ELMODIS

WE MAKE INDUSTRY SMARTER

INDUSTRIAL MACHINERY MARKET

Electric motors drive daily more than 350 000 000 machines and therefore constitute critical elements of production processes. Their failures entail high service costs and simultaneously generate significant losses due to production outage.

01

UNFORESEEN FAILURES ARE THE COSTLIEST ONES

Operation in heavy duty industrial conditions, i.e. high temperatures, contamination, improper handling or high overloads adversely affects the life expectancy and efficiency of machines, which translates into an increase in the operating costs.

02

EXTENDING THE PERIOD OF **RELIABLE OPERATION** IS POSSIBLE

Proper operation of machines and detection of any possible electrical and mechanical problems at an early stage provides a possibility (according to the estimates of the European Energy Agency) to enhance the efficient use of machines with electric motors by almost 20-30%.

03

ON-LINE INFORMATION ON THE MACHINE CONDITION

Access to actual and current data on technical condition of machines becomes the key element entailing a change of maintenance mode in a plant. It enables transfer from reactive to entirely predictive maintenance of equipment resources.

SOLUTION FOR INDUSTRY 4.0 MARKET

The Elmodis System is the first and until now the only system on the market to implement all assumptions for the complete platform supporting the operation and maintenance (understood broadly as technical operation and energy consumption) of industrial machines driven by electric motors. It simultaneously meets assumptions made for Industry 4.0 revolution and establishes standards for state-of-the-art solutions created for Maintenance Services.

ELMODIS SYSTEM

Elmodis provides a complete end-to-end environment (both hardware and software) that allows full monitoring, diagnostics and prediction of machine technical condition and helps to optimize the way it is operated by means of technology based on the analysis of electrical measurements of the machine, vibrations and other process parameters of machine

The uniqueness of the Elmodis System consists in advanced correlation of results of processing electrical parameters with other measurement data from various sources. Based on this correlation Elmodis System produces reports reflecting the current machine condition and supports operational decisions.

The routine diagnostics is conducted with algorithms based on ADEC technology developed by Elmodis. These algorithms enable early detection of a potential hazard for the machine operation.

The system consists of dedicated modules used for monitoring and diagnostics of motor-driven machines. The modules are installed at the power supply of a monitored machine, without any interference in its wiring system. Such solution enables each and every machine, regardless of its technological advancement, to become a part of Industry 4.0 solutions.

The on-line measurement data, analyses and reports are stored on a server, which provides a client with permanent access to information on the machine condition. Authorized persons can access data on the current machine condition by means of a web browser safely and in a way adjusted to various types of devices (laptop, tablet, smartphone).

ELMODIS

WE MAKE INDUSTRY SMARTER

INDUSTRY FOCUS

PRODUCTION

Given the nature of its activity, production industry is aimed at effective use of time and energy when manufacturing the products. The manufacturing process requires the use of various systems, i.e. process lines, hydraulic systems, HVAC systems or chiller units.

Elmodis System is applicable in manufacturing through:

- monitoring of hydraulic pumps and water pumps – determining the energy profile of the technological process using information about damage such as leakage in the system, incomplete closing of valves, filter clogging and defects in the mechanism of pump and its motor
- monitoring of fans used in technological process – determining machine efficiency, early-stage detection of misalignment, imbalance or bearing failures
- in the handling systems of production lines – preparing a precise characteristics of daily operation, informing of occurrence of any damage both in electric and mechanical system, e.g. gear-related problems, problems with transferring power through sliding systems to the operating machines.

DISTRIBUTED UTILITY SYSTEMS

Distributed utility systems are used among others in water supply systems (municipal water supply systems, heat distribution networks, gas mains) – these networks are located in large areas with difficult service access. Any failure to those systems results not only in purely financial costs but often includes social difficulties and environmental hazards. The operators of such type of infrastructure find it essential to detect the failure as soon and precise as possible, whether it is related to equipment, e.g. pump, operation or transfer line damages, such as pipe breakages.

Elmodis System for distributed utility systems provides a complete solution for monitoring the operating parameters of equipment (electrical characteristics, pressure, flow and temperature) and the dedicated algorithms and software enable effective detection of a failure before it takes place (electrical faults or mechanical damages of equipment). Furthermore, integrated additional pressure sensors enable the system to detect for example utility system leakages.

