ADVANCED CONDITION MONITORING SYSTEMS FOR ROTATING MACHINES

www.koncarmonitoring.com
Preserving investment value, reducing costs and increasing production revenue are the goals of every plant operator. With constant pressure on the machines to produce more, failures occur more often and continuous production process is jeopardized. Introducing a proper machine monitoring system is the first step towards operational improvements on a daily basis.

Timely detection of problems prevents serious machine damage and in financial terms brings substantial savings. When predictive maintenance is accepted and used across the entire organization, the results impact many areas including profit and loss figures. The research shows that maintenance represents fully 15% - 40% of the operating cost of a plant and up to 35% of these costs is unnecessary. Whether it is installed on new equipment or during a refurbishment phase, the costs of predictive maintenance program are minor compared to the benefits that such program brings.

Importance of predictive maintenance
Condition monitoring brings value in many areas of business

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Who we are

Over 50 years of know-how in rotating machines & energy field

Helping our clients to solve their problems and increase their productivity has been motivating us since the first day. Located in Zagreb, Croatia, as a part of KONCAR Group, we develop products for applications in hydro, wind, process industries and other areas.

Our passion for new and innovative products is motivating us to grow and create value for our clients. With our educated and experienced team, we extend the lifetime of most complex equipment and solve problems that others can't. Because of our expertise and flexibility we are a preferred supplier of many international companies in power generation and energy sector.

Worldwide recognized and implemented

More than 20 GVA monitored with our solutions!
Recognizing different needs of your machine during its lifetime is the first step towards fault-free machine operations. From the early stages of production to commissioning, regular usage, and maintenance, our solutions help to identify and prevent most common rotating machine problems. The technology behind them makes sure that all market players perform their tasks efficiently and achieve their goals.

The machine lifetime has a well-known scenario – after the initial critical phase before the machine is commissioned, the probability of failure increases with its age, until faults suddenly start to appear more and more. Identifying problems on time will assure that the machine value is preserved and its lifetime extended.

Solutions that save money and time

Right products for right customers at the right time
**Stationary monitoring solutions**

**Machine condition monitoring (MCM)**

MCM is a modular solution applicable to power plants and machines of all sizes. It allows integration of key values and equipment according to customers’ requirements enabling full insight into machine operations.

**Shaft current and voltage protection (SCVP)**

SCVP detects shaft currents and voltages that may damage the generator bearings and thus prevent greater economic damages. The know-how built in the system protects expensive machines from one of the major generator damages.

**Expert motor condition monitoring (EMCM)**

EMCM provides users with crucial information for integrated and smart motor management. The solution uses advanced methods for early fault detection of key motor parts, minimizes maintenance costs and saves a lot of resources especially in process-intensive industries.

**Small hydro condition monitoring (SHCM)**

SHCM is a compact solution designed for small hydro plants of all types and age. It targets the most important elements of the operation and allows efficient and cost-effective monitoring of plants located in rural areas.

**Electrical machine black box (EMBB)**

EMBB records machine issues that allow manufacturers to get insight into conditions caused by user mis-handling (asynchronous operations, number of machine starts and stops, run-out, extensive vibrations, etc.). This important information helps producers to protect themselves from penalty fees which are not caused by their product.

**Shaft torque and power monitoring (ST&P)**

STP gives the complete picture to users by monitoring torsional vibrations which lead to major machine damage and thus cause financial losses. The system can also be expanded with advanced measurements of machine efficiency and load angle, which is especially important in hydropower and ship industry.

Installed for the permanent period, these solutions allow users to have continuous access to key elements of their equipment and optimize their maintenance periods.

*The meaning of the symbol is stated on pages 4-5*
**Portable monitoring and diagnostic instruments**

**Vibration measurement instrument (VMI)**
VMI is a user-friendly instrument made for rugged field applications with the focus on radial and axial bearing vibration measurements according to norms and standards. Equipped with a fast and reliable processing unit, the system integrates various advanced options for quick and effective data management.

