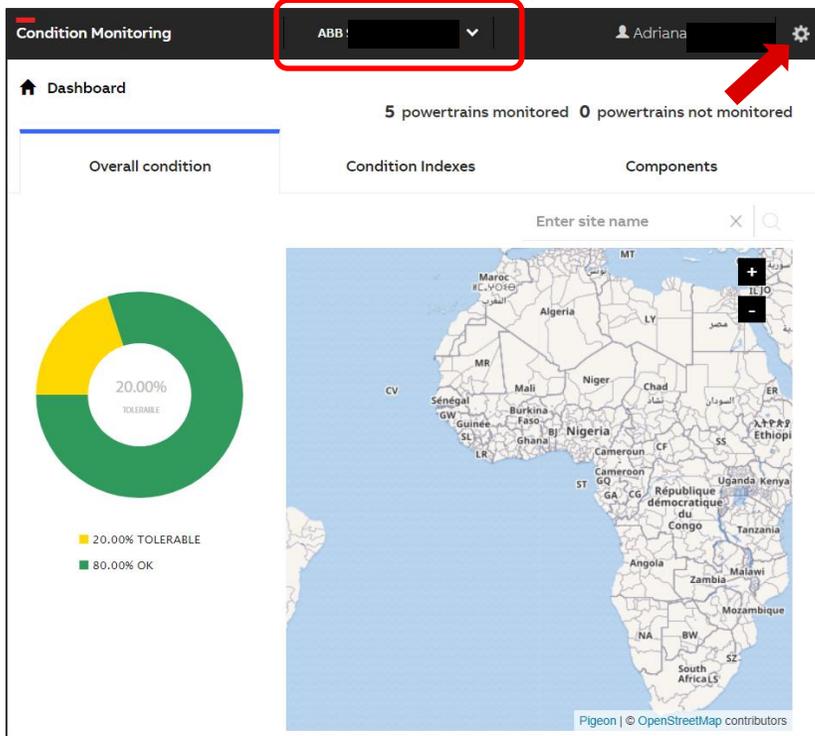
0) Navigate on your browser to:  
<https://powertrain.abb.com>