Main advantages of the system:

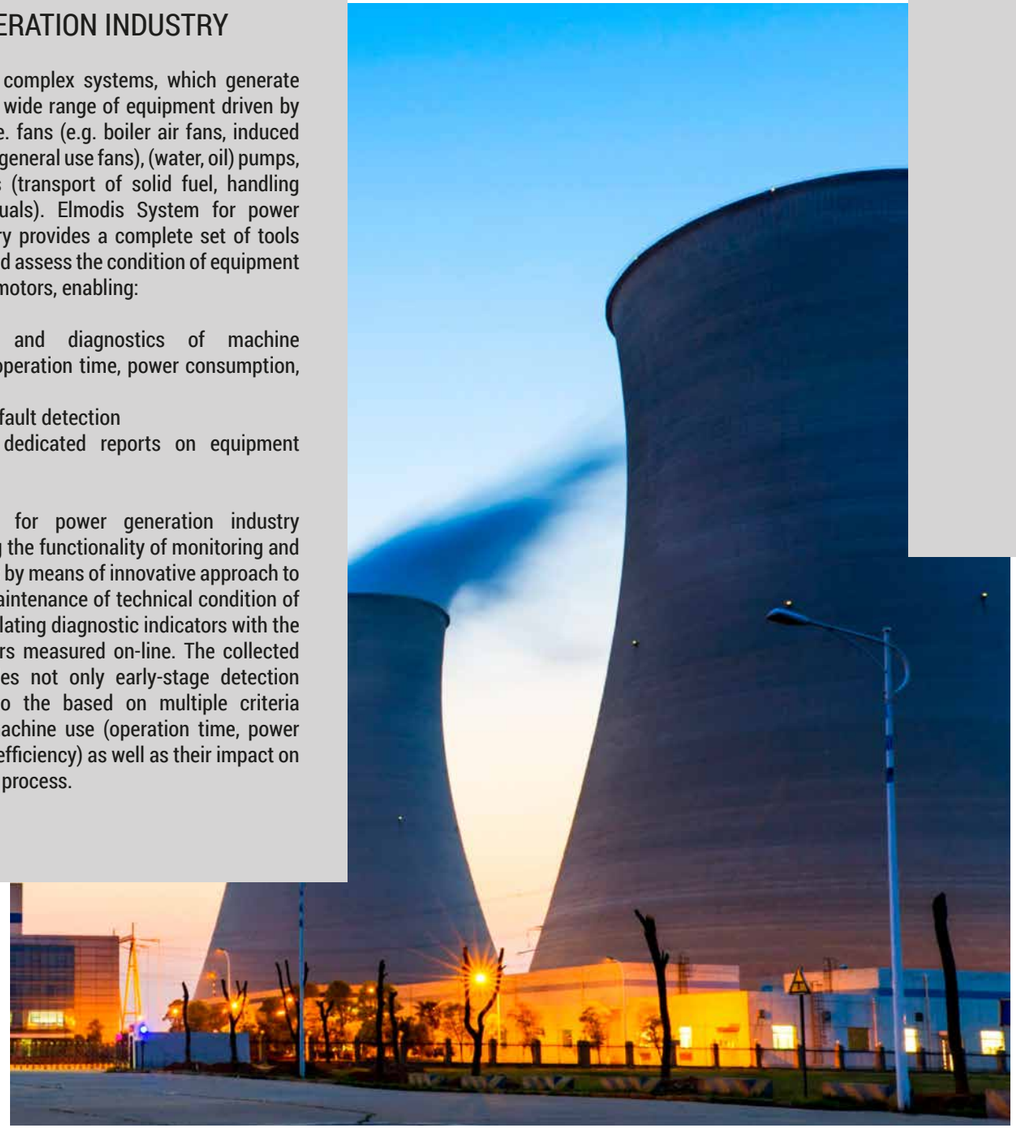
- easy installation
- wireless communication being a key feature in view of infrastructure being located in a large area
- possibility to integrate additional sensors into the system
- possibility to integrate the system with already used systems collecting data from equipment and transfer infrastructure
- remote access to collected and processed data.

