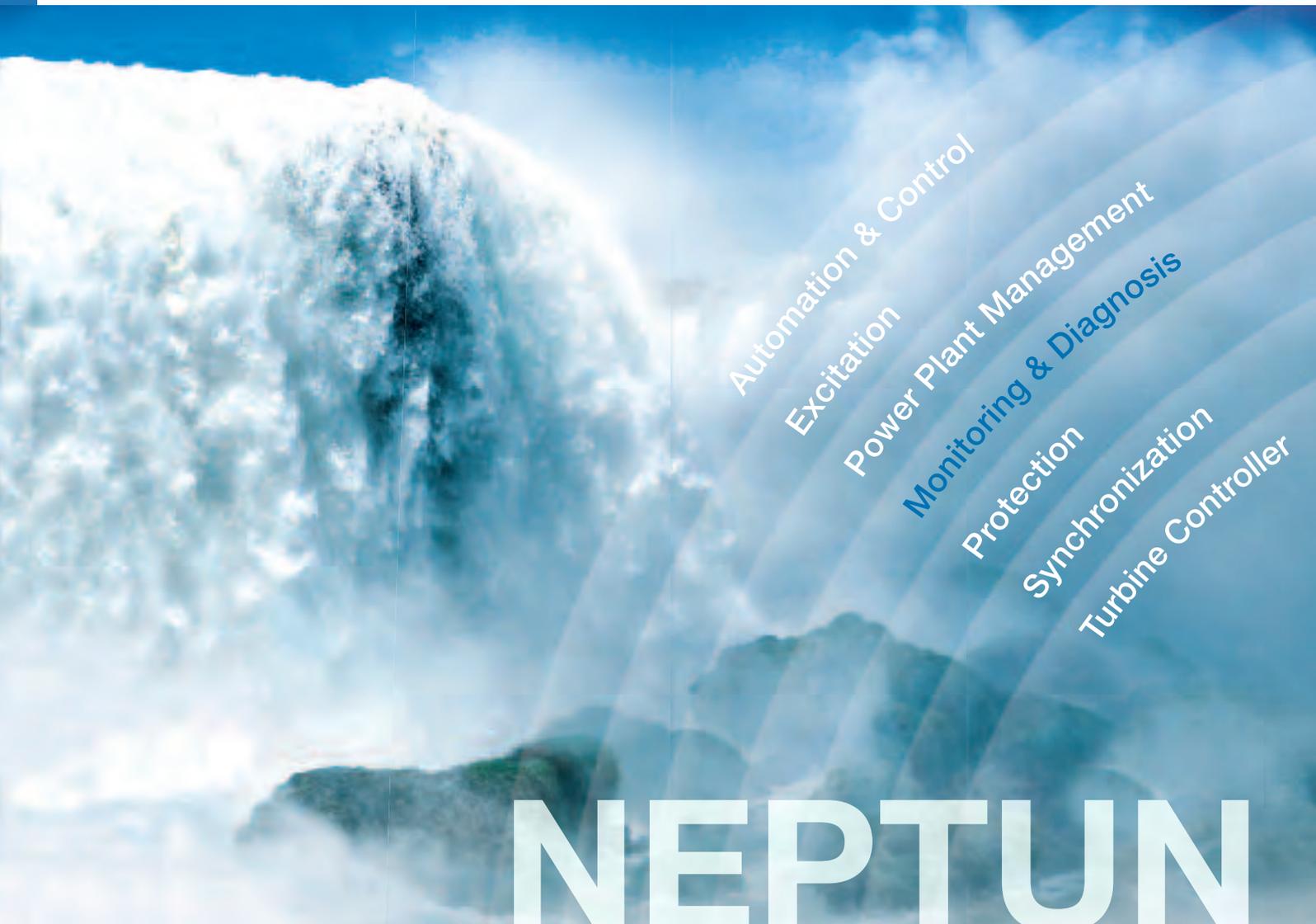


Monitoring & Diagnosis



Automation & Control
Excitation

Power Plant Management
Monitoring & Diagnosis

Protection
Synchronization
Turbine Controller

NEPTUN

Monitoring & Diagnosis



2 x 340 MVA each, Goldisthal, Germany

Preventing damage the easy way

Nowadays every power plant must maximize energy production and minimize costs.

Components (turbine, shaft, bearings, and generator) also suffer ageing and damage in normal operations.

State-of-the-art systems for monitoring and diagnosis track the progress of significant changes in status, analyze their trends, and issue an alert when defined limits are exceeded. These systems should also help to diagnose the cause of deviations (ageing and faults) before there is any serious and expensive damage.

