

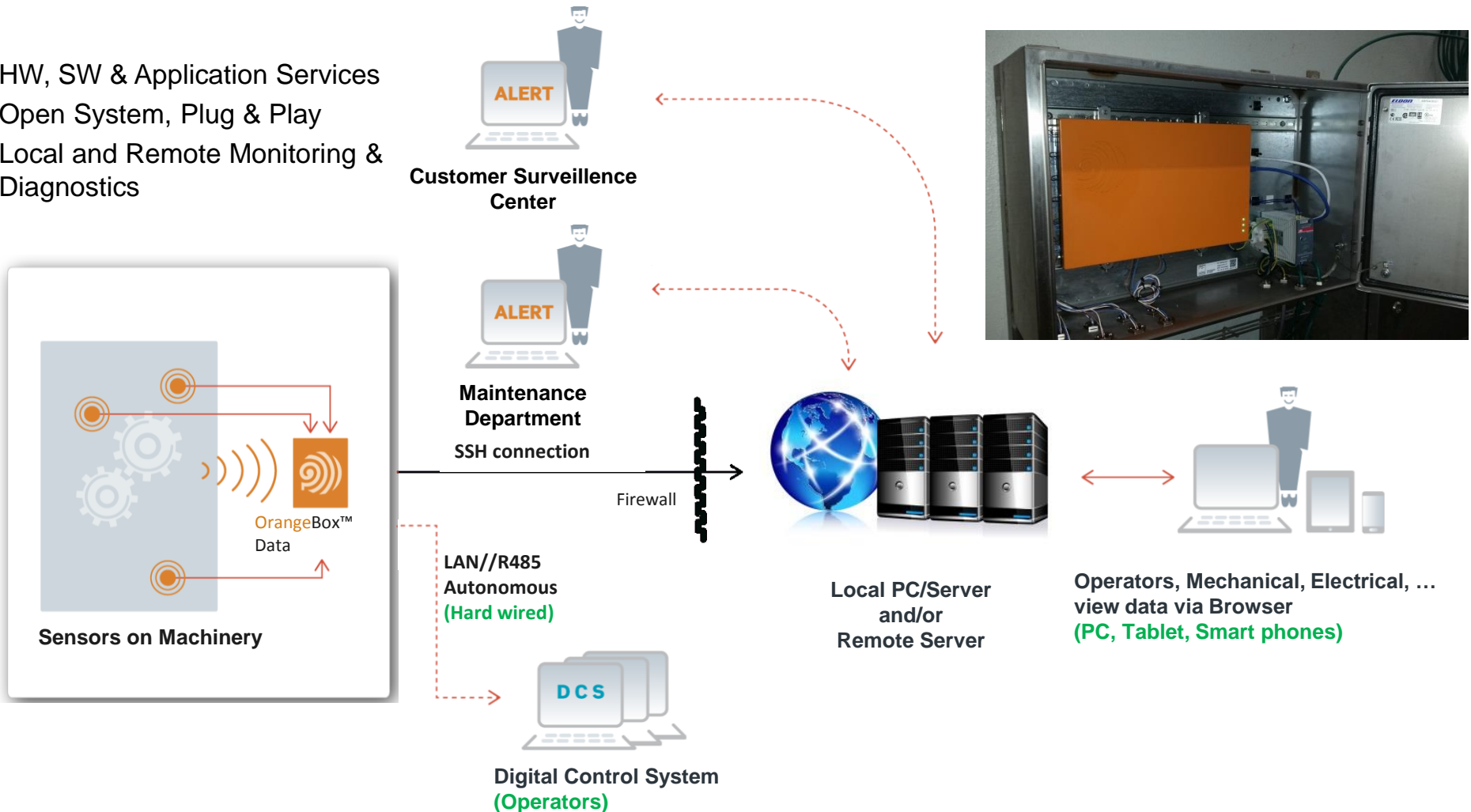


E n g i n e M o n i t o r i n g S y s t e m

Product Brief

Monitoring Studio – An End-to-End Solution

- HW, SW & Application Services
- Open System, Plug & Play
- Local and Remote Monitoring & Diagnostics



Basic Tasks - Protection

Monitoring:

- ISO10816 severity monitoring (protection).
 - Acceleration, velocity, displacement & process (4-20 mA / 0-10V) sensors.
- Storing – historical data for more than 15 years.

