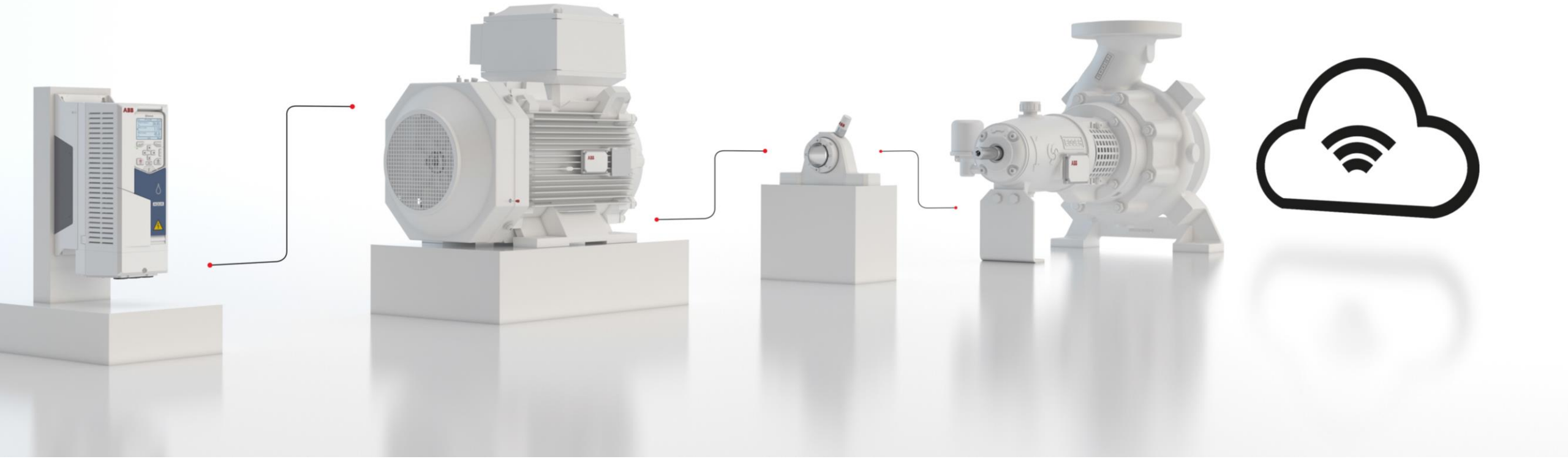


ABB Ability™ Digital Powertrain

Montserrat Grima

Sales Manager for Service drives South Europe

Industrie 4.0

The last Industrial revolution

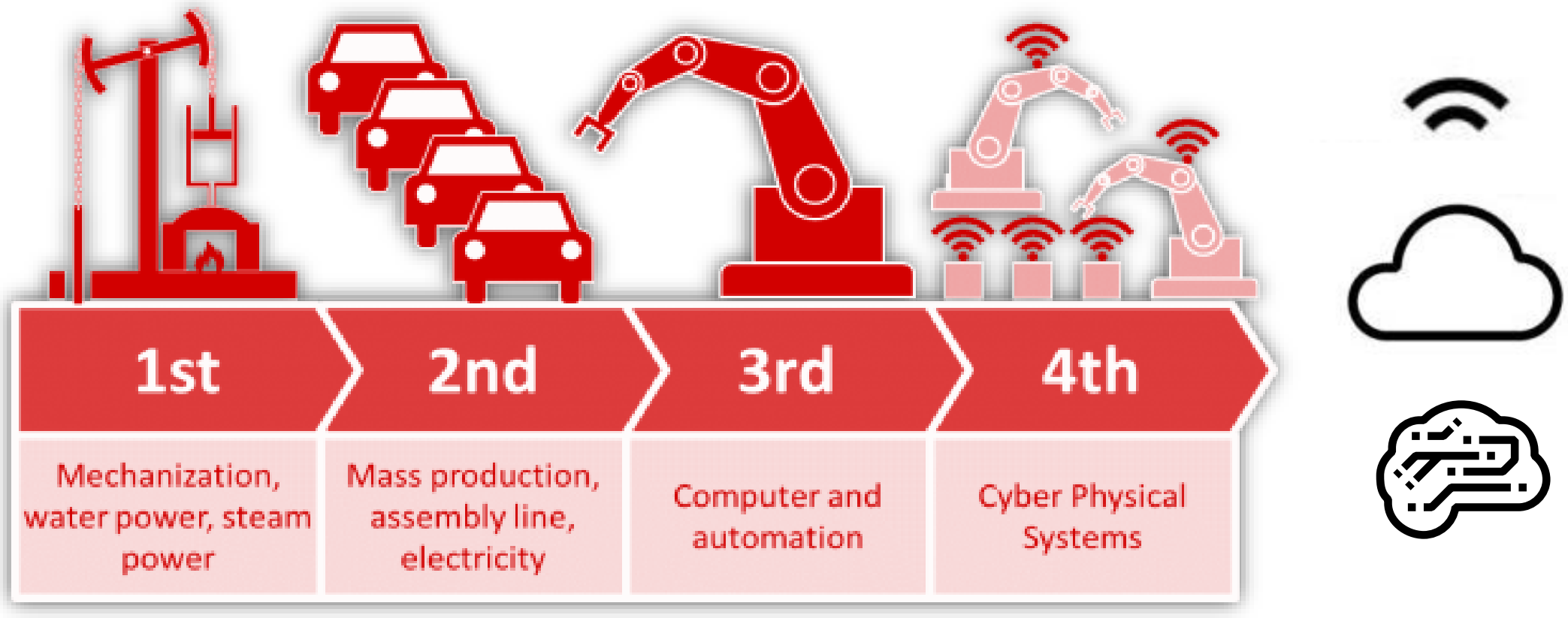
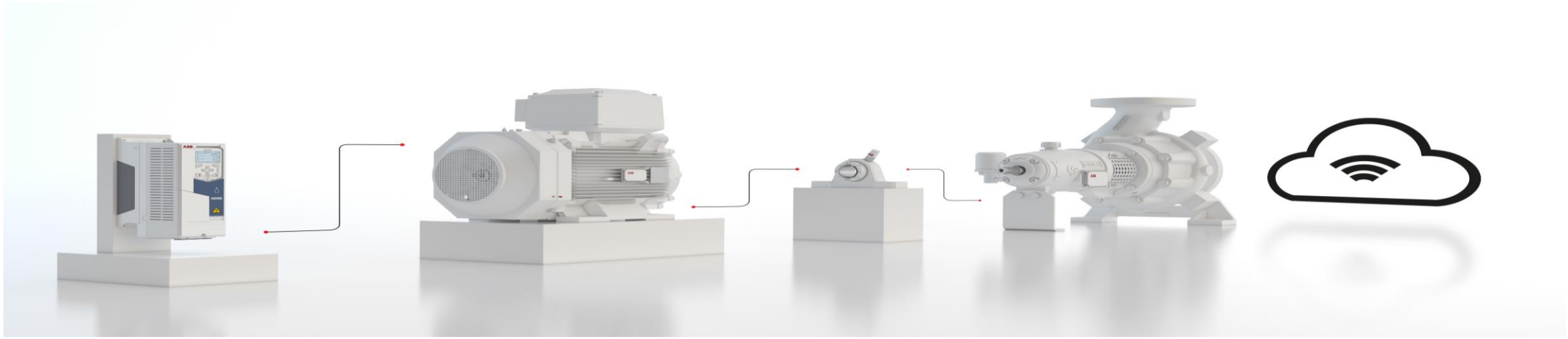


