

MAJOR UPGRADE OF OPENpredictor™

A new, upgraded version of the OPENpredictor™ Condition Monitoring software has now been released. Version 2.8.0 is a major upgrade from 2.7.2 and offers two types of changes.

Basic Upgrade Package

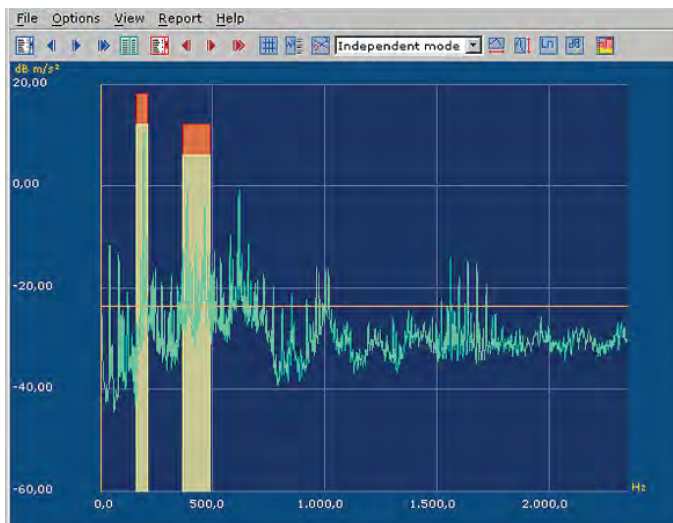
The basic upgrade offers a number of improvements relating to the user interface, infrastructure, speed compensating function plus enhanced integration with Plant Information (PI) system and off-line monitoring.

What will you achieve from upgrading your condition monitoring system?

- Faster data transport and response time
- New 3D, Microsoft XP like look & feel
- More options of individual settings
- Latest versions of Oracle and Java software, providing faster back-up and restoring of the OPENpredictor™ database
- Easier future extension of your system with more applications as well as diagnostic support from Rovsing Dynamics.

Version 2.8.0 supports Microsoft 2000, 2003 and XP.

For customers with a Service License Agreement the basic upgrade package will be installed online by Rovsing Dynamics free of charge. For others it is an optional offer.



Combustion Pressure Pulsation monitoring: *Instantaneous Autodiagnosis™ reveals significant changes in the combustor pulsation level. When pulsation frequency exceeds the predefined level (left), an alarm message is immediately sent to the operator.*

More OPENpredictor™ optional applications

OPENpredictor™ version 2.8.0 also incorporates easy access to three OPENpredictor™ applications, which so far have only been offered to a limited amount of customers:

- **Reliability Data Monitoring** was previously a stand-alone OPENpredictor™ module but has now been merged into the standard OPENpredictor™ platform. The module logs downtime and root causes, and identifies non-performing machinery and KPIs on reliability, availability and utilization. It provides a solid foundation for prioritizing maintenance according to economical impact.
- **Combustion Pressure Pulsation Monitoring** is a cost-effective method to detect critical combustion

pressure pulsation in gas turbines to prevent fatigue, damage and unplanned shutdowns. Whereas traditional pressure sensors typically are mounted inside the combustion chamber, OPENpredictor™ uses accelerometers, which are easily mounted on the outside of the combustor and which can be retrofitted.

- **Oil Analysis Results** can now be imported into OPENpredictor™ to support fault diagnoses, for alarm purposes and to keep an easy accessible track record of history and trends. Data can be imported electronically or manually depending on the format of your analysis results.

These three applications are optional and subject to individual quotation for

all customers. Activation requires additional engineering by Rovsing Dynamics and configuration of the specific machinery to be monitored.

“The upgraded OPENpredictor™ version 2.8.0 offers a number of features and applications, requested, defined and tested by other customers,” says Rovsing Dynamics’ Product Development Manager Lars Glæsel. “We are pleased that all this useful functionality is now made available to other customers as well.”

More information

If you are interested in upgrading your OPENpredictor™ solution to version 2.8.0 and want more information about the Basic Upgrade Package and the access to new functionalities, contact us on info@rovsing-dynamics.com.