Protection:

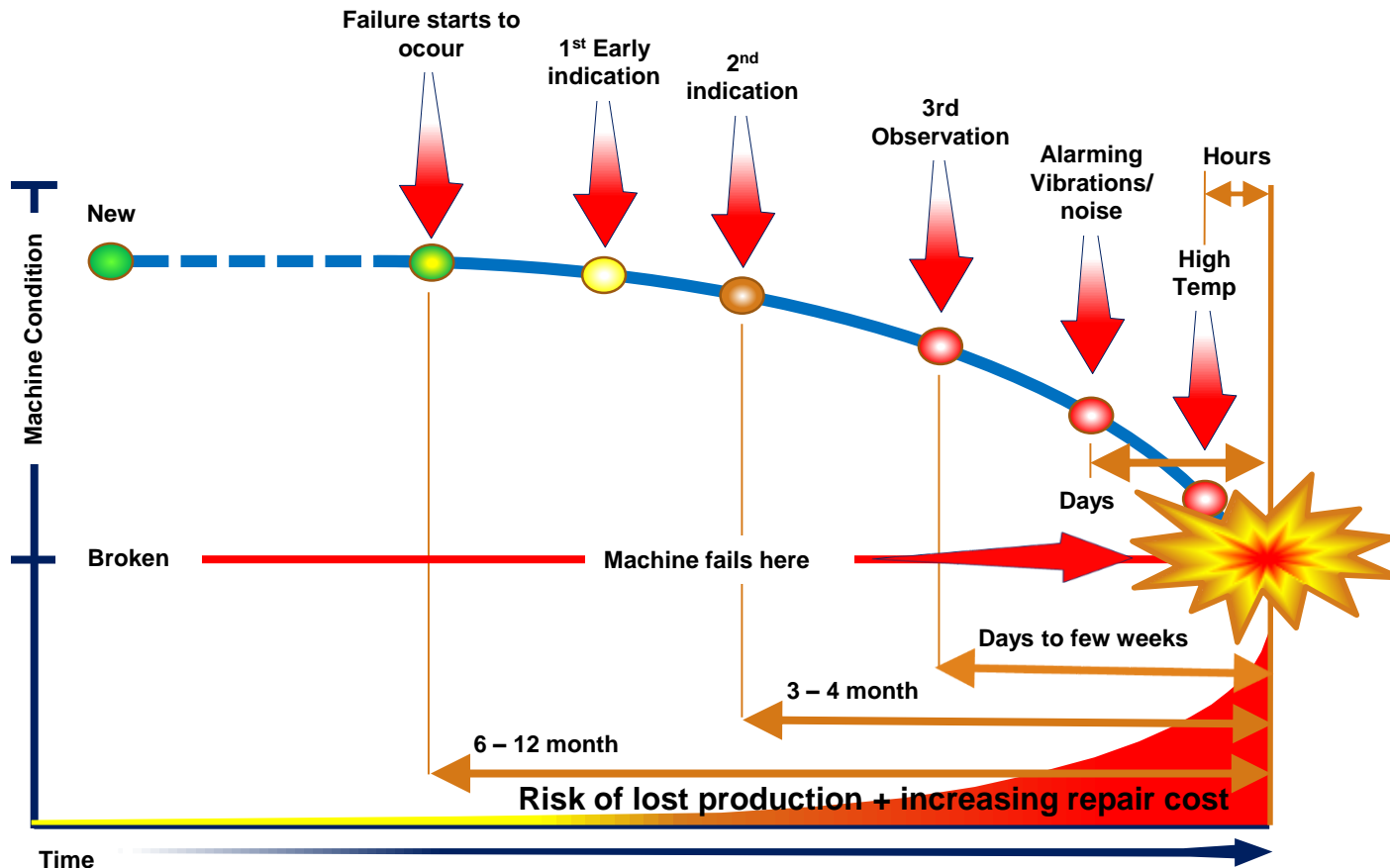
- Detect events; alerts & alarms and notification of operators (e.g. via e-mail).
- Provide control signals to PLC or emergency shut down system (ESD), via 4-20 mA signals or relay's, or
- Shut-down assets directly via relays (OK, Alert & Danger with voting logic).
- Continuously updating event logs (sequence of events).