1) Log in with existing ABB account

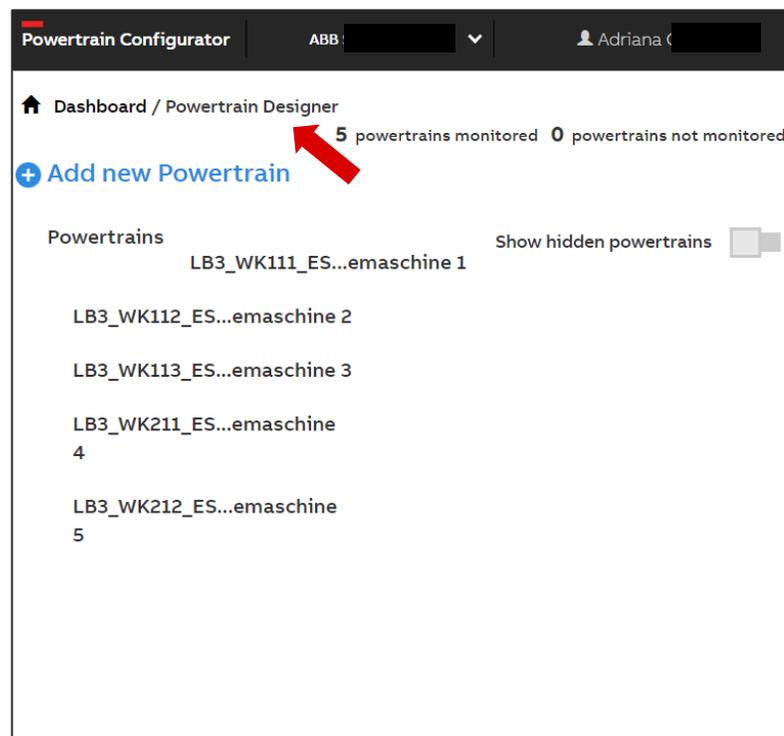
# Creating a powertrain step by step

## Preliminary steps

2



3



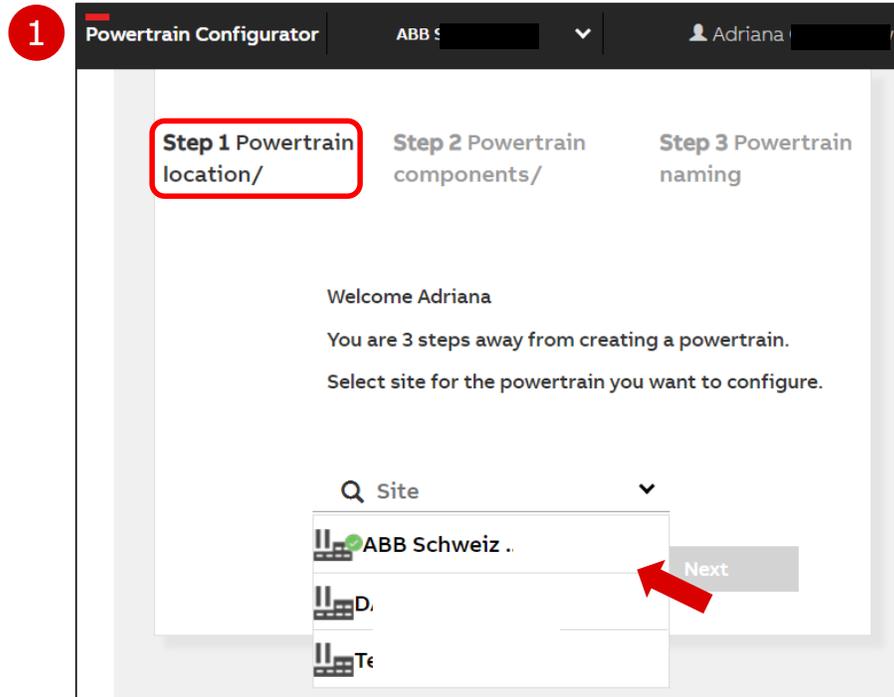
2) When entering the dashboard, click on the gearwheel on the top right

3) Click on “+ Add new Powertrain” to go to the Powertrain configurator

- You can choose from a list of countries or plants.
- Plants are defined when you commission your sensor with the mobile app.

# Configuring a powertrain step by step

Three main steps



The 3 steps to configure a new digital powertrain:

- Location
- Components
- Naming

## Step 1) Location

Choose a **site** from the dropdown list and click on **Next**

# Configuring a powertrain step by step

Three main steps

2

The screenshot shows the 'Powertrain Configurator' software interface. At the top, there is a header with 'ABB' and a user profile 'Adriana'. The main content area is divided into three steps: 'Step 1 Powertrain location', 'Step 2 Powertrain components', and 'Step 3 Powertrain naming'. 'Step 2' is highlighted with a red box. Below the steps, there are three columns: 'Component Type', 'Available Components', and 'Selected Components'. The 'Component Type' column has a dropdown menu with 'Motors' selected. Below it are icons for Generators, Transformers, Drives, Motors, Bearings, and Pumps. A red arrow points to the 'Transformers' icon. The 'Available Components' column has a search bar 'Name or Serial Number' and a list of three items, each with a blue plus icon and a red arrow pointing to it: '=LB3\_WK113\_AS01 3GV1210891713006', '=LB3\_WK013\_AS11 3GVA0910400047019', and '=LB3\_WK110\_AC03 3GVA0910379496001'. The 'Selected Components' column is empty and has the text 'Select components from the Available Components list'. At the bottom right, there is a blue 'Next' button.