POWER GENERATION INDUSTRY

Power plants are complex systems, which generate electricity using a wide range of equipment driven by electric motors, i.e. fans (e.g. boiler air fans, induced draft fan systems, general use fans), (water, oil) pumps, conveyor systems (transport of solid fuel, handling combustion residuals). Elmodis System for power generation industry provides a complete set of tools used to monitor and assess the condition of equipment driven by electric motors, enabling:

- monitoring and diagnostics of machine operation (operation time, power consumption, efficiency)
- early-stage fault detection
- generating dedicated reports on equipment operation.

Elmodis solution for power generation industry enables increasing the functionality of monitoring and control of systems by means of innovative approach to monitoring and maintenance of technical condition of machines by correlating diagnostic indicators with the process parameters measured on-line. The collected information enables not only early-stage detection of faults but also the based on multiple criteria optimization of machine use (operation time, power consumption and efficiency) as well as their impact on energy generation process.



PETROCHEMICAL INDUSTRY

Processing natural raw materials refineries constitute the primary facilities of petrochemical industry. This type of plants is characterized by a high level of variety of systems, in which electric motors often play a key role.

Elmodis System for petrochemical industry provides the possibility of monitoring and optimizing the operation as well as an early-stage detection of any faults in both individual machines and the whole units driven by electric motors.

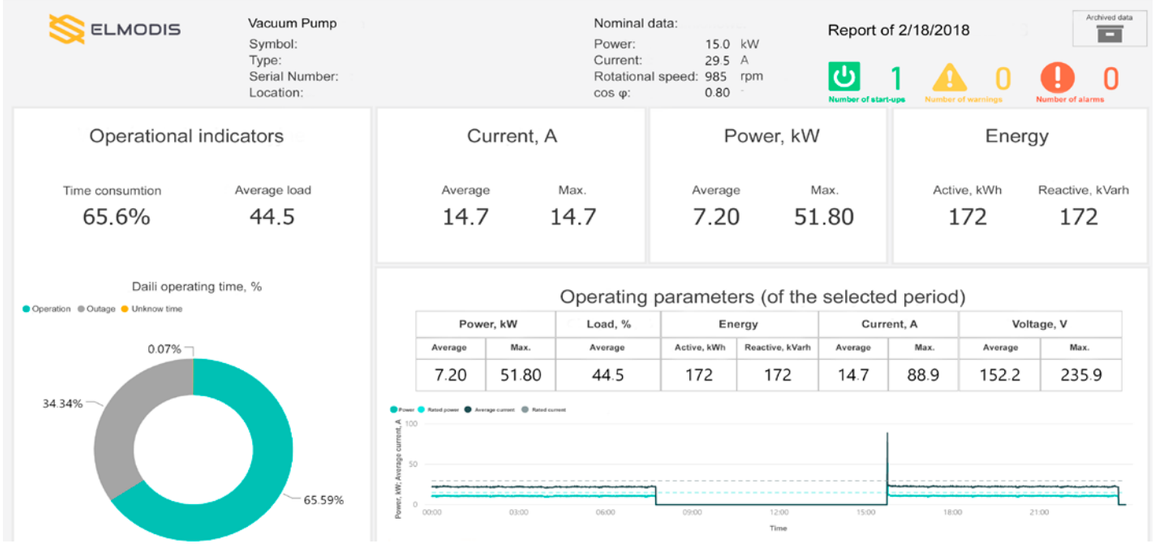
Original software dedicated for individual types of machines provides continuous monitoring of the selected operating parameters and warning in case of exceeding the alarm levels. This enables a general enhancement of the plant operating stability, decrease in unplanned outages and thus reduction in number of costly start-ups.

Use examples:

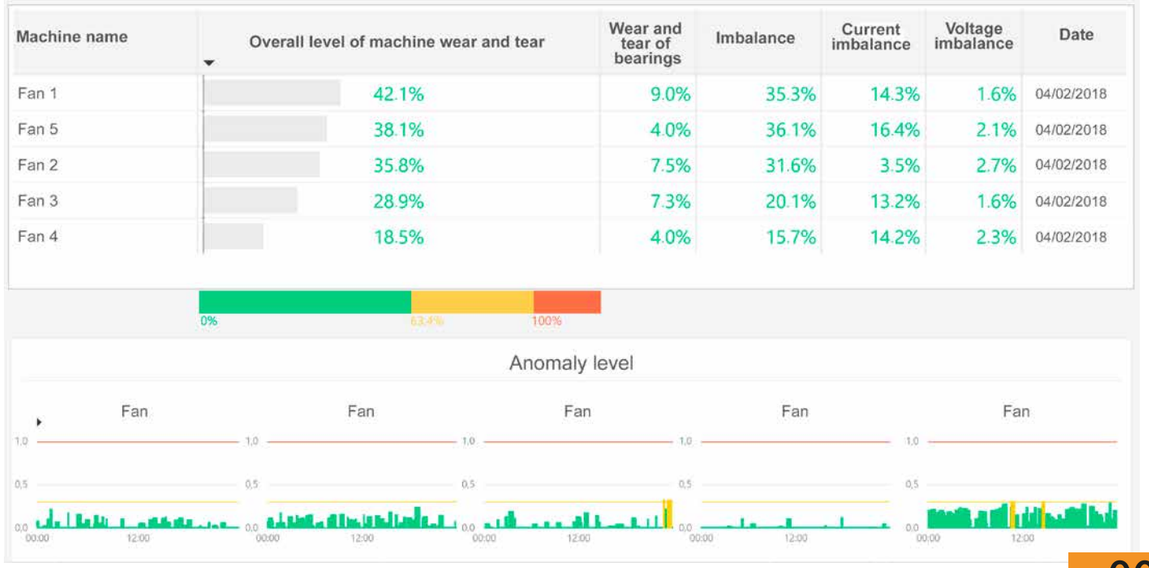
- monitoring of pumps and compressors engaged in the process of raw material transport
- continuous preview of efficiency and performance of equipment, information on early symptoms: component wear, filter clogging, valve malfunction, seizure
- capability to detect leakages in hydraulic systems.

EXAMPLES OF REPORTS FROM THE ELMODIS SYSTEM

- Diagnostic indicators that may indicate specific types of damage.
- Complete real-time diagnostics of vibration parameters
- Graphic and interactive alarms signalizing approximation of alarm conditions



- Complete information on the operating parameters
- History of measurements and possible analysis of parameters from the selected period
- Analysis of daily operating time (divided into: operation–outage–number of start-ups)
- Comparative analysis, e.g. comparison of shift operation
- Energy consumption (active and reactive)
- Load statistics
- Machine and process efficiency



- Enabling production of collective reports
- Classification of machines based on customized criteria
- Assessment of anomaly level
- Grouping machines based on the level of degradation of their individual components

EXAMPLES OF USE

PUMPS

EXAMPLE OF PARAMETERS:

Pump parameter diagnostics (dry-run, efficiency drop, mechanical wear, thermal analyses, electrical diagnostics)

INDUSTRIES: Waterworks, petroleum chemistry, processing industry, gas systems

FANS

EXAMPLE OF PARAMETERS:

Operation diagnostics (imbalance, misalignment), foundation problems, bearing diagnostics, electrical diagnostics (overloads, voltage imbalance), mechanical and electrical protections

INDUSTRIES: All industries

GEARS

EXAMPLE OF PARAMETERS:

Mechanical and electrical diagnostics, degree of wear and optimization of operation

INDUSTRIES: Production (automotive plants, cement works, energy generation, steelworks)

HANDLING SYSTEMS

EXAMPLE OF PARAMETERS:

Load analysis, mechanical diagnostics of drive systems and belts, diagnostics of tensioning systems, process control, drive systems optimization, electrical diagnostics

INDUSTRIES: Production, coal mining and processing, power generation industry

ADVANTAGES OF USING ELMODIS SYSTEM

01

COST REDUCTION

The system provides current data on the condition of machines and exceeding alarm thresholds, which translates into reduction of unexpected failures and therefore their costs may be lowered and outage-related losses be avoided.

02

OPTIMIZATION OF OVERHAUL PLANNING

Based on data from Elmodis System maintenance services may change methods of performing prevention inspections and limit them to machines that require taking actions. As a result, the outage periods are shortened and the working time of plant maintenance team is optimized.

03

EFFICIENCY INCREASE

On-line monitoring provided by Elmodis System enables control over machine operating time. Information on the efficiency of machine operation may be used for optimizing the technological process itself.

ELMODIS

WE MAKE INDUSTRY SMARTER

e-mail: elmodis@elmodis.com
tel. +48 531 507 668

www.elmodis.com