Data Access:

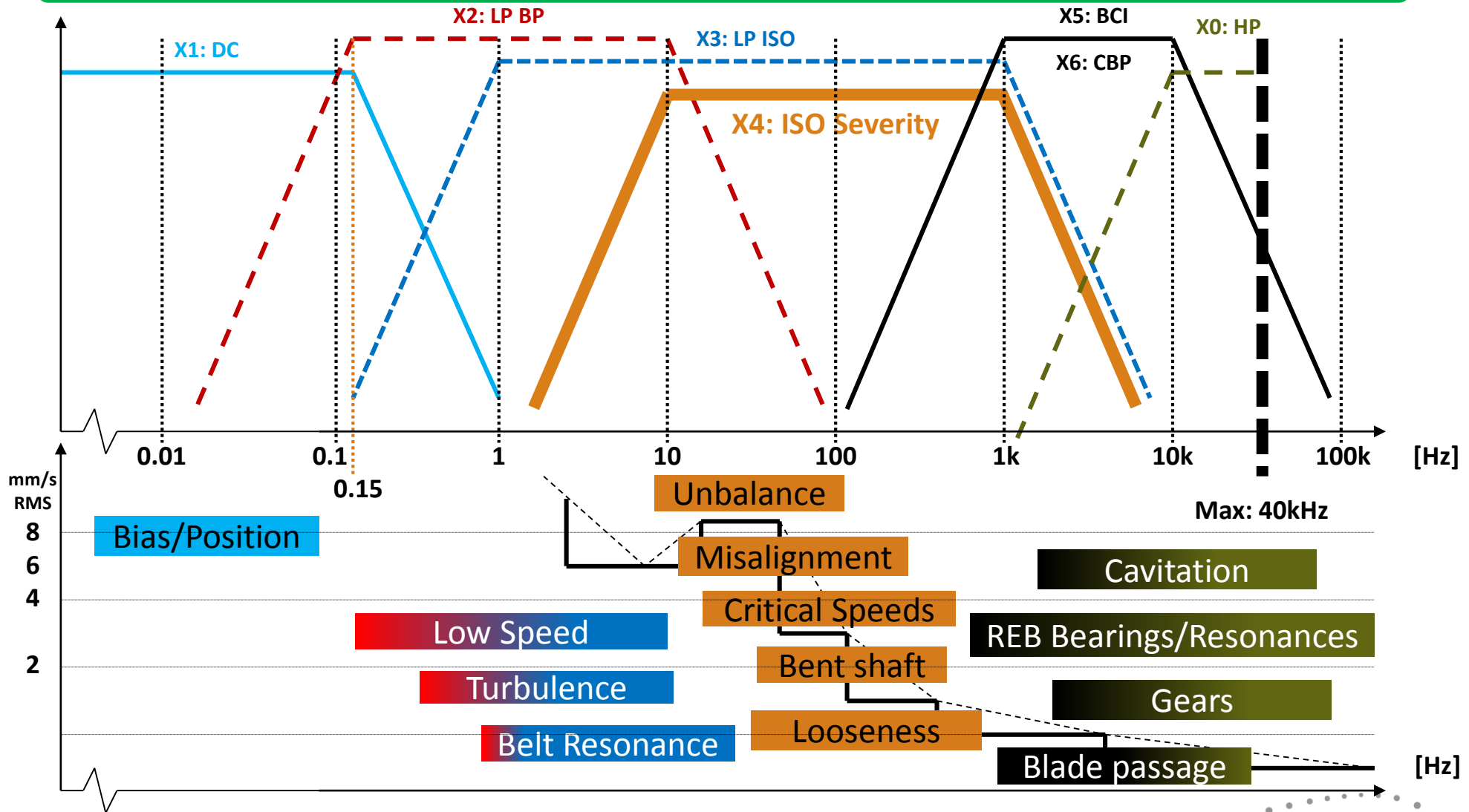
- Local access to monitoring, event and historical data, and/or:
- Remote access to monitoring, event and historical data.

Advanced Tasks – Diagnostic Monitoring

It may take a long time from the error first appears, to the machine actually breaks down.
The longer you wait the higher the risk is for lost production + increasing repair cost !