The decision-makers (plant manager, technical experts, CEO, and so on) can then proceed on the basis of the results obtained from the analysis/diagnosis). At the same time, it should also be possible to reduce the maintenance and repair costs, as well as improving efficiency. The hardware and software used must be based on the latest system concepts and able to accommodate future developments or additions.

The system should support easy integration of existing monitoring components, as well as any add-ons specific to the operator's own processes.



6 x 140 MVA, Birecik, Turkey



1 x 157 MVA, Kelenföld, Hungary

Strategic products

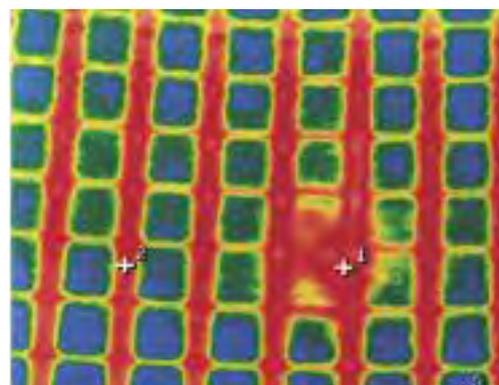
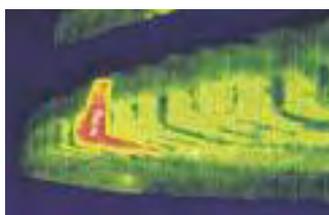
DIATECH

DIATECH is an online system developed by ANDRITZ HYDRO that takes account of the experience of international generating utility operators. The software and hardware used reflects the latest technologies. It has a modular structure and supports customer-specific applications; in some cases, special developments are also included. The open system architecture ensures that the products of external suppliers can be integrated easily.

Various diagnostic packages (referred to as knowledge modules) can identify mechanical, dielectric, and thermal problems. Online diagnosis is improved significantly in some cases by also taking the various operating modes, such as normal generator operation, normal turbine operation, run-up, and shut-down, into consideration.



Typical forms of stress



The comprehensive solution

Monitoring and diagnosis in practice

Knowledge modules

Mechanical monitoring

(Stator winding, core, shaft, bearings, turbine)

- vibrations
- structure-borne sound
- air gap
- cavitation

Thermal monitoring

(Stator winding, core, soldered joints, cooling system)

- cooling air analysis – hot spots
- generator
- rotor and rotor pole temperature

Dielectric monitoring

(Stator winding, insulation)

- cooling air analysis – ozone
- partial discharge

Magnetic monitoring

(Rotor winding)

- magnetic rotor field

DIATECH hot spot cooling air analysis

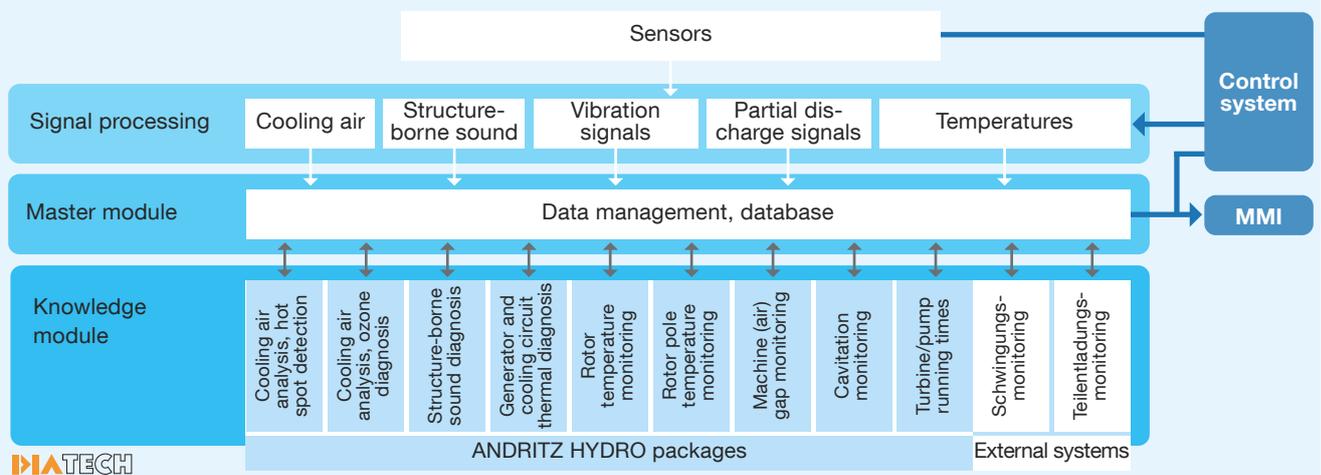
By detecting the hot spot in a soldered joint at an early stage, the downtime was reduced to a minimum of two repair days (48 days maximum unscheduled repair

time). This also resulted in a reduction in downtime (outage cost) from 48 days to only two days.

