DMT – Online Condition Monitoring Systems
MineSafe®, PlantSafe®, WindSafe®
PlantSafe®

- Power Plants and Refineries fundamentally depend on high availability. Unplanned shutdowns create high costs.
- Through condition monitoring, damage can be detected at a very early stage before an actual failure would occur.
- The operator is thus in the position to carry out the necessary exchanges or repairs in line with shutdown periods that are planned.
DMT – Online Condition Monitoring System
Condition Monitoring in Mining – Why?

**MineSafe®**
- Detection of damage and thus reducing unplanned downtime
- Avoid major damages
- Planning of maintenance and revisions based on objective data
- Increased availability
- Reduced maintenance costs
- Monitoring smart grid

*Earth. Insight. Values.*
DMT – Online Condition Monitoring System

What is detected?:
- Wear
- Bearing damage
- Lack of balance
- Tooothing damage
- Coupling damage
- Damage at blades
- Impending mixed friction
- Cavitation
- Assembly alignment errors
- Corosion
- Impermissible operating states

By combining and correlating structure-borne noise signals with process parameters (power, speed, pressure, etc.)
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Spectra points: A number of alarm thresholds have been exceeded

Centrifugal pump 1P451B
Ruhrpumpen SVN-4X13

Structure-borne noise spectra with monitoring thresholds and development of bearing damage.
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Replacement based on machine condition

- Damage
- Working period
- Optimal replacement
- Alarm
- Machine failure
- Beginning of damage
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How is monitored? – Aggregation architecture

Condition based monitoring of structure-borne noise

Transformation in frequency range and correlation with characteristics

Machine condition as Condition Monitoring index (CMI)

Structure of the aggregated Condition Monitoring index
DMT – Online Condition Monitoring System
Structure born-noise – Basic for Trending

- automatically analysis
- belonging to elements
- early wear information
- change of components in time

planed maintenance!

„Trending“
basic for service planning

Tooth 2. stage
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Control center architecture

Example: Online CMS for deep drilling technology

First level display within the fleet control center

Second level display within the fleet control center

Display for the monitoring of a mud pump
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MineSafe® control center

Example: Online CMS for mining industry

control center

machine view
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MineSafe® system structure

Centralised and decentralised diagnostics

Customer-Intranet

Data acquisition and preprocessing

Surface mining

Underground mining

Earth. Insight. Values.
DMT – Online Condition Monitoring System
Monitoring a wide variety of mining components

- Electric motors
- Crushers
- Belt Conveyors
- Chain conveyors
- Gearboxes
- Pumps
- Cooling devices
- Shearers
- Fans
DMT – Online Condition Monitoring System

Monitoring a wide variety of power plant and refinery components

Electric motors
Pumps
Gear boxes
Fans
Compressors
Turbines
Stirrers

And other rotating equipment
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Typical projects

Online Monitoring System
PlantSafe® for petrochemical facilities

PCK Raffinerie GmbH

Delivery, installation and support online-CMS

- pre-engineering
- configuration and implementing
- training
- application support of the system with more than 1500 metering points
DMT – Online Condition Monitoring System

Typical projects

Condition Monitoring System for aluminium and steel industry

Thyssen Krupp, Germany

Complex online system for monitoring of vibration on rolling mills
DMT – Online Condition Monitoring System

Typical projects

Condition Monitoring System for coal mining machinery in the USA (OEM)

International supplier for coal mining industry

Development of an integrated CM System
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Typical projects

Online Monitoring System
WindSafe®

PNE AG, Germany
Delivery, installation online-CMS for off-shore wind park

- pre-engineering
- measuring strategy
- configuration and implementing
- adjusting thresholds
- training
DMT – Online Condition Monitoring Systems

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