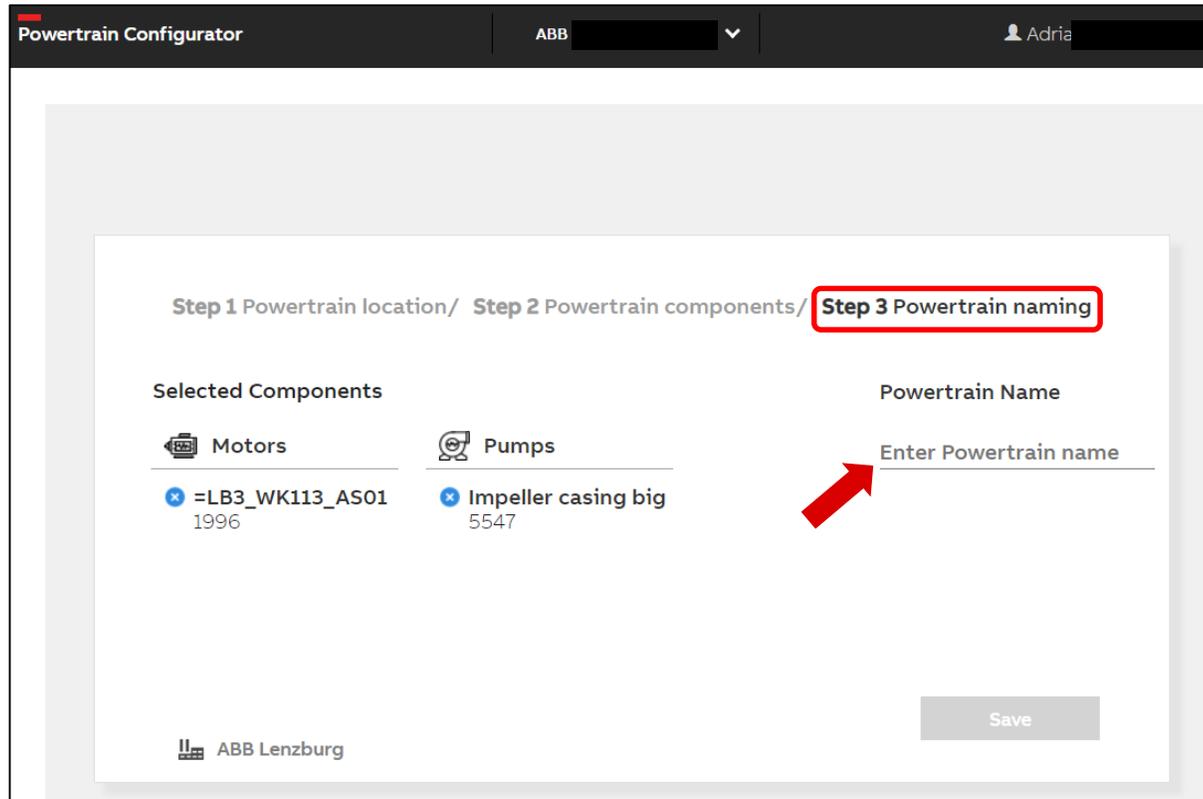
## Step 2) Components

- Select **component type** from the dropdown list
- Add specific assets from the list of **available components** by clicking on the +
- Repeat process for more assets
- Click on **Next**

# Configuring a powertrain step by step

Three main steps

3



## Step 3) Naming

Enter a **name** for the powertrain and click on save

# Visualization of powertrain data

A few clicks to creating a graph

**0**

Powertrain Configurator | ABB Lenze | Adriana

Dashboard / Powertrain Designer | 6 powertrains monitored | 0 powertrains not monitored

+ Add New Powertrain

Powertrains | Pump Experim...ig Lenze | Show hidden powertrains

Demo

Motors WK110

Motors AS01

Motors 75kW

Demo 123

**1**

Condition Monitoring | ABB Lenze | Adrian

Dashboard | 6 powertrains monitored | 0 powertrains not monitored

Overall condition | Condition Indexes | Components

All Indexes | State | Powertrain

Enter powertrain name

66.67% POOR

16.67% TOLERABLE

16.67% OK

Powertrain Demo 123

Powertrain Demo

**0)** Click on the home icon on the top left to go to the **Dashboard**

**1)** Click on «**Condition Indexes**» to see the condition of each powertrain. Then click on the **graph** of the powertrain.