Advanced Tasks – Diagnostic Trend Monitoring



Advanced Tasks – Early Fault Detection

Monitoring:

- Parallel processing of frequency band monitoring (potential fault detection):
 - ISO (10 Hz to 1 kHz), low band pass ISO (1 Hz to 1 kHz), slow pass (0.15 Hz to 10 Hz), Crest factor (peak/RMS), Bearing condition Indicator (BCI), High pass (10kHz to 40 kHz), see next slide.
 - Up to 6 frequency band passes, e.g. focusing on rolling element bearings.
 - Critical Event Recorder (stores raw sensor signals on events).

Diagnostics:

- FFT, zoom and Order-spectra.
- Reference spectra.
- Spectrum comparison.
- Kinematic Data, e.g. geometrical bearing data gives typical fault frequencies.

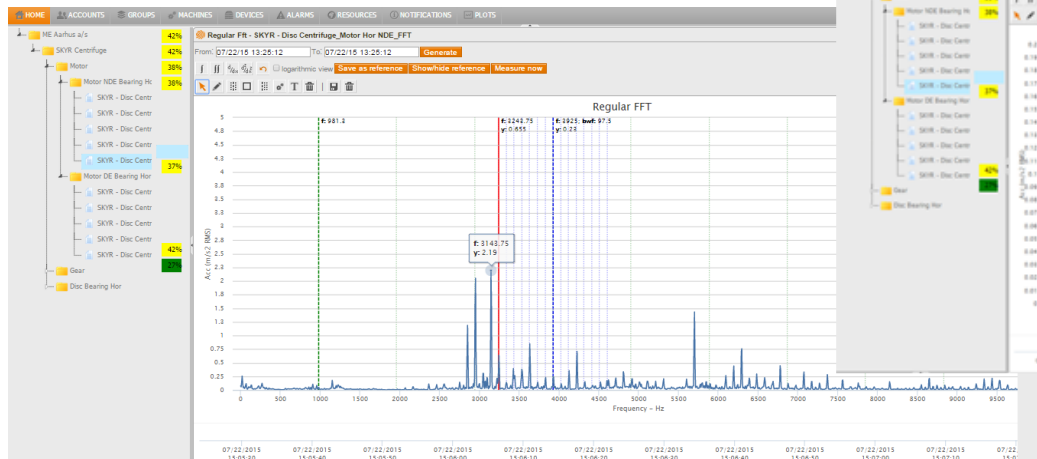
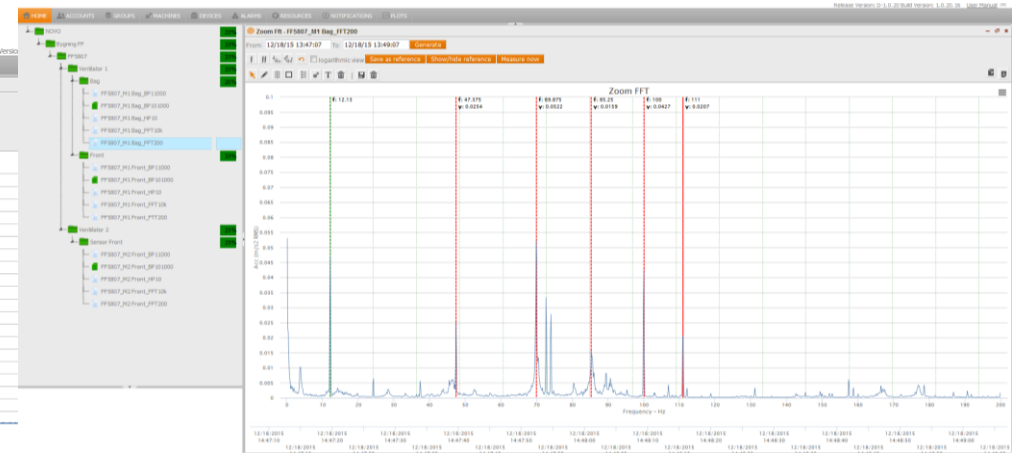
Notification:

- Detect events and notify mechanical engineers or diagnostic staff (via user interface or e-mail).
- Update event log books.

