# ONLINE CONDITION MONITORING



## SCALABLE, COST-EFFECTIVE SOLUTION

CORTEX MONITORING SYSTEM (CMS) is dedicated to the prediction of asset failure and the prevention from catastrophic and costly repairs.

## INNOVATIVE SYSTEM

Our solution will help optimize your performance by monitoring the condition of your valuable assets thanks to accurate diagnostic tools

## HIGHER ACCURACY

Manual measurements and recorded data increase the possibility of data errors and missed events, with CORTEX MONITORING SYSTEM you can ensure high data accuracy thanks to a continuous data collection

## OPTIMIZED PERFORMANCES

On-line condition monitoring can help ensure an optimized distribution of a limited reliability staff to perform the highest value tasks required for maintenance and to properly manage priorities.

## THOROUGH DIAGNOSIS

CMS provides unique tools to improve assets monitoring, guarantee consistent analysis based on stored historical baseline data and minimize the need of equipment specialists

## NEW TECHNOLOGY

CMS is the first Online system that allows you to turn your permanent sensor into a Real-Time Analyzer in order to remotely investigate any abnormal vibration behavior. It comes in a rugged industrial form factor, with extended operating temperature range.

## SIGNAL PROCESSING

The System comes with embedded signal processing tools running on-board, ensuring maximum autonomy. In case of network failure, the controller will store data locally for weeks. Data streaming is performed as soon as a connection is re-established.

## DATA STORAGE

The SQL Server database allows for maximum security on your network. The database is filled with raw data from your sensors, triggered by the user/with customizable time event/alarm level crossing. Raw Data is processed and stored in the database for trending and diagnosis.

## THE TOOL YOU NEED

Our product runs on a core solution that enables custom health monitoring on any type of machine and can follow any measurable parameter (details in the following figure). The product is scalable to fit your needs for channel count and sensor type.
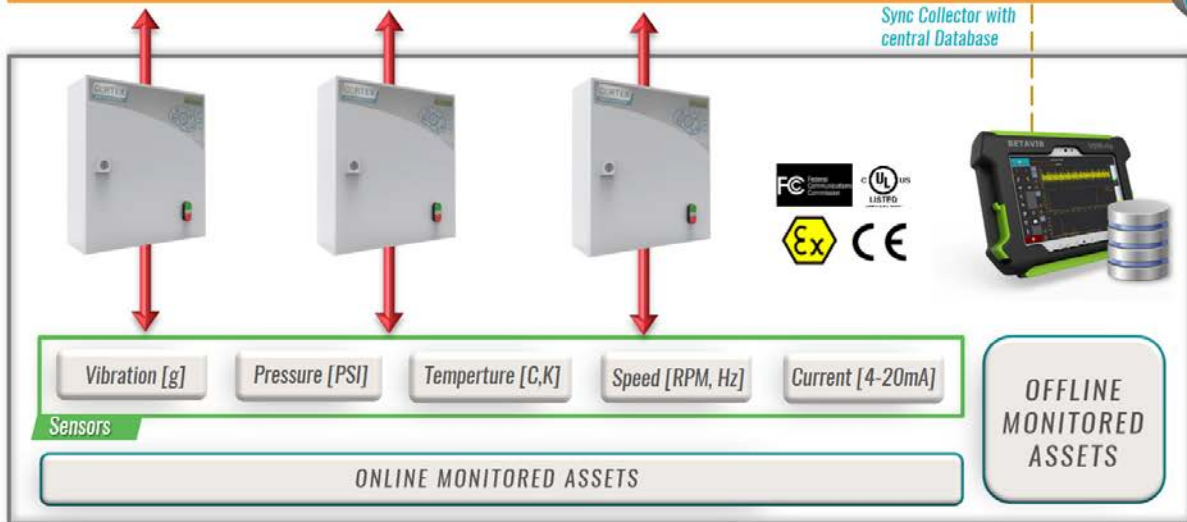
# CORTEX ARCHITECTURE

Real Time monitoring Analysis, Assets overview

Data Explorer, trends and archive

**Central DB and Visualization tools**

**Site Network**

Sync Collector with central Database

FC — Federal Communications Commission

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**Sensors**

| Vibration [g] | Pressure [PSI] | Temperture [C,K] | Speed [RPM, Hz] | Current [4-20mA] |

**ONLINE MONITORED ASSETS**

OFFLINE MONITORED ASSETS

**Remote Visual**
Dashboard
Time Waveform
Spectrums
Navigation Tree

**Web Services**
Worldwide access
from any connected
device: PC, Ipad, Iphone,
Android...

**Notification**
SMS
Email

## CRAFTED FOR RELIABILITY READY TO RUN

ACHIEVE PERMANENT HEALTH MONITORING OF YOUR CRITICAL EQUIPMENT WITH A UNIQUE AND SCALABLE TURNKEY SOLUTION, DEVELOPED TO FIT YOUR NEEDS.