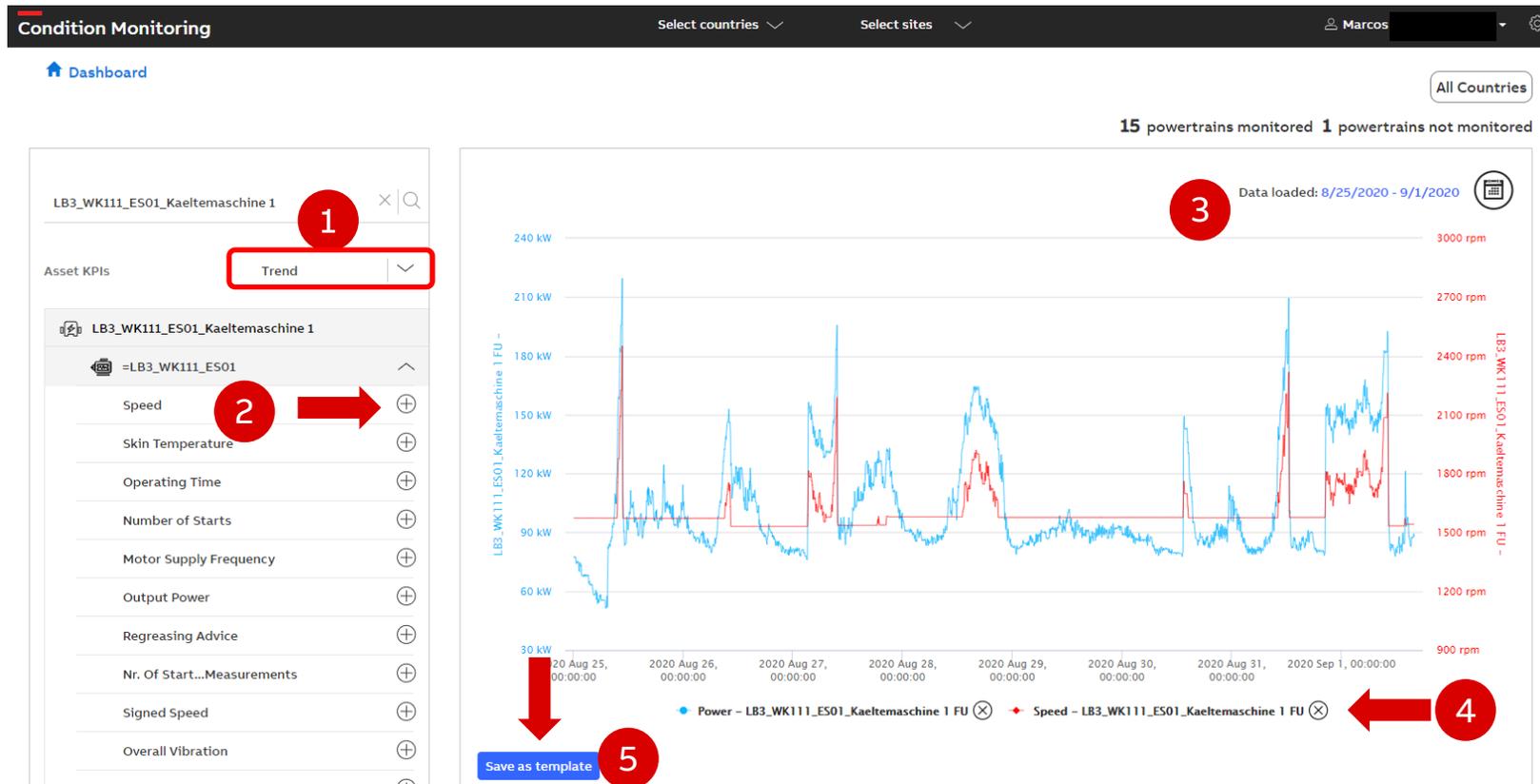


\* The **hierarchy** shows the details of the condition of the powertrains and their assets