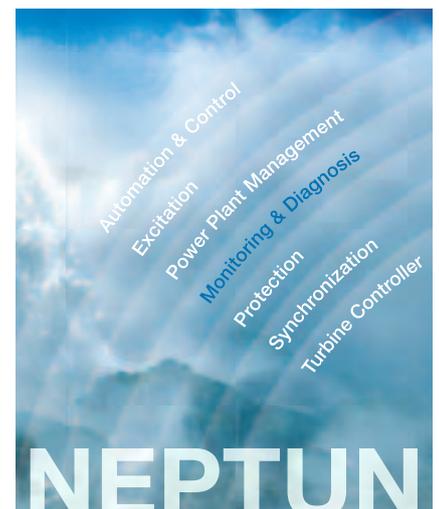
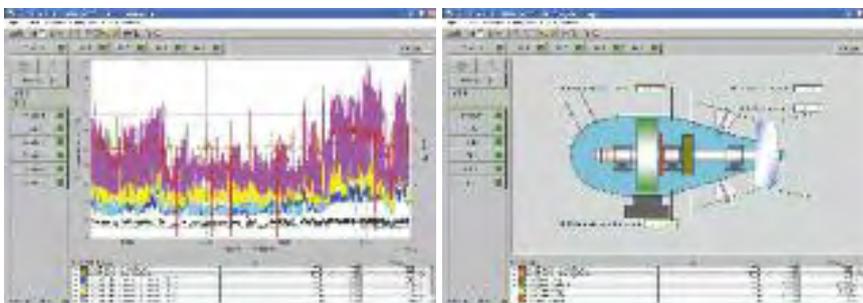
DIATECH structure-borne sound analysis

An online analysis of structure-borne sound identified some loosening of the stator core at an early stage. Trend monitoring over a specific period showed only a very slight rise in the data measured and thus, no need for immediate action. As a result, the customer had leeway to schedule repairs to the generator at a convenient time and thus at lower cost.

System architecture



Application examples



Your benefit

Optimal use:

- with ergonomic user interfaces
- through efficient hardware and software

Reduced costs:

- through prevention of expensive secondary damage
- with less maintenance costs
- by cutting repair costs and repair times
- with optimum scheduling of repairs

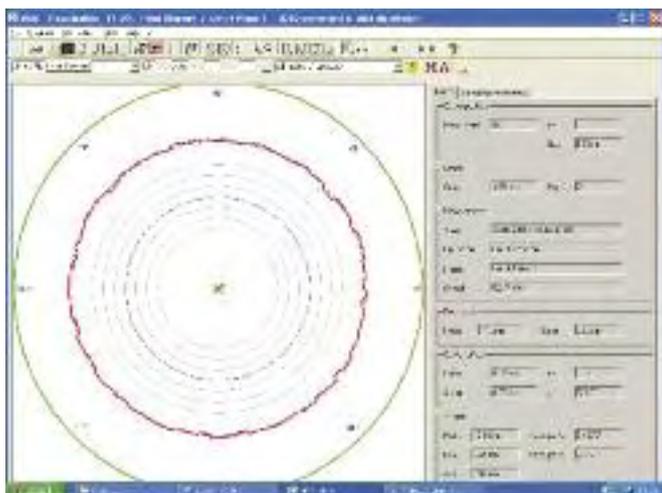
Increased earnings:

- through reduced outage time
- with optimized energy generating
- through longer plant service life

NEPTUN – the comprehensive solution for secondary systems can offer additional notable advantages in step-by-step expansion of your plant.

This gives you integrated advantages in addition to the current benefits of your monitoring and diagnosis system if additional components are used (for example automation & control, turbine controller).

- Efficient communication standard (IEC 60870-5-104)
- Comprehensive system concepts for remote functions
- Central engineering toolkit
- Simplified plant configuration
- Less engineering and documentation required
- Minimum of additional infrastructure for signal communication
- Minimum of spare parts required
- Liquidation of previously tied capital
- Fewer maintenance and service assignments on site



NEPTUN



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