

System Detects Changing Conditions of Machinery and Improves Performance



COMPANY DESCRIPTION

A large manufacturer with assembly and sub-assemblies mass produces automotive parts and components. A plant of this magnitude requires equipment, such as motors, pumps, compressors, fans, vibratory feeders and other machines.

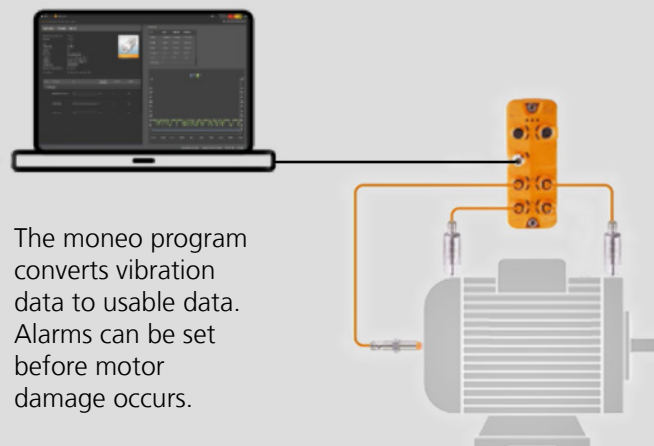
- The manufacturer had incurred significant financial losses, experiencing bottlenecks that caused unplanned downtime and increased scrap rates.
- Predictive maintenance programs lacked process visibility and did not include intelligent warning and alarm systems.
- Different types of equipment had different parameters and there was no one system to collect the information.

DISCOVER MONEO – SYSTEM MONITORS MACHINE PERFORMANCE IN REAL-TIME AND WARNS OF FAILURE – ELIMINATES DOWNTIME

- ifm's moneo Real-time Monitoring System monitors machine performance and warns of changing machine condition when it experiences unusual operating conditions.
- ifm vibration sensors are designed to permanently mount on a machine to continuously monitor the machine's vibration level.
- By detecting common fault conditions of impacts, component fatigue, and friction early, unplanned downtime is eliminated and machine capacity utilization is optimized.
- The moneo software converts sensor values into process-relevant information using data modeling (calculate values).
- The moneo cockpit function displays a detailed visual of each sensor and its value used in the process.
- moneo software provides analysis and trending of performance.
- The system quickly reacts to changing process parameters via an integrated alarm management system.

ifm's moneo Real-Time Monitoring System maximizes machine performance by monitoring the vibration value of each piece of equipment in the plant. The system detects changing conditions, displays the results, and sends a warning before damage occurs. moneo is easy to program and is user-friendly, which frees up the maintenance team to do value-added work versus time-based maintenance checks. The moneo platform aligns corporate goals with Industry 4.0 initiatives.

moneo | RTM System Structure