# Visualization of powertrain data: trends

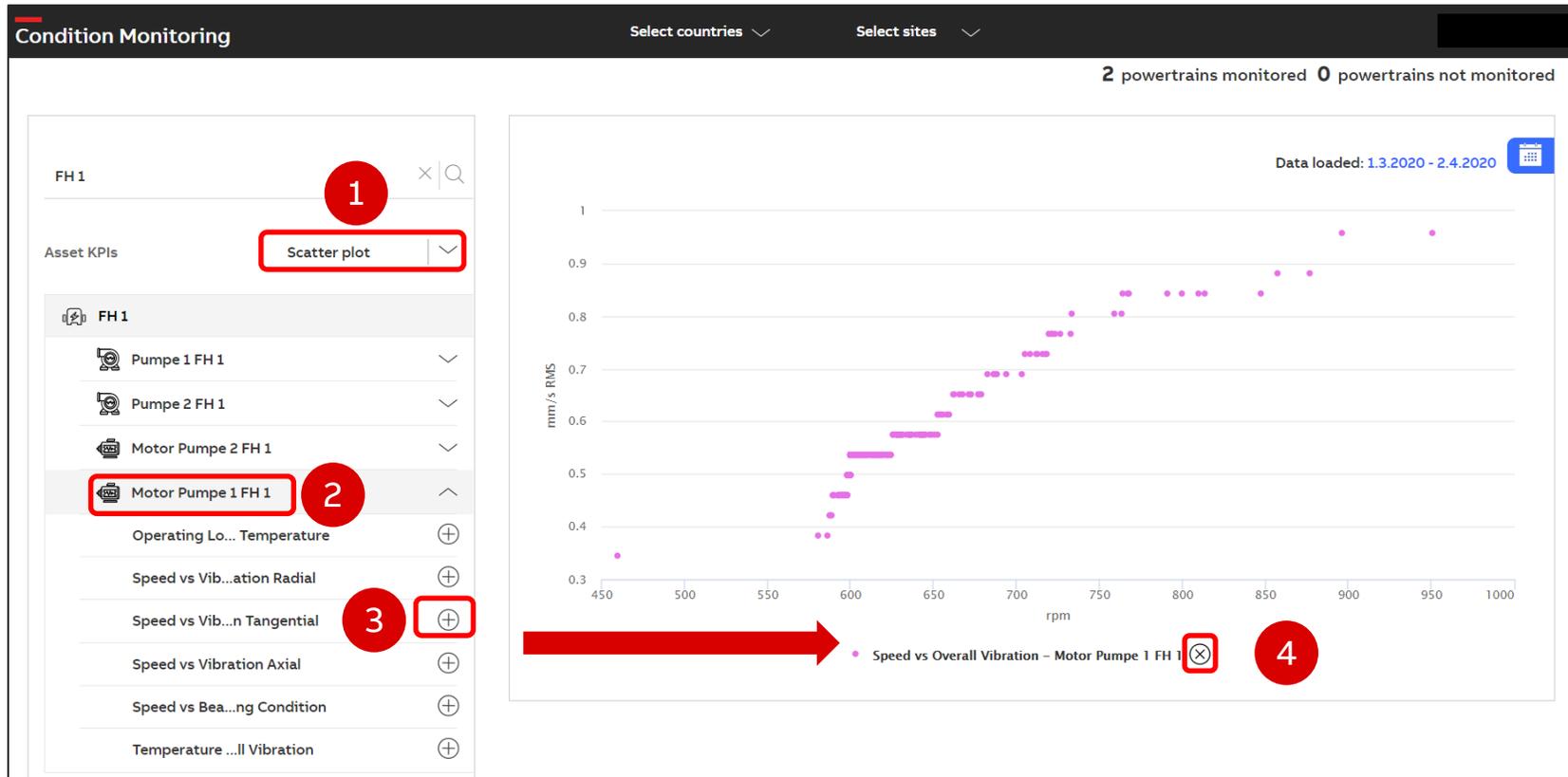
Visualize time-series data



- 1) "Trend" is selected by default.
- 2) On the «Cross Asset KPI Visualization» page, **add** the desired **KPIs** for **each asset** in your digital powertrain from the dropdown lists by clicking +
- 3) Adjust the **timeframe** on the top right.
- 4) Click on the KPIs below the graph to **hide/show** them
- 5) **Save as template** if desired