Data:

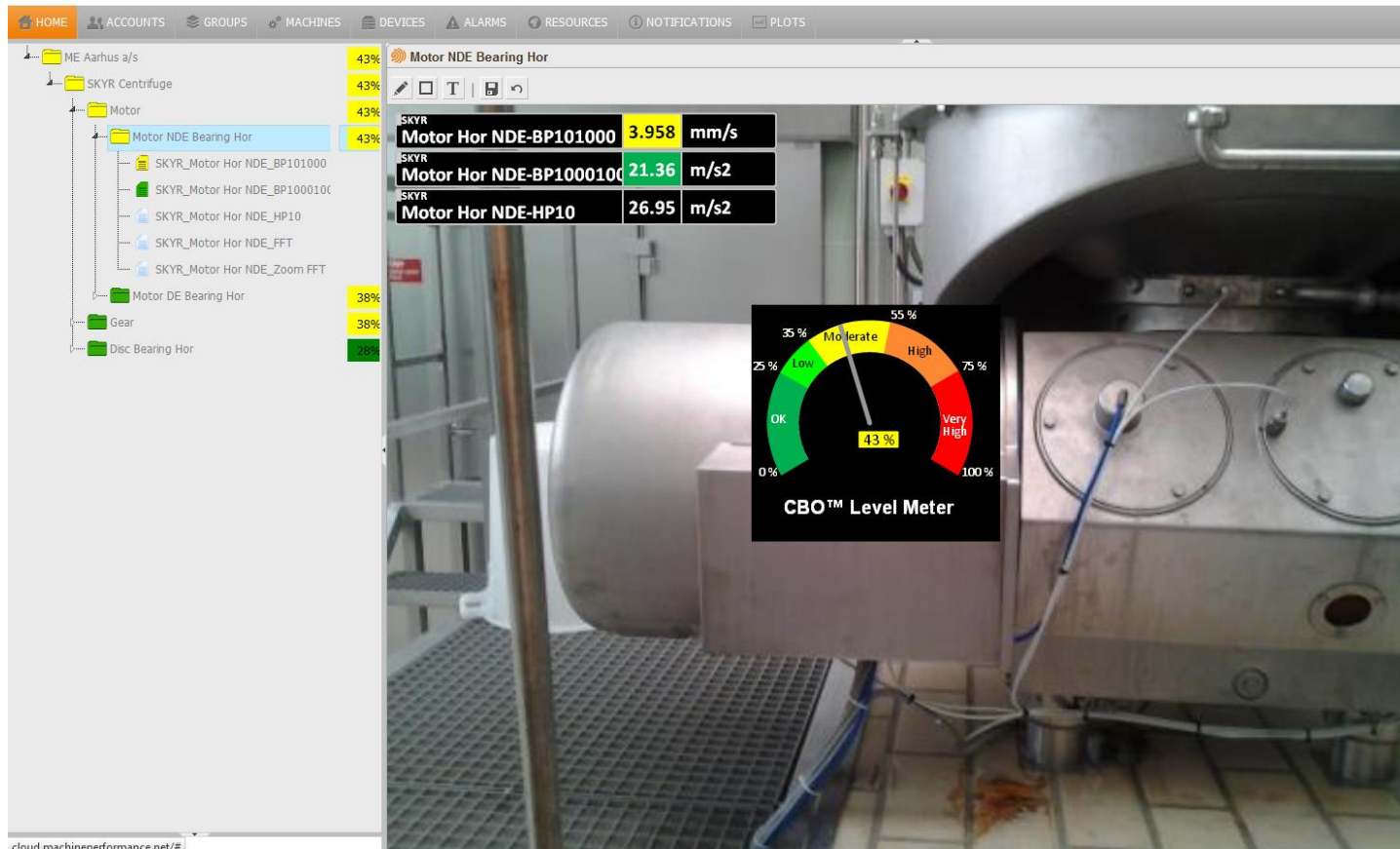
- Compression and storing up to 15 years historical data.
- Local and remote access to event data and historical data.

