

Online - Condition Monitoring in Power Plants

Preventing Unplanned Shutdowns



Power Plant online Condition Monitoring – Why ?

- Trouble-free operation and the avoidance of unforeseen failures are prerequisites for smooth power plant operation.
- 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

- The DMT system analyzes the mechanical condition of machinery components including bearings, shafts, motors and other drive train components.
- Machine operators and maintenance staff are alerted to mechanical problems in their early phases of development.
- Unplanned machinery downtime and runnability problems are avoided.

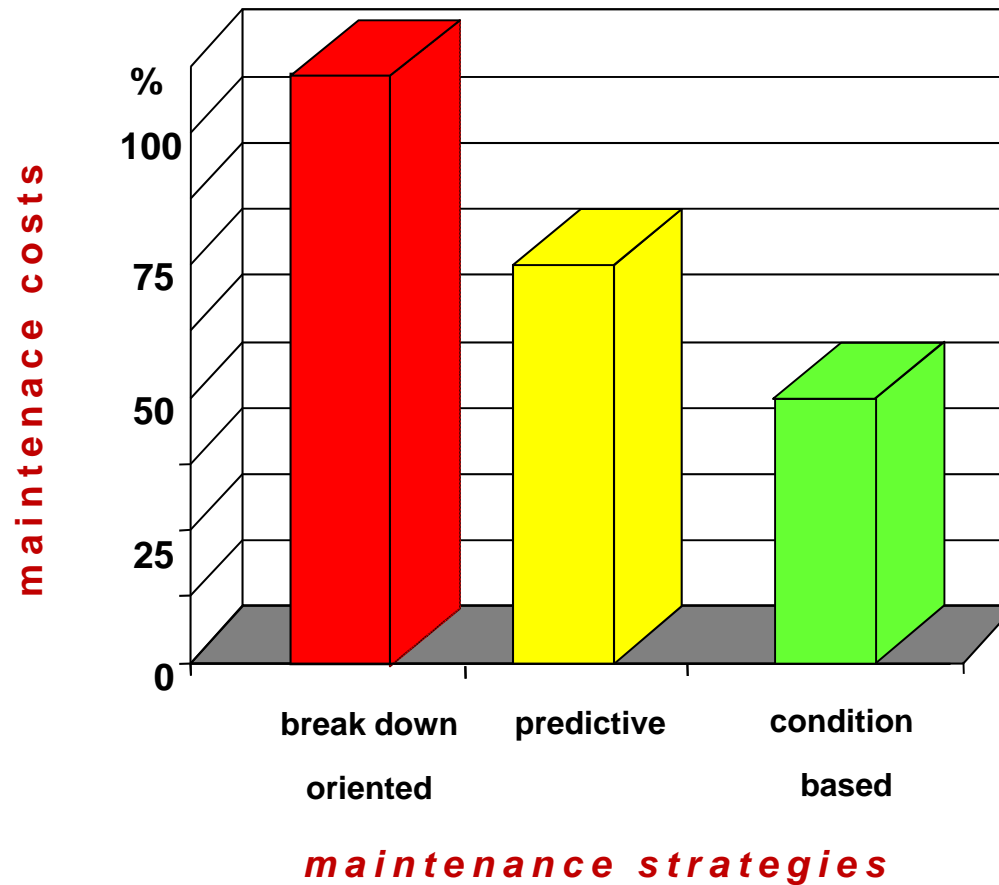


Benefits of the DMT Machine Monitoring System

- Increase of plant availability
- Increase of plant reliability
- Improvement of the operating safety
- Improvement of machine safety
- Reduction of maintenance costs
- Increase in the service life of machines and systems
- Avoidance of capital machine damages
- Prevention of unplanned down times



Profitability of maintenance strategies



source:

Electrical Power Research Institute

Monitoring a wide variety of power plant installations



- Cooling water pumps
- Condensate pumps
- Induced draughts
- Fresh air ventilators
- Turbines
- Coal pulverisers
- And other installations