ABB Ability™

ABB Ability ™ is a portfolio of more than 210 multisectoral digital solutions that ABB offers in all sectors based on its expertise and more than 70 million connected devices.
ABB Ability Digital Power Train is one of them

What is ABB Ability™ Digital Powertrain and what are the benefits?

What is the Digital Powertrain? And How does it work?



A suite of digital technologies to improve the performance, reliability and efficiency of all components within the powertrain: from **drives** and **motors,** to **pumps, couplings & gearboxes, bearings and other applications.**

Data gathered from your drives, motors, bearings and pumps, can be aggregated, stored and further accessed via the cloud. The ability to gather and analyze this data can reveal information on the status and condition of your equipment, so that you can intelligently maintain and manage the performance of your powertrain

What are the benefits?

Digital advantage with ABB Ability™ Digital Powertrain

Optimizes a powertrain's performance

Intelligent analysis of the condition of your powertrain's components enables you to reduce downtime, be smart about maintenance scheduling and increase efficiency.

Saves time and money on maintenance

Data from the powertrain can be gathered and assessed, revealing information that helps you schedule maintenance intelligently and lower operating costs.

Provides peace of mind

Automated reports and alerts allow you to monitor the performance of your powertrain remotely and even predict when components will need replacing depending on their specific environment.

Improves safety

Enables easy access to equipment in locations that are difficult or dangerous to access

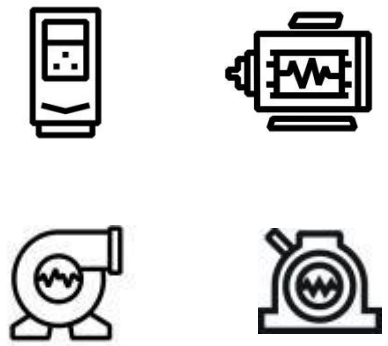
From factory floor to cloud

ABB Ability™ Condition Monitoring for powertrains

Intelligent powertrain

1

Comprises drive, motor, bearing and application (e.g. pump) - equipped with sensors and cloud connectivity.



Turning data into info.

2

Data collected from drive's inbuilt sensors, loggers and smart sensors.

Accessing data

3

Condition monitoring gives detailed information on temperature, vibration, stress levels and other parameters. Dashboards offer transparency of data.

Digital advantage

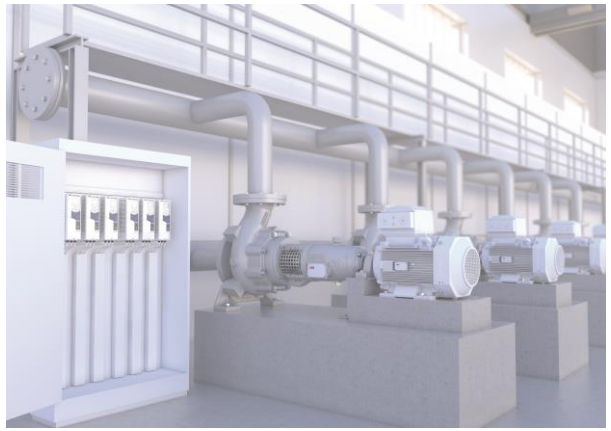
4

The right person is exposed to the right information at the right time.

What is our offer?

ABB Ability™ Digital Powertrain consists of a suite of devices, software and services

Devices



Choose the product of the powertrain you want to digitize - drive, motor, bearing, pump.

Software

Data from those products is transferred via the cloud into your monitoring portal via NETA-21 and Smart Sensor.

Services

Choose the basic level of service or select from optional service features

Devices

How we connect our powertrain components to ABB Ability™

Motors, bearings and pumps

ABB Ability™ Smart Sensor, available for: LV motors, and mounted bearings

- Converts traditional motors, pumps and bearings smart, wirelessly connected devices.
- Picks up data on vibration, temperature and othe parameters
- Attached to the component's frame, no wiring is needed.
- Battery operated
- Communication via Bluetooth

Drives

NETA-21

A remote monitoring tool that provides access to drives via the Internet or local Ethernet networks.