Advanced Tasks – Diagnostic Spectra Monitoring

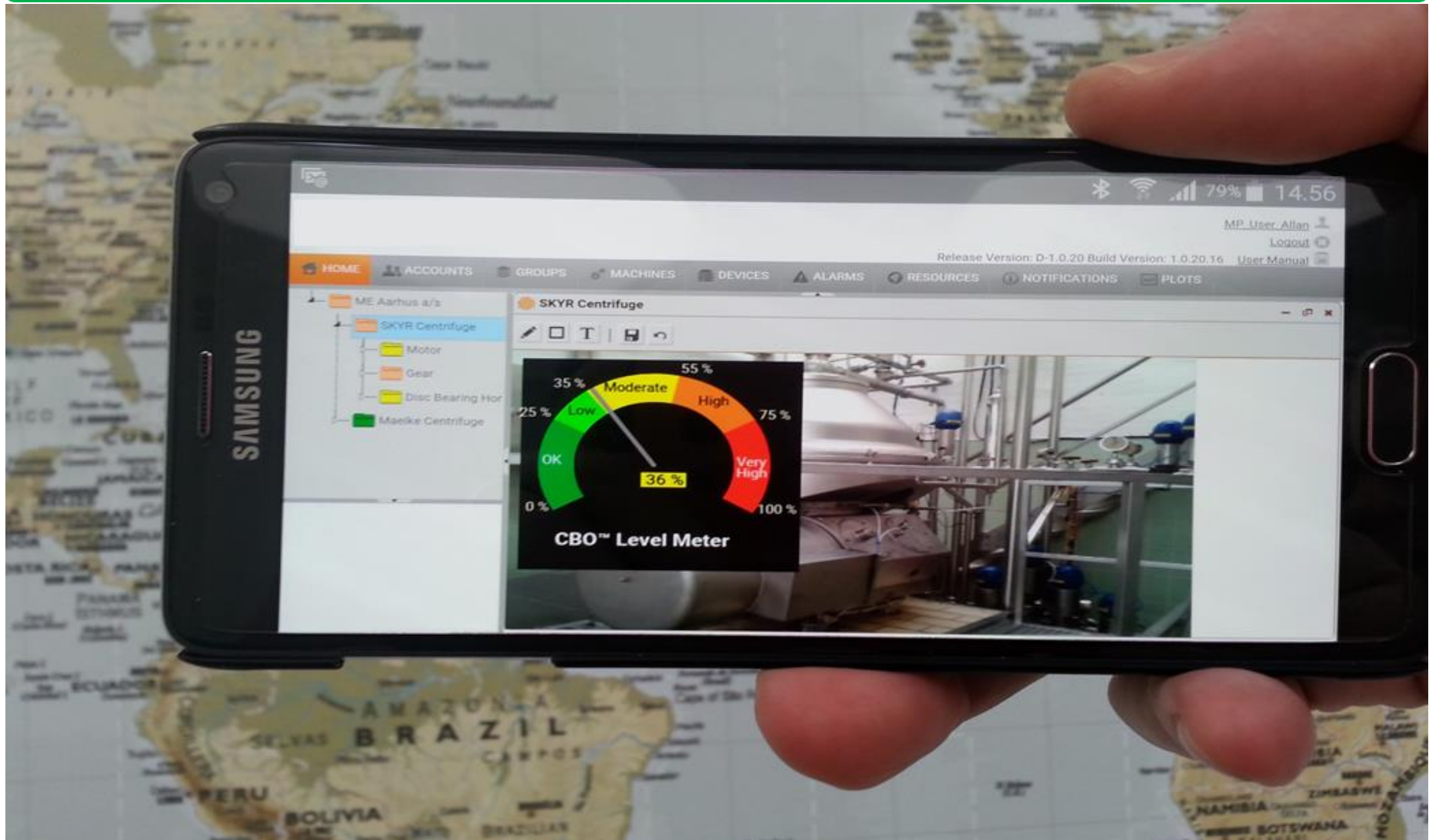


Simple User Interface – Monitoring Studio

Users can easily get an overview of the machines and see how risky it is to run these, by using the **CBO™ Level Meter** (CBO = Condition Based Operation).