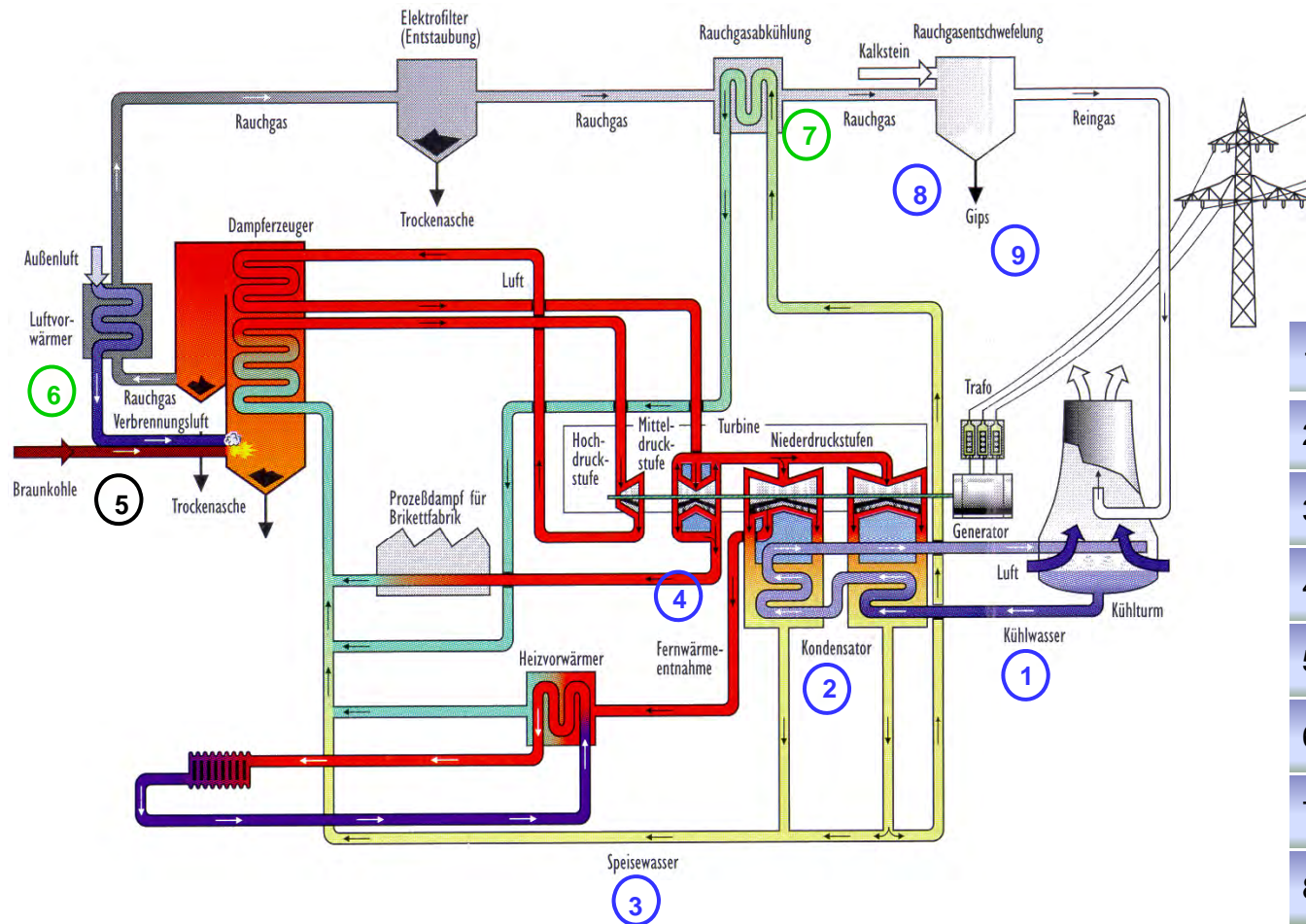
DMT online Condition Monitoring System detects

- Wear
- Bearing damage
- Out-of-balance condition
- Toothing damage
- Coupling damage
- Damage at blades
- Impending mixed friction
- Cavitation
- Assembly alignment errors
- Corrosion
- Off-spec operating states



by combining and correlating structure-borne noise signals **with** process parameters (power, speed, pressure, etc.)

Overview of pumps in plant

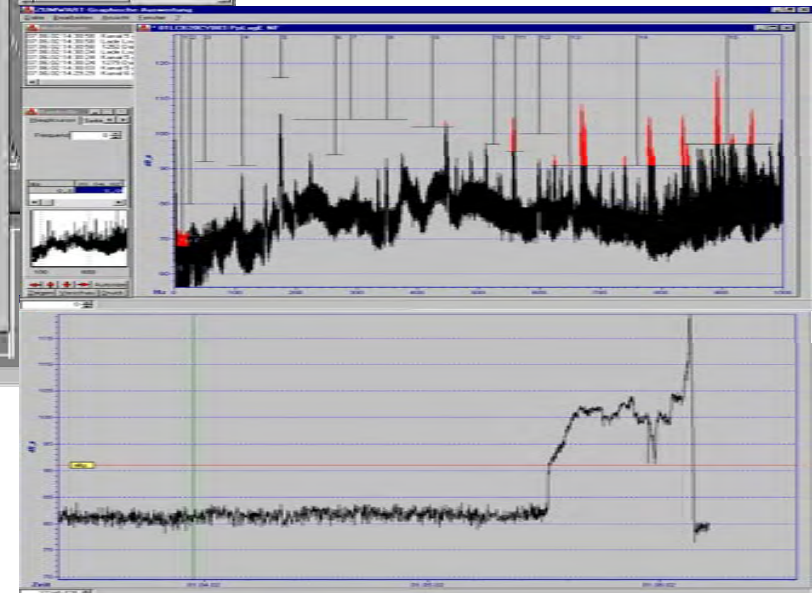
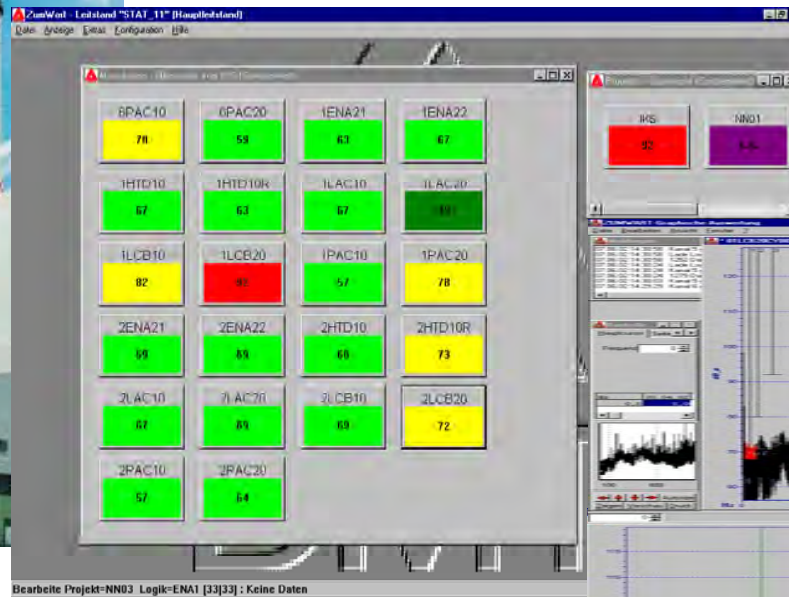