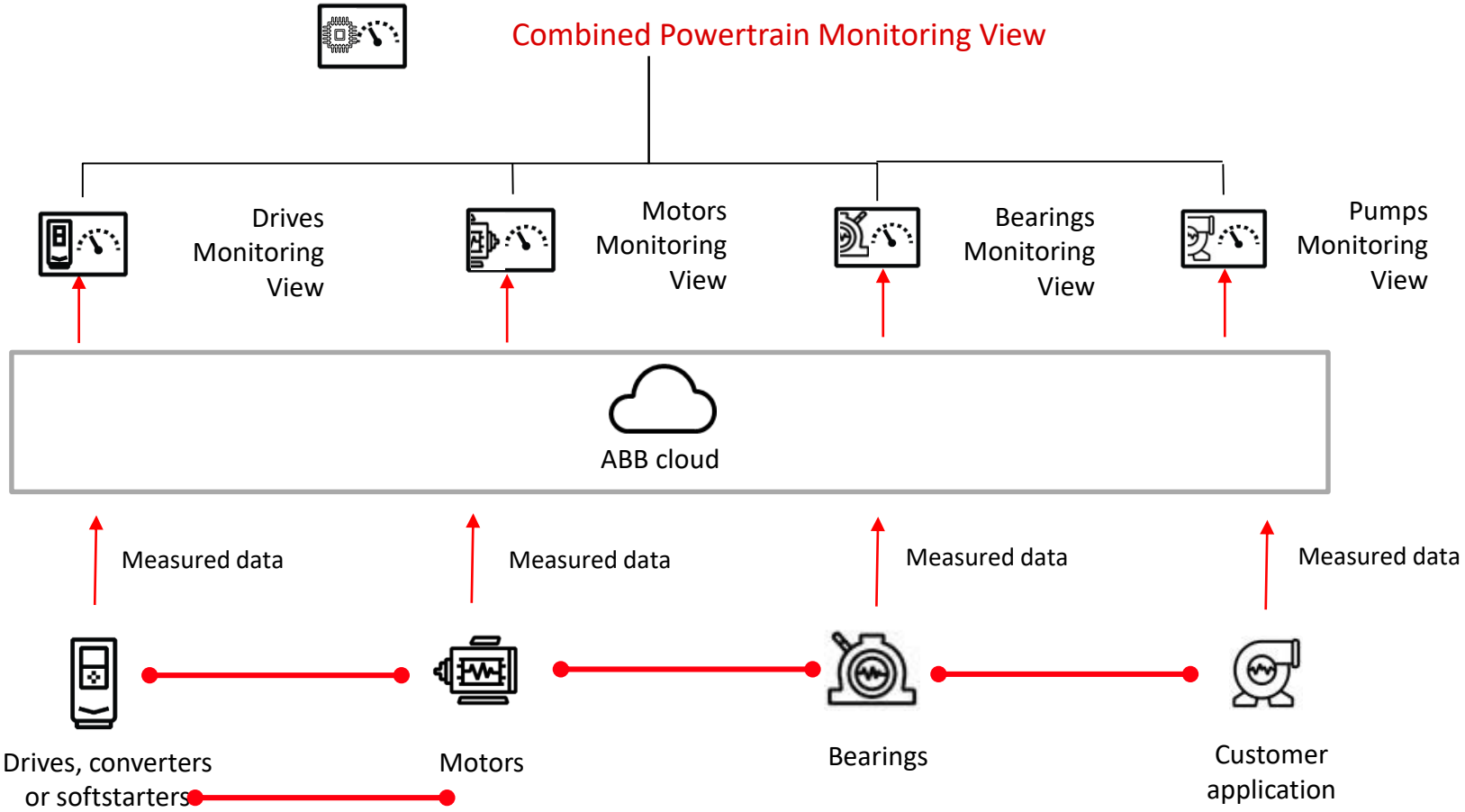
- A built-in web server
- 24DC powered
- Compatible with standard web browsers, Allowing configure drive parameters
- Monitors drive data and faults, tracks load levels, run times, energy consumption

Software

The monitoring portal: Instant access to performance information

- Integrated visualization of the powertrain performance via a monitoring portal.
- Data about components is transmitted via the cloud from the ABB Ability™ Smart Sensors / NETA-21 to the monitoring portal.
- Enables to take actions that lead to less down time, extended equipment lifetime, lower costs, safer operations and increased profitability.
- Offers full transparency of key operational parameters of individual assets as one unified system.

ABB Ability™ Digital Powertrain monitoring portal with combined views



- Aggregated simple view on powertrain assets
- Powertrain configuration management
- Combined reports
- Easy access to additional services

- Less downtime,
- Lower safety risk
- Better life cycle management

*The market knows powertrains only for vehicles!