# TWO CORTEX
## Because each Application is different

### CMS-Ox16 / CMS-Ox32

*Standard, off the shelf permanent monitoring solution allowing multiplexed measurements from accelerometers and proximity probes.*

*Vibration is routed in real time to a dynamic Dashboard from the sensors and local signal processing is performed (on the controller) to ensure proper and safe operating conditions. A Real time assets viewer will display the status of each monitored point.*
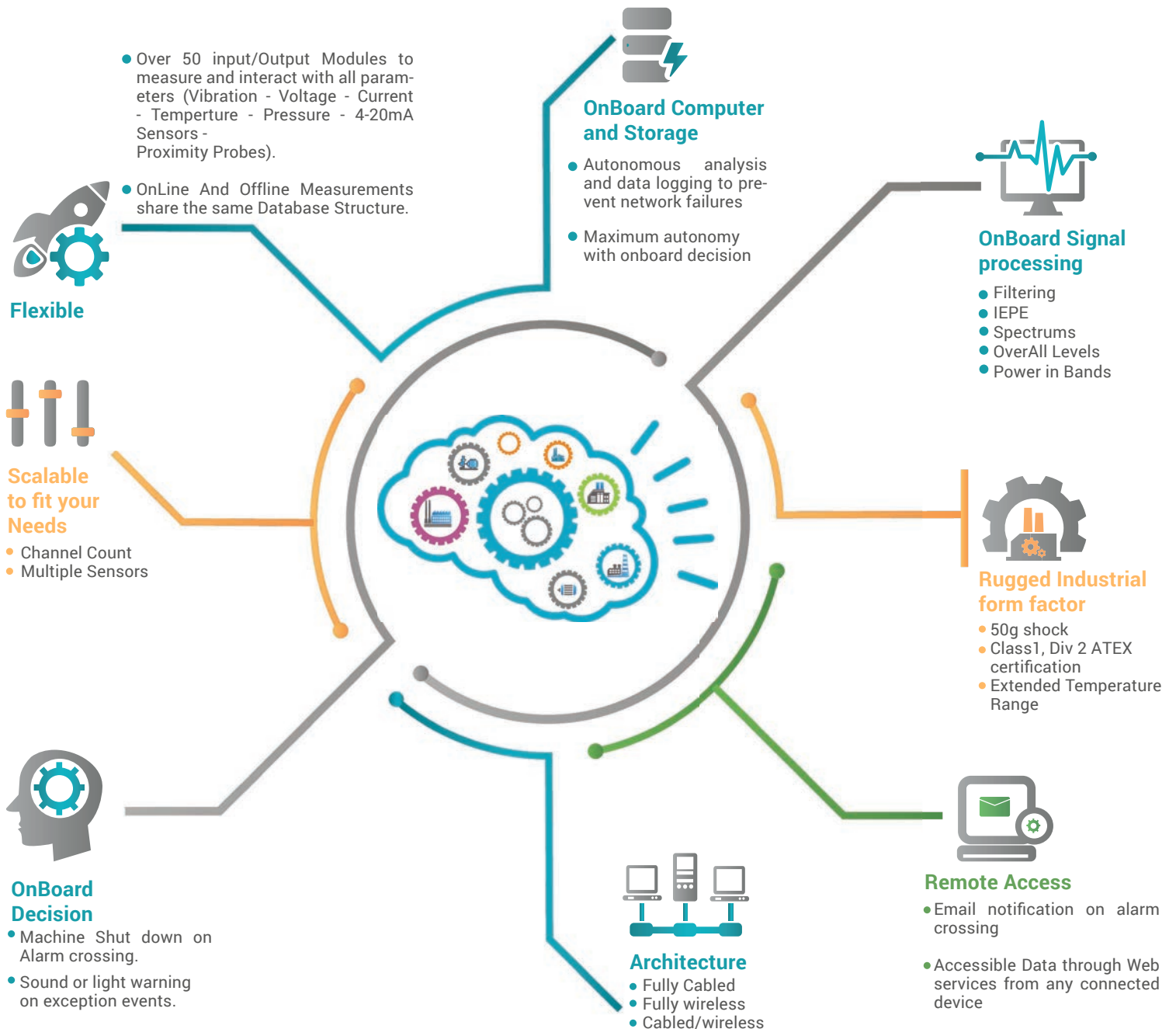
*Recording can be triggered with programmable timers, and/or with RPM counters (2 counters available). 8 output voltage Channels are available to share valuable information like alarm crossing and network malfunction … with other systems .*

### CMS-OC

*High end Online monitoring solution allowing simultaneous measurements from ANY type of sensor (Vibration, Voltage, current Temperature, Pressure, Prox, 4-20mA sensors…).*

*Cortex Monitoring System OC is a Custom built solution that will fit exactly your application: exact number of sensors, trigger handling, recording parameters, communications, environment…*

*No matter how complex your application (parameters-channel count-variable operating conditions), we can build a Custom solution that fits exactly your machine. You will be able to monitor the dynamic signature of your assets but also relate their behavior to the process variables*

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**Flexible**
- Over 50 input/Output Modules to measure and interact with all parameters (Vibration - Voltage - Current - Temperture - Pressure - 4-20mA Sensors - Proximity Probes).
- OnLine And Offline Measurements share the same Database Structure.