1	Cooling water pumps
2	Condensate pumps
3	SPAT units
4	Heating pumps
5	Coal pulverizers
6	Fresh air ventilator
7	Induced draughts
8	Quencher pumps
9	Vacuum pumps / band filter

Control panel shows the critical machines



Industrial power plant

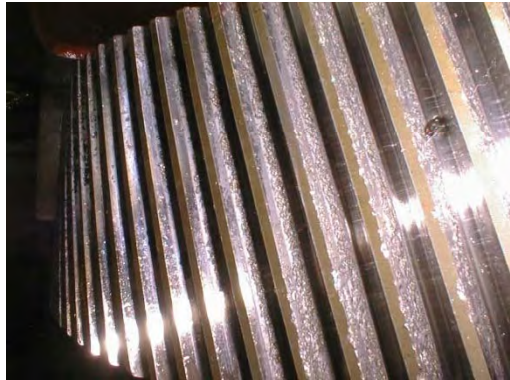


Structure-borne noise spectra with monitoring thresholds and development of bearing damage

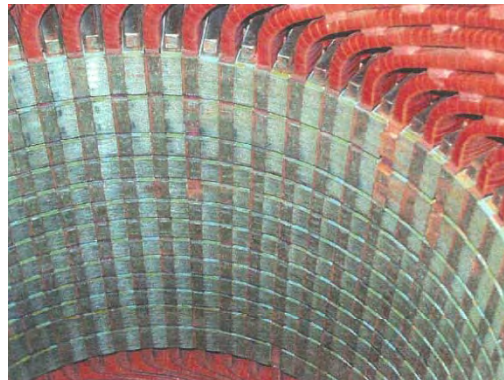


An unscheduled outage was avoided

Detected failures – some examples



Pitting on the gear



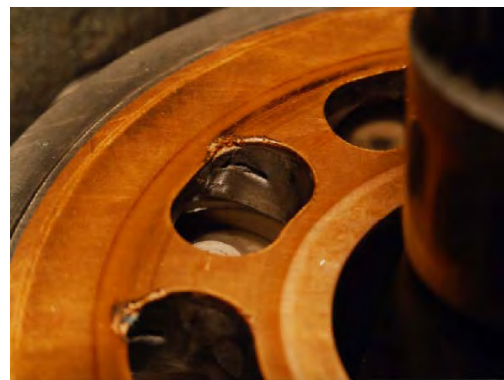
Destroyed slot wedges



Tooth flank corrosion



Bearing wear damage



Cavitation damage



Broken rolling-element

DMT online Condition Monitoring means

- Shorter inspection times
- Extended inspection intervalls
- Lower maintenance costs
- Continuous status monitoring
- Trend analyses and forecasting
- Longer machine service life
- Reduced personnel costs
- Early recognition of wear
- Process and system optimization
- Higher availability

References	
Recirculating pumps for district heating system	KSB
Pressure booster pumps for district heating system	KSB
Primary coolant pumps	Halberg
Condensate pumps	Weller
Secondary condensate pumps	KSB
Quencher pumps	Sulzer
Turbo feed pumps	Sulzer
Vacuum pumps (belt filters)	Siemens
Intermediate coolant pumps	KSB

Examples

- PlantSafe[®]:** Monitoring of Power Plants
- PlantSafe[®]:** Monitoring of Pipeline Stations
- PlantSafe[®]:** Monitoring of Refineries

- MineSafe[®]:** Monitoring of underground coal mines
- WindSafe[®]:** Monitoring of wind energy converter

Machinery diagnostics

Please contact us:

DMT GmbH & Co. KG
Industry Systems
Am Technologiepark 1
45307 Essen, Germany
is@dmtd.de

 **+49 201 172-1666**