RELIABILITY MONITORING FOR OPTIMUM ASSET MANAGEMENT

Reliability and availability are key performance indicators (KPIs) for critical rotating machines in energy production. Every 1% downtime has huge economical impact so it is important to know downtime causes to take appropriate measures to reduce scheduled and unscheduled downtime.

OPENpredictor's Reliability Monitoring module provides

- Automated identification and quantification of downtime
- Downtime & operation statistics for root cause analysis
- KPIs for reliability, availability and utilisation

Such information helps operators focus and prioritize activities to problems that repeat and cause the largest amount of downtime, with maximum economic effect.

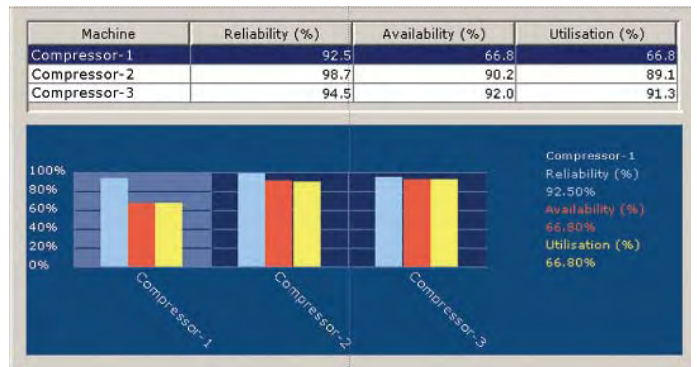
Data sources & warnings

OPENpredictor™ automatically imports data like downtime and fault codes from existing plant information systems and creates a traceable set of data for root cause analysis.

When a machine is stopped or reliability or availability drops below benchmark figure, OPENpredictor's warning system prompts the operators to provide information. A warning list gives an overview of duration, nature and downtime cause.

Root cause analysis

The user can define statistics and observation periods to verify short term problems and conclude on long term trends. With a root cause analysis it is possible to investigate how changes in maintenance can influence the downtime figures.



OPENpredictor™ provides different overviews of reliability, availability, utilisation, ↑ scheduled/unscheduled downtime, operating hours, successful/failed starts plus time causes for a root cause analysis ↓.

Surveillance	Downtime Cluster	Unscheduled Downtime	Risk Causes	Performance	Reliability	Availability	Utilisation
Cause			Cause Code			Total Downtime (hrs)	Total Downtime (%)
Unscheduled			UNK			18	3.9
Preventive Maintenance			PM			70	15.2
Corrective Maintenance			CM			3	0.6
Failed While Running			FWR			22	4.7
Failed to Start			FTS			3	0.6
Standby Mode			STBY			90	19.2
External			EXT			10	2.1



Reliability trend graph with alarm level.

TAQA MONITORS RELIABILITY TO MEET PLATFORM TARGETS



TAQA Energy, formerly BP Netherlands, use OPENpredictor™ to monitor the reliability, condition and performance of critical gas turbine compressor lines and auxiliary machinery on its mature North Sea gas compression field.

On the offshore platform three operators check operation alerts

from OPENpredictor™ and fill-in the downtime causes. Onshore the automatically generated statistics are useful tools for TAQA's Rotating Equipment Engineer, Neil MacRae, and the managers in Asset Management and Engineering for their operation and maintenance of the gas compression field.

"We use the key performance indicators and statistics on downtime causes to identify the common faults on the machines," says Neil MacRae. "We also compare with the information in our computerized

maintenance management system to ensure that we capture all faults."

"The target for the platform and the asset management team is 97% availability. Compressor performance is crucial to the operation, so if they are not reliable our annual targets are not met. Thanks to reliability monitoring, we now have more concrete data to work with. Our asset manager uses the monthly reports with analysis and recommendations from Roving Dynamics to check how the machines

are performing. In case of downwards trends in availability we can now easily identify the cause and quickly solve the problems," Neil MacRae concludes.

TAQA gained > \$ 5 million by combining information on asset reliability, performance and condition with business objectives among other things due to a 2% increase in reliability and availability of critical production assets.

For more information see www.roving-dynamics.com/oil_gas.