**OnBoard Computer and Storage**
- Autonomous analysis and data logging to prevent network failures
- Maximum autonomy with onboard decision

**OnBoard Signal processing**
- Filtering
- IEPE
- Spectrums
- OverAll Levels
- Power in Bands

**Scalable to fit your Needs**
- Channel Count
- Multiple Sensors

**Rugged Industrial form factor**
- 50g shock
- Class1, Div 2 ATEX certification
- Extended Temperature Range

**OnBoard Decision**
- Machine Shut down on Alarm crossing.
- Sound or light warning on exception events.

**Architecture**
- Fully Cabled
- Fully wireless
- Cabled/wireless

**Remote Access**
- Email notification on alarm crossing
- Accessible Data through Web services from any connected device

# CORTEX SPECIFICATION TABLE

## SYSTEM

| | |
|---|---|
| Processor Capacity | 667 MHz dual-core ARM Cortex-A9 |
| Non-volatile storage | 512 MB |
| System memory | 256 MB DDR 3 |
| Ethernet port | 1 (1024MB/s rate) |
| Serial Ports | Yes |
| Hi-Speed USB Port | 1 (can be used for external storage) |
| Architecture | Cabled/wireless (as an option) |
| Operating Temperature | -20 °C - 55 °C (Optional -40°C to 70°C) |
| Storage temperature | -40 °C - 85 °C |
| Operating Relative Humidity | 10 % - 90 % |
| Operational Shock | 50 g |

## POWER REQUIREMENTS

| | |
|---|---|
| Voltage input range | 9 VDC to 30 VDC |
| Reverse voltage protection | 30 VDC maximum |
| Maximum power input | 18 W |

## HUMAN-INTERFACE (HMI)

| | |
|---|---|
| Real time Dash Board | Yes |
| Custom System Overview | Yes |
| Long time raw data display | Yes |

## VIBRATION ANALOG INPUTS

| | |
|---|---|
| Measurement Type | Accelerometer/Proximity Probes |
| Sampling rate | Up to 51.2 KHz (Fmax=20 KHz) |
| Differential Channels | 16 or 32 |
| Coupling | AC/DC |
| Smart TEDS sensor compatibility | Yes |
| Analog Input Resolution | 24 bit |
| Maximum Voltage Range | -5V 5V |
| Excitation Current (IEPE) | 2 mA/ 4 mA |
| Dynamic Range | 102 dB |
| Maximum Bandwidth | 23.04 KHz |
| Input Impedance | 305 K Ohm |
| Signal conditioning | Anti-aliasing filter current excitation |

## TACHOMETER INPUTS

| | |
|---|---|
| Inputs number | 2 |
| Measurement type | Voltage |
| Coupling | DC |
| Sampling rate | 51200 Hz |
| Max Voltage | 5V |

## CURRENT ANALOG INPUT

| | |
|---|---|
| Inputs number | 4 in CMS-Ox16 (8 in CMS-Ox32) |
| Measurement type | Current |
| Range | ± 20 mA |

## VOLTAGE ANALOG INPUT

| | |
|---|---|
| Inputs number | 8 |
| Measurement type | Current |
| Range | ± 10 VDC |

## VOLTAGE DIGITAL OUTPUT

| | |
|---|---|
| Output number | 4 (8/16/32 as an option in CMS-Ox16) 8 (16/32 as an option in CMS-Ox32) |
| Output type | Digital |
| Logic level | 24 VDC |
| Isolation level | Ch-Earth Ground Isolation |
| Output type | Sourcing |
| Current drive single | 0.75 A |
| Current drive all | 6A |
| Switch duration | 100 us (1 us as an option) |

## ON BOARD DECISION AND SIGNAL

| | |
|---|---|
| Filtering | Lowpass/Highpass/In band |
| Number of lines | 400 up to 102400 lines |
| Overall levels and indicators | RMS, Peak, CF, KU, Velocity |
| Power in bands | 6 frequency bands per channel |
| Signal processing | Time waveforms/FFT and envelop spectra |
| Alarms Customizable or Automated | Set adaptive according to historical Data |
| Exceptions warning (sound or light) | Yes |
| Autonomous analysis-data logging | Yes (system storage or external storage |

## 4-20mA INPUTS

| | |
|---|---|
| Inputs number | 4 in CMS-Ox16 (8 in CMS-Ox32) |
| Measurement type | CURRENT |
| Range | 4-20 mA |

**LUDECA**
Keep it running.

BETAVIB