**Roundness measurement instrument (RMI)**
RMI instrument significantly saves time during the machine production. The system measures important stator and rotor values regulated by norms, using methods that eliminate time-consuming process.

**Slow-roll runout instrument (SRI)**
SRI instrument measures mechanical imperfections such as out-of-roundness and non-concentricity of the shaft. It gives insights into runout imperfections values that have to be regulated according to standards in order to assure stable generator operations.

**Field measurement instrument (FMI)**
FMI helps during the machine production by detecting issues related to the incorrect connection of stator windings and by making easier on-site modifications and repair. With simple installation and clear and actionable readings, machine production is quicker and testing time shorter.

**Instrument for winding fault detection (WFD)**
WFD provides real-time information on excitation winding failure, which is one of the biggest problems of hydro generators. Using advanced technology for fault detection of the severe problem, the instrument is a crucial equipment for all professionals trying to avoid production shutdowns.

**Custom specific instruments**
Custom specific instruments are designed to focus on values most relevant to the users. The solution platform integrates most important functions for the field usage and can be adapted to almost any kind of application. Up to 50 output channels can be configured to monitor special machine elements such as rotor faults, partial discharges, air gap, shrink fit, machine efficiency, etc.

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**Actionable monitoring with smart tools**

With our set of tools we make sure that results obtained from the machines are used to effectively plan maintenance periods, increase revenue and reduce maximally the number of machine faults.

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<tr>
<th><strong>CLOUD INTERFACE SOFTWARE</strong></th>
<th><strong>TRAINING</strong></th>
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<tbody>
<tr>
<td>Access to web application from any computer in the world. No special installation software, free of charge for additional users, no expensive investment.</td>
<td>We organize on-site and remote training on rotating machines and on how to save resources with condition monitoring.</td>
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<tr>
<th><strong>INTEGRATION OF MULTIPLE MACHINES AND KEY VALUES</strong></th>
<th><strong>EXPERT SUPPORT</strong></th>
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<td>Our modular platform allows multiple machine integration to a single interface. All critical applications and their values can be monitored from one place.</td>
<td>Our team is available to support you in all phases of machine life cycle – from solution design to implementation and interpretation of results.</td>
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<th><strong>SMART TRENDING</strong></th>
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<td>The unique feature uses advanced algorithms that predict point when a failure will occur, which makes it ideal for optimized maintenance planning.</td>
<td>The scope of our work covers visual inspection, tests and diagnostics and condition prediction. This includes on- and offline tests, as well as testing before, during and after the overhaul.</td>
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<th><strong>ADVANCED FAULT DETECTION</strong></th>
<th><strong>EQUIPMENT LIFETIME ESTIMATION</strong></th>
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<td>Using our in-house method we detect failures at early stage and focus on critical machine part with no special diagnostic equipment required.</td>
<td>Thanks to our knowledge and experience we use advanced methods to estimate machine lifetime with respect to its design, operations and condition.</td>
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<th><strong>CALCULATION OF MACHINE EFFICIENCY WITH CONTROL FUNCTION</strong></th>
<th><strong>R&amp;D</strong></th>
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<td>State-of-the-art knowledge built in our system allows calculation of machine efficiency and usage of real time information to set machine inputs resulting in maximized production output.</td>
<td>During the past 20 years we have been involved in more than 700 generator and 7000 motor projects. FEM and CFD calculations, dynamic effects, motion and real material properties are some of the skills we implement in rotating machines.</td>
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<th><strong>AUTOMATICALLY GENERATED REPORTS</strong></th>
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<td>With automated reports key stakeholders get tailor-made insight into machine status, which significantly saves their time.</td>
<td>No matter what your goal is – equipment protection, cost reduction or process improvement, we help you to achieve more and increase your productivity.</td>
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<th><strong>Full range services for your machine</strong></th>
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Our premium services cover all of your needs. From training to diagnostic of all types of rotating machines, our experts are dedicated to help you fulfill your objectives and save resources.