Customers can configure powertrains and customize the digital service plan

1 Choose one or more assets you want to protect

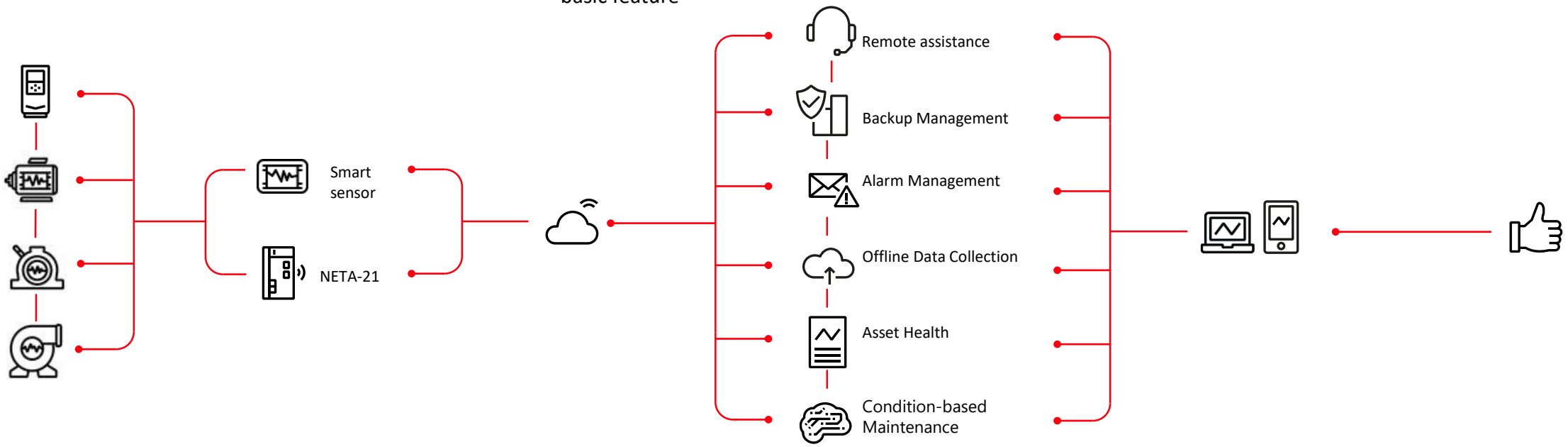
2 Install the connectivity devices

3 Activate access to the Condition Monitoring basic feature

4 Pick optional features and customize

5 Start monitoring

6 Enjoy the customized service



Condition Monitoring

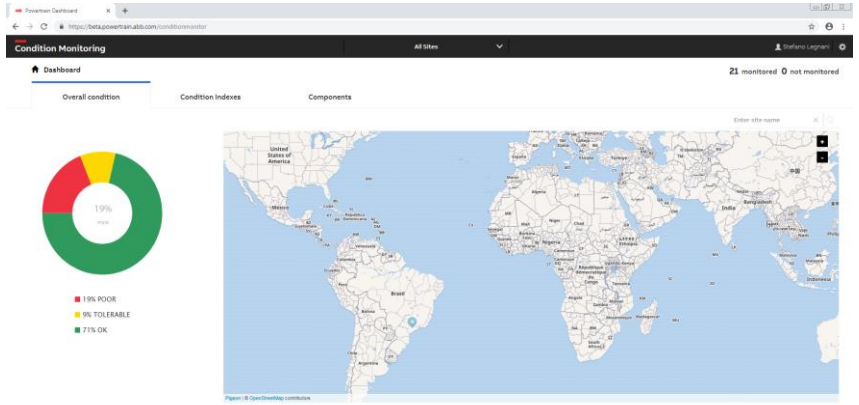
BASIC feature set

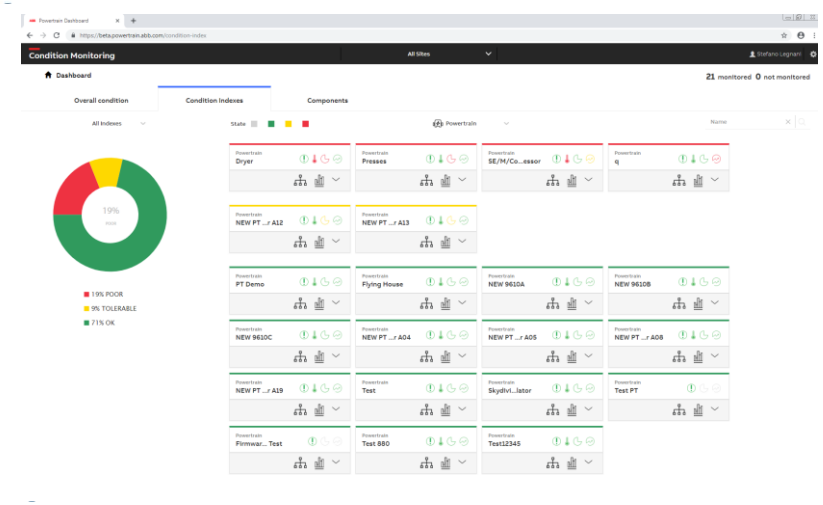
Description and features:

- Condition Monitoring set is the basis for all digital services. The default data monitoring set includes fleet views without ability to compare separate devices with each other.
- Parameter backup (in drives) can be done once a month, or on demand with overriding last.

Benefits:

- ✓ **Maintenance actions can be triggered by component condition information**
- ✓ **Reduce the risk of unexpected downtime**





Backup Management

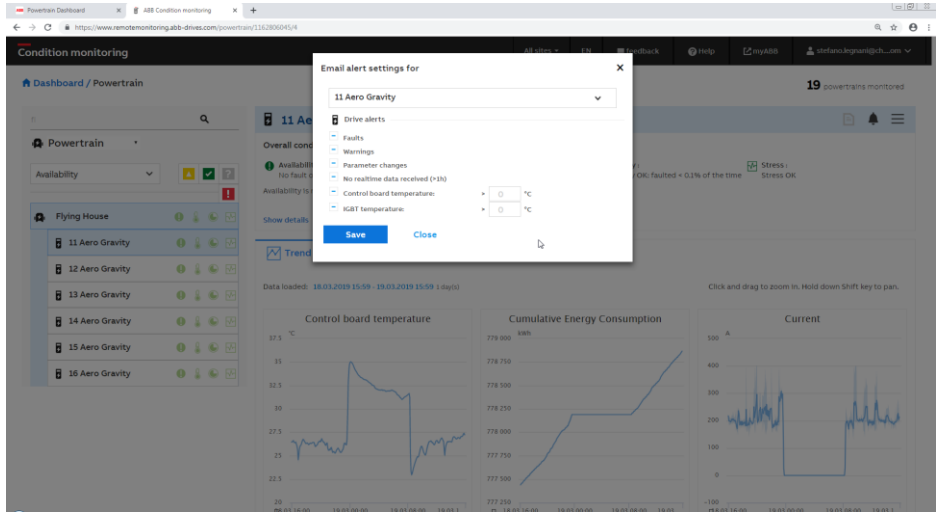
Optional feature set

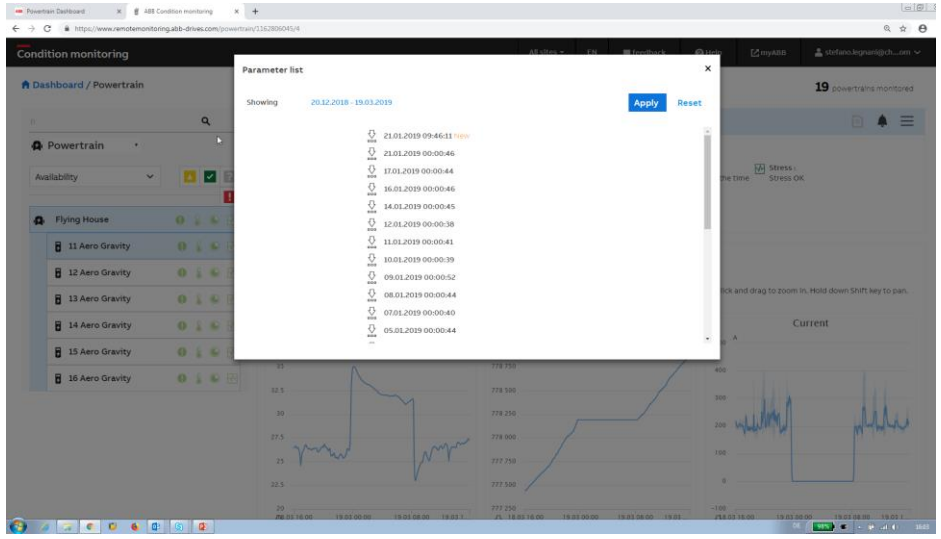
Description and features:

- Limit downtime in case of drive exchange
  - Parameter Recovery Feature
- Protection against misuse and accidental parameter changes
  - Alert, e-mail in case of parameter change
  - Parameter backup feature
- Default feature set together with data monitoring when using NETA-21

Benefits:

- ✓ **Limits downtime in case of a drive exchange or breakage**
- ✓ **Protects against misuse and accidental parameter changes**
- ✓ **Eliminates the need for time-consuming fault tracing procedures**





Alarm Management

Optional feature set

Description and features:

– Plant maintenance action triggered by condition

  • Condition alerts via email, verified on portable devices enable fast resolution

Benefits:

✓ **Limits downtime from wear and tear of components**

✓ **Maintenance actions can immediately be triggered by component condition information**

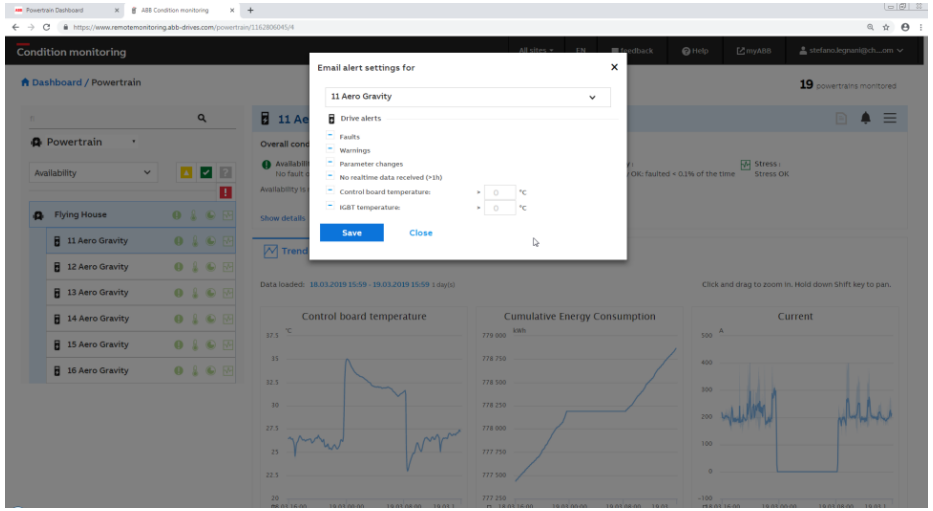
Setting email alerts on temperature, vibration and other

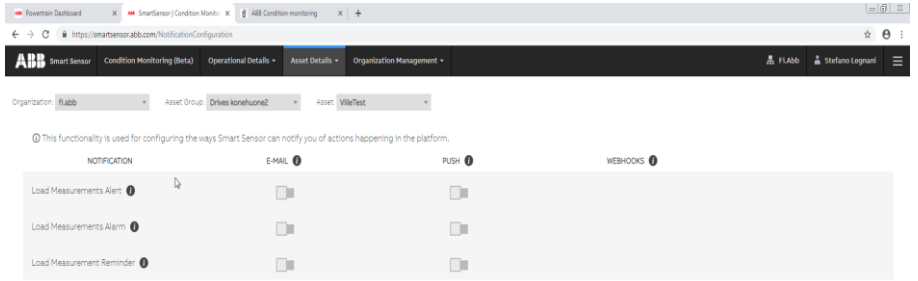
Drive warming or motor vibrating too much

Receiving alert to email

Checking status in DP mobile version

Calling maintenance on-site to fix situation





Offline data collection

Optional feature set

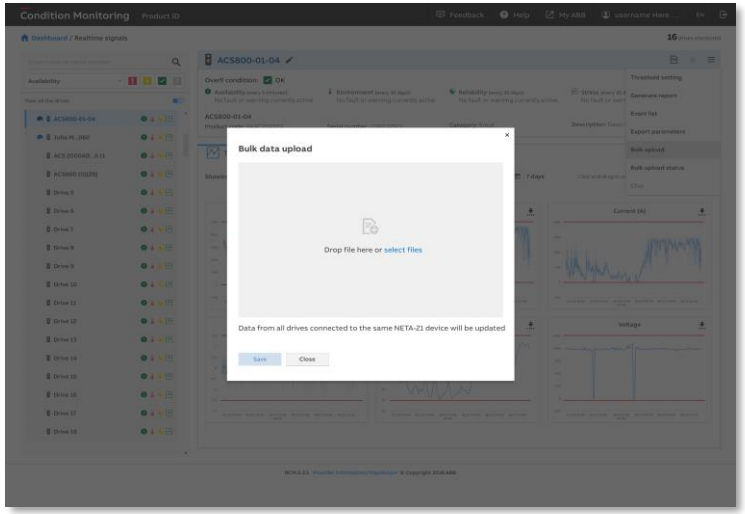
Description and features:

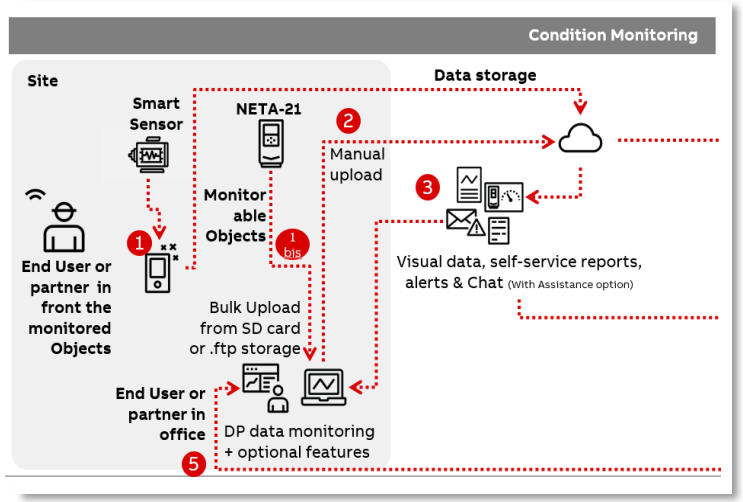
- Bulk Upload
  - According to the customer’s cyber security standards
  - With local storage
  - Optimize satellite costs for mobile segment
- Mobile data collection option for ABB Ability™ Smart Sensor