# Visualization of powertrain data: scatterplots

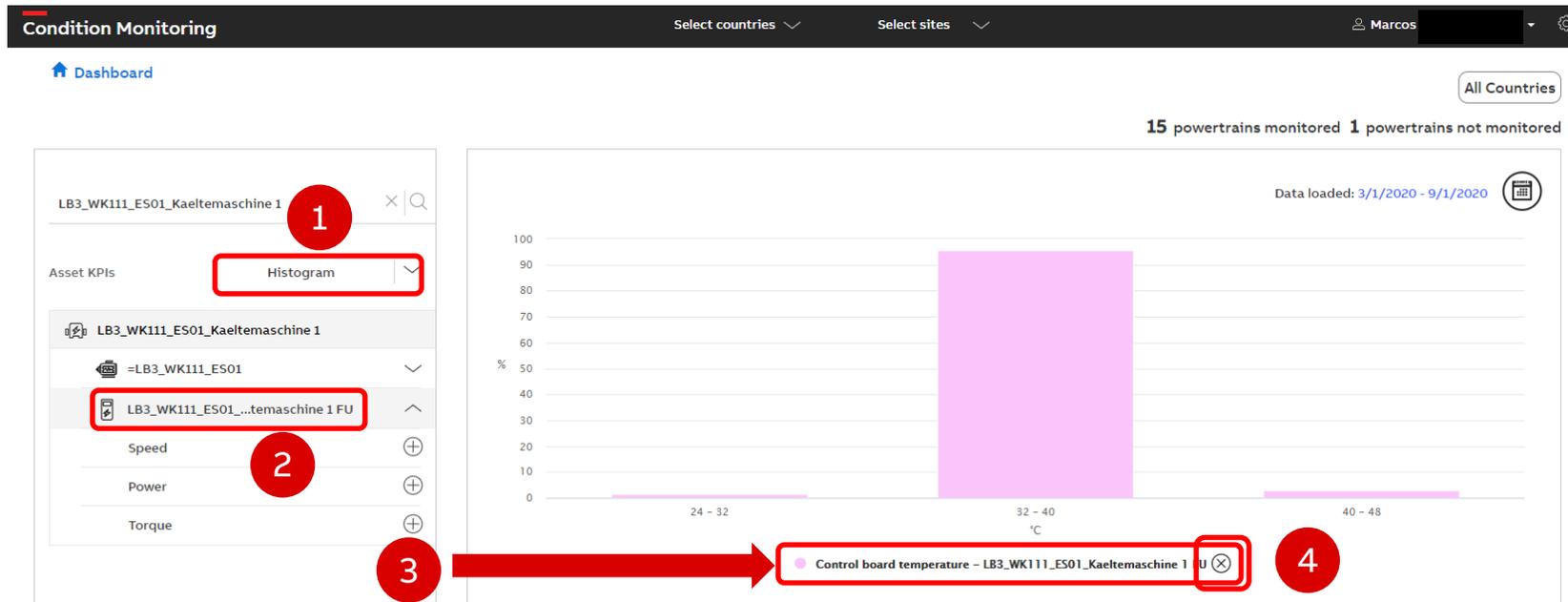
Visualize relationships between KPIs



- 1) Choose graph type "**Scatterplot**" from the drop-down menu
- 2) Choose the asset from the list of available assets
- 3) Selected the combinations of KPIs to visualize as scatterplot.
- 4) To remove the data click the «x» next to the name

# Visualization of powertrain data: scatterplots

Visualize relationships between KPIs



- 1) Choose graph type "**Histogram**" from the drop-down menu
- 2) Choose the asset from the list of available assets
- 3) Selected the KPI to visualize as histogram.
- 4) To remove the data click the «x» next to the name

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# 9. ABB Ability™ Smart Sensor Subscriptions

[Back to table of contents](#)

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# How to buy a new subscription voucher – as an end user or partner

The subscription vouchers can be purchased directly with your local ABB sales unit

## 1 Contact your ABB sales unit or partner

They should be able to provide you with a list of subscription plans with different validity periods and prices.