Condition Based Monitor on Smart Phone & Tablets (App Solution)



The Acquisition Box – Designed for Flexibility

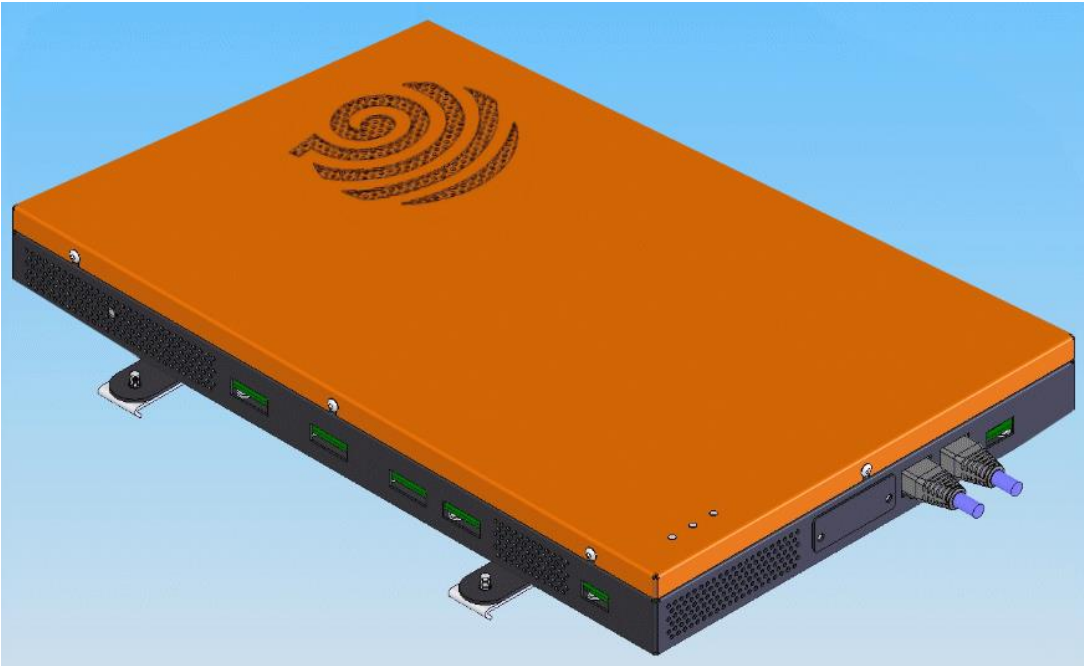
- Sensor inputs
 - Acceleration sensors.
 - Velocity sensors.
 - Displacement sensors.
 - Temperature sensors.
 - Speed / reference sensors.
 - Pressure, differential pressure sensors.
 - Temperature sensors (4-20 mA)
 - Any Voltage or current sensors.

Basically all sensors that have an electrical signal



- The Acquisition Box provides standard 24 VDC power supply to all kind of sensors.

The Acquisition Box



- 8 input channels
 - ✓ Accelerometer
 - ✓ Proximity probes
 - ✓ Process parameters
 - ✓ Other analogue sensors
 - ✓ 2 x tachoes

- Communication
 - ✓ LAN - SSH communication to external server
 - ✓ LAN - Autonomous Modbus RTU (TCP/IP) to DCS
 - ✓ RS 485 - Autonomous Modbus RTU (TCP/IP) to DCS
 - ✓ 6 x analogue outputs & 4 digital inputs
 - ✓ 3 x double-pole relays

- Performance:
 - ✓ High dynamic range > 106dB.
 - ✓ Data stored locally.
 - ✓ Sends automatically an e-mail on event (alarm).
 - ✓ New functions can be remotely updated.
 - ✓ Connects directly to the internet or local LAN.
 - ✓ NO moving parts.
 - ✓ Store Time wave functions for root cause analysis.

Acquisition Box

The Acquisition Box:

- Performs continues measurements every 100 msec.
- Makes alerts/alarms on all continues measurements.

– Upper Critical	Not Acceptable
– Upper Major	Not Satisfactory
– Upper Minor	Satisfactory
– Reference	Good
– Lower Minor	Satisfactory
– Lower Major	Not Satisfactory
– Lower Critical	Not Acceptable

- Sends e-mail notification on events to users.
(outlook can be set up to forward SMS if necessary).
- Makes spectra on all channels every 30 minutes (intermediate data).
- Option: Capture time wave forms on events, for post event analysis.