Benefits:

✓ **Keep cybersecurity risks within your cybersecurity standards**

✓ **Accessible data around the clock without internet connectivity**



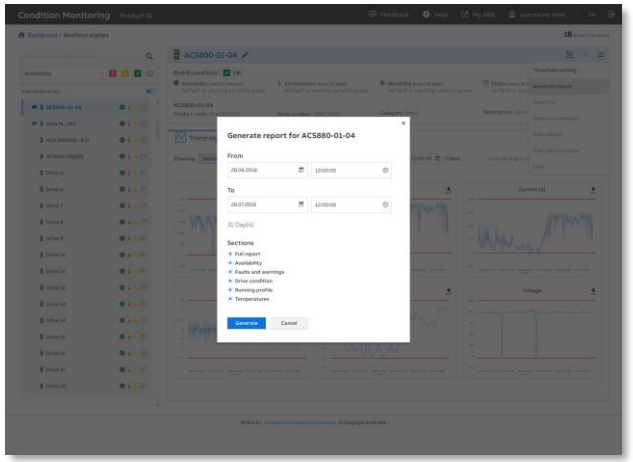


Asset Health

Optional feature set

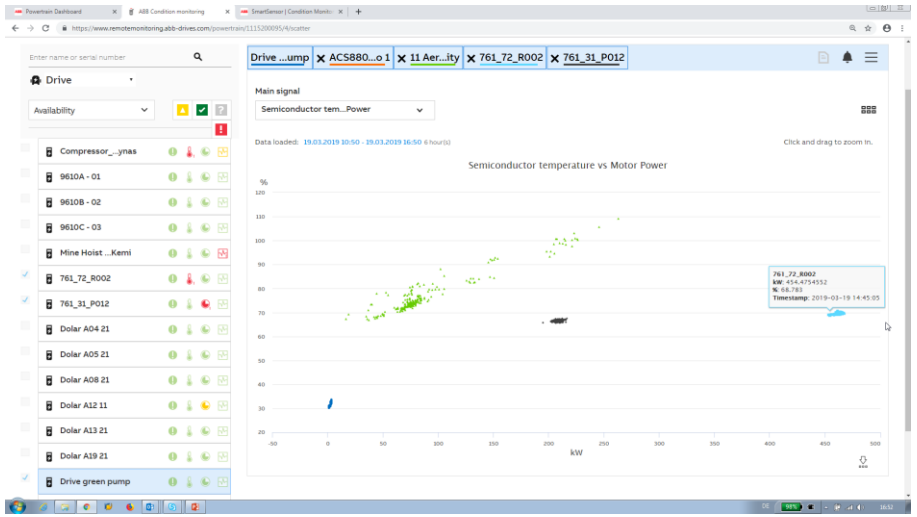
Short description and features:

- Recommendations (expert reports)
  - Condition-based report with a rough asset condition estimation
- Self-service
  - Self generated reports and fleet comparison view in the portal allow to spot inconsistencies
  - Comparing major parameters on fleet level



Benefits:

- ✓ **Combines your process know-how with analysis and recommendations by ABB professionals**
- ✓ **Reduces the risk of unexpected downtime**
- ✓ **Monitors topics that are important**



Condition-based Maintenance

Optional feature set

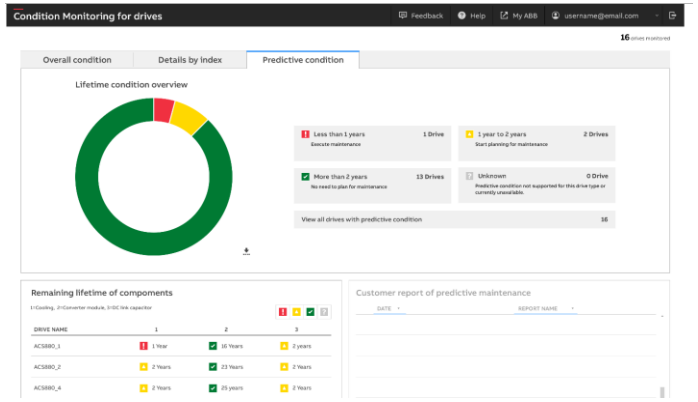
Short description and features:

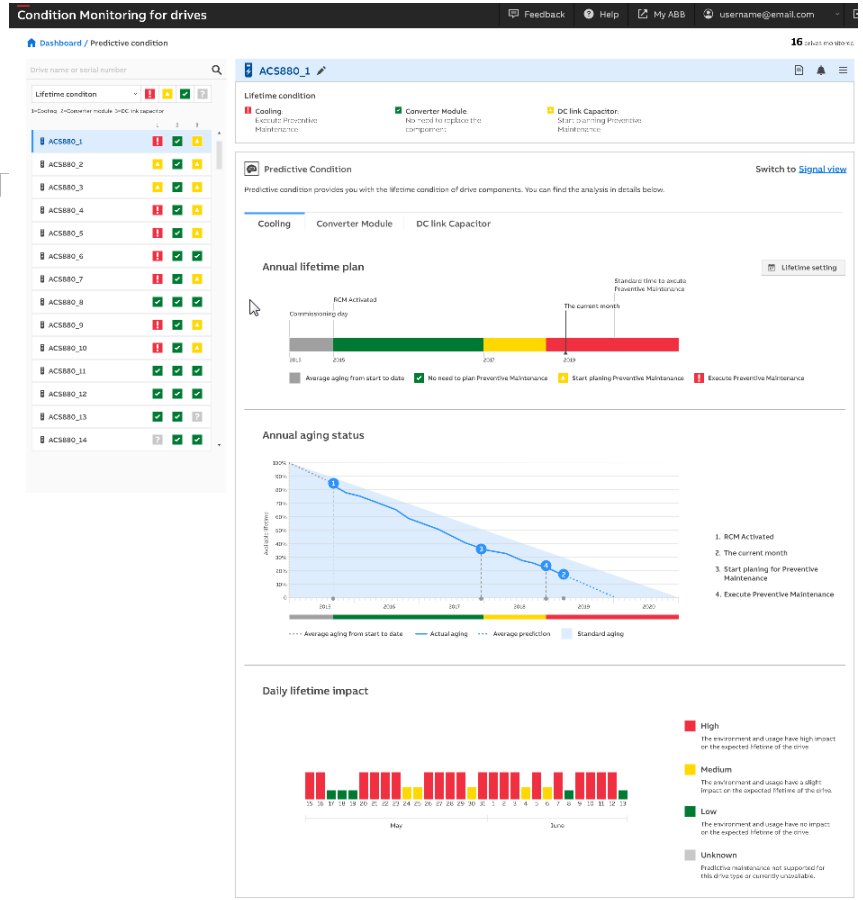
– Condition-based Maintenance provides customers with the lifetime condition of drive components.