## 2 Choose your subscription

Talk to you local ABB sales unit about your needs if you need help deciding which subscription duration is best for your accounting needs.

## 3 Purchase your subscription

After selecting your desired subscription, agree on purchasing terms with your local ABB sales contact.



4

## Activate subscription

You will receive a voucher with a code for the purchased subscription. To activate it, just scan the code from the voucher with the ABB Ability™ Smart Sensor Platform app.

5

## Start monitoring your motors and pumps

You can access the ABB Ability™ Digital Powertrain condition monitoring solution for motors and pumps via the ABB Ability™ Smart Sensor web portal (<https://smartsensor.abb.com>) or the ABB Ability™ Smart Sensor Platform app.



# How to buy a new subscription via ABB Ability™ Marketplace – as end user

The subscription plans can be purchased in the ABB Ability Marketplace™



## 1 Access ABB Ability Marketplace™ and register

Access ABB Ability Marketplace™ (<https://marketplace.ability.abb>)



Fill in the required information to log in (e.g. contact/business info). Please note that account validation can last up to 7 working days. Purchase is possible after your account is validated.



## 2 Choose your condition monitoring subscription plan

Use the solution cluster menu to find the desired application under 'Condition Monitoring' and choose a subscription plan.



## 3 Purchase confirmation

Once you have chosen subscription model, billing period, payment type (credit card or SEPA direct-debit) and accepted the Terms and Conditions, you will receive purchase confirmation.



## 4 Activate subscription

You will receive a voucher with a code for the purchased subscription plan. To activate it, just scan the code from the voucher with the ABB Ability™ Smart Sensor Platform app. Please note that the voucher(s) can only be downloaded by registered users in the [ABB Ability™ Smart Sensor web portal](https://smartsensor.abb.com).



## 5 Start monitoring your motors and pumps

You can access the ABB Ability™ Digital Powertrain condition monitoring solution for motors and pumps via the ABB Ability™ Smart Sensor web portal (<https://smartsensor.abb.com>) or the ABB Ability™ Smart Sensor Platform app.

# How to buy a new subscription via ABB Ability™ Marketplace – as a partner

The subscription plans can be purchased in the ABB Ability Marketplace™



## 1 Register as partner

Sign up for the reseller program (<https://eu.marketplace.ability.abb/en-US/pages/partner>) and accept the partner Terms and Conditions. Link [here](#).

Afterwards, you will receive an invitation from Marketplace to register. You will need to fill in the required information (e.g. contact and business information).

Please note that account validation can last up to 7 working days.

Purchase is possible after your account is validated.



## 2 Complete training process



## 3 Choose your condition monitoring subscription plan

Use the solution cluster menu to find the desired application under 'Condition Monitoring' and choose a subscription plan.



## 4 Purchase confirmation

After selecting your desired subscription model and payment type, you will receive the purchase confirmation and the Condition Monitoring voucher.



## 5 Sell your digital services

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# ABB Ability Marketplace™ is available in most OECD countries

Please contact your **local sales unit** if Marketplace is not available in your country

List of countries where the ABB Ability Marketplace™ is available:

Australia	Japan
Austria	Korea
Belgium	Luxembourg
Canada	Mexico
Chile	the Netherlands
Czech Republic	New Zealand
Denmark	Norway
Estonia	Poland
Finland	Portugal
France	Slovak Republic
Germany	Slovenia
Greece	Spain
Hungary	Sweden
Iceland	Switzerland
Ireland	the United Kingdom
Italy	India

**ABB**