E-mail notification preferences

Recieve e-mail notifications about critical alarms

Yes

Recieve e-mail notifications about major alarms

Yes

Recieve e-mail notifications about minor alarms

Yes

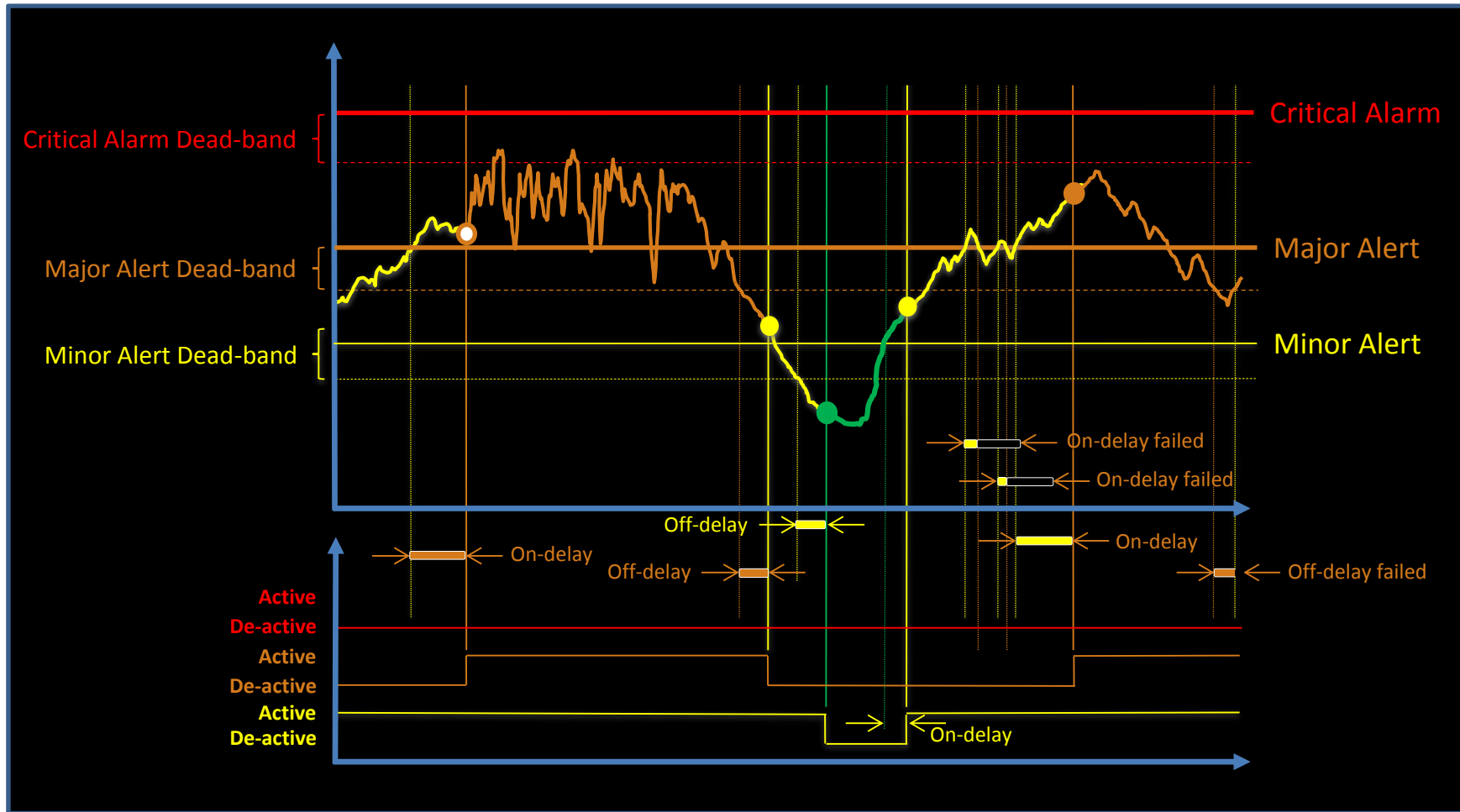
Recieve e-mail notifications about system alarms

Yes

Recieve e-mail notifications about timewave dumps

Yes

Alarm System – Avoiding False Alarms





Contact



Thank you for attention