Benefits:

✓ **Helps avoid downtime**

✓ **Enables to plan and predict maintenance**





Q3 2019 WILL BE AVAILABLE ON DRIVE VIEW

Remote Assistance

Optional feature set

Description and features:

– For maintenance managers:
  - ABB experts are always remotely available
  - No need of highly skilled resources on site
  - Efficient resources enrollment in case of site issues
– For plant managers
  - Secure productivity
  - Meet delivery schedules

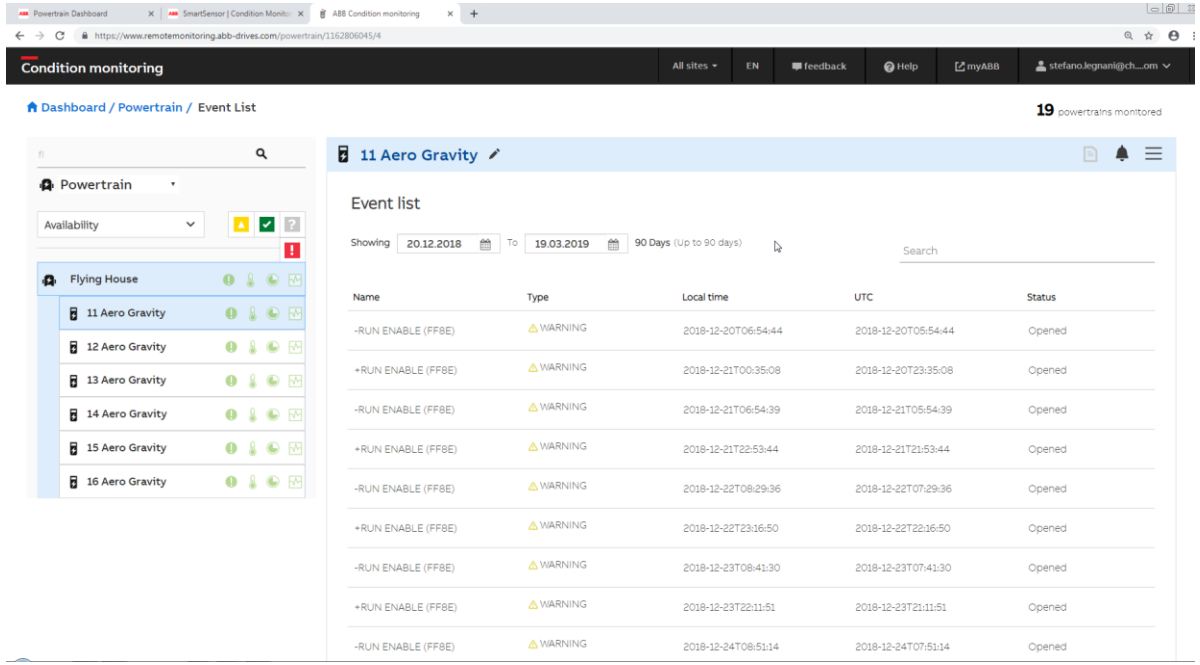
Extra value to *Alarm Management feature*:

– Condition alerts to ABB/partners via email
  - Faster support

Benefits:

✓ **Available 24/7, ABB's experts are always at hand to consult**

✓ **Quick resolution of problems with no requirement for on-site skills**



Case studies describing ABB Ability™ solutions for the components of the digital powertrain

Aero Gravity, Italy

ABB Ability™ Condition Monitoring for drives

Who is the customer?

- Aero Gravity – Anyone can simulate a free fall from an airplane at an altitude
- The airflow inside the flight chamber is driven by 6 powerful turbines that send air from top to bottom, down into the foundations. From here it is conveyed in a sort of overturned funnel that for the Venturi principle accelerates the speed up to 370 km/h. e of 4.500 meters.

What did they buy?

- The customer bought ABB Ability™ Condition Monitoring service for drives to help prevent the risk of downtime.
- ACS800 drives help adjust the air flow in the flight chamber thanks to ABB's precise motor control.

Why did they buy?

- Through the monitoring and corrective actions the customer could minimize their drives' stress condition as well as improve the application's efficiency in terms of air temperature and power control.

Siam Cement Group, Thailand

ABB Ability™ Smart Sensor and ABB Drivetune app

Who is the customer?

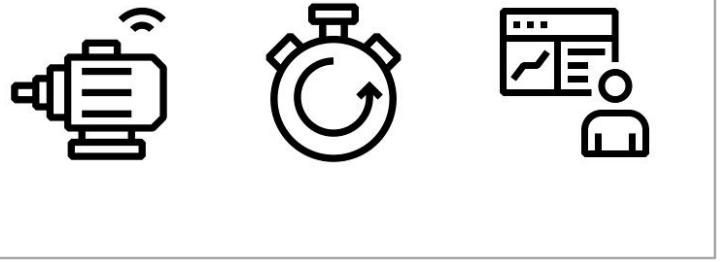
- Siam Cement Group (SCG), Thailand's largest cement company that is more than 70 years old.
- Wanted to upgrade its plant in Thailand's Tha Luang in Saraburi Province.
- In 2016, SCG was also ranked as the second largest company in Thailand and the 604th largest public company in the world by Forbes.

Story link

What did they buy?

- Installed ACS880 series drives along with ABB motors to optimize operating conditions, including a new mobile application ABB Drivetune. Users can control and monitor drives through a smartphone connected with the Bluetooth panel in ACS 880.
- ABB Ability™ solutions for drives improves performance of cement plant

Why did they buy?



- To increase their kiln, the heart of the cement making process, capacity and modernize its ABB drives system by converting from direct current (DC) to alternating current (AC) to enable better control and less maintenance of its plant.
- Better cement kiln control and reduced energy consumption achieved. Optimal capacity of kiln was managed with high operating accuracy while keeping fuel consumption in check, maintaining low running costs and meeting environmental standards.

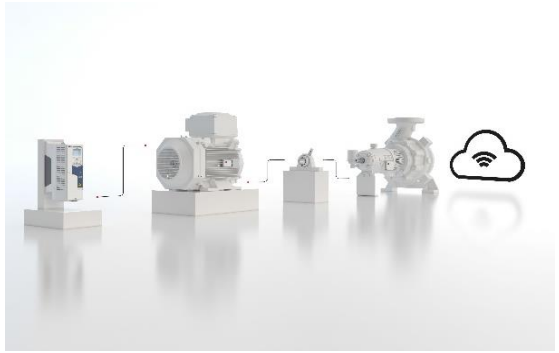
Uppsala Vatten och Avfall, Sweden

ABB Ability™ Condition Monitoring for powertrains

Who is the customer?

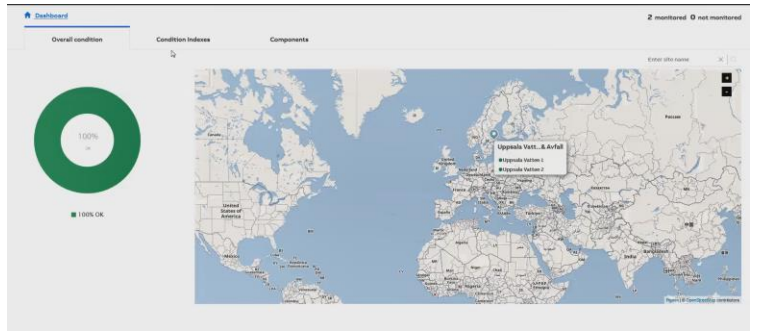
- Uppsala Vatten och Avfall is a municipal-owned water utility company in Uppsala, Sweden.

What did they buy?



- ABB Ability™ Condition Monitoring for powertrains.

Why did they buy?



- The company uses Condition Monitoring for powertrains so that its plant operators receive reports on real-time indicators like reliability, usage patterns, power consumption and stress levels.

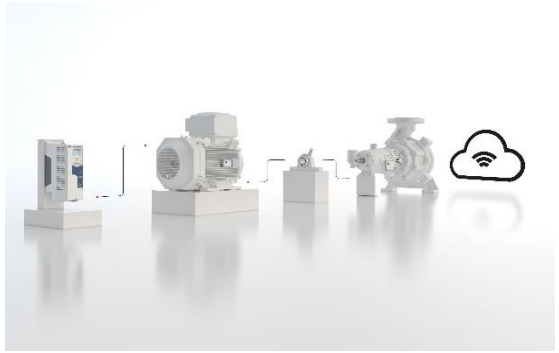
Glencore Nikkelverk, Norway

ABB Ability™ Condition Monitoring for powertrains

Who is the customer?

- Glencore is a mining company, which activities include nickel refinery in Kristiansand, Norway.

What did they buy?



- ABB Ability™ Condition Monitoring for powertrains in seawater pumps system that distributes water in the factory

Why did they buy?

- The integration of ABB Ability™ gives us the possibility to collect more information on the cooling status of the drives and compare data coming from two monitoring solutions".

SSAB steel factory, Finland

ABB Ability™ Remote Assistance for drives

Who is the customer?

- SSAB specialises in processing raw material to steel.
- Founded in 1978 with XX approx. employees.
- The headquarters for SSAB Europe are located in Hämeenlinna, Finland.
- Its revenue was SEK 66.06bn in 2017.

Story link

What did they buy?

- ABB Ability™ Remote Assistance service

Why did they buy?

- To increase the reliability of key drives and motors in the coking plant.
- Remote monitoring system enabled faster fault identification in one of the drives on-site and enabled ABB immediately to contact SSAB.
- Thanks to the early notice and cooperation, unwanted downtime was avoided.
- It enabled the alarm's drives to be analysed remotely, helping the mill's coking plant avoid a possible breakdown and reducing downtime.

Olam International, Asia

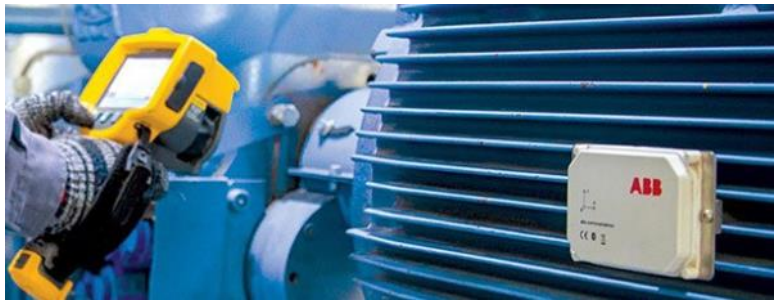
ABB Ability™ Smart Sensor for LV motors

Who is the customer?

- Olam International is a supplier of food and industrial raw materials
- Olam has around 30,000 motors across 70 factories globally. Their reliability and performance is critical for a smooth production

Story link

What did they buy?



- ABB AbilityTM Smart Sensors for LV motors (approx. 100)
- Olam first installed the ABB Ability™ Smart Sensor for motors at its cocoa factory in Singapore, followed by its dairy processing plant in Malaysia and its sugar refinery in Central Java, Indonesia.

Why did they buy?

Productivity **Availability**

- In the past, the monitoring of a motor was a manual process, consuming time and labor
- The sensors monitor motors remotely, enabling predictive maintenance, substantially reducing downtime and extending equipment life.
- The savings from preventing only one motor failure has already recovered Olam's investment in equipping smart sensors on a number of motors at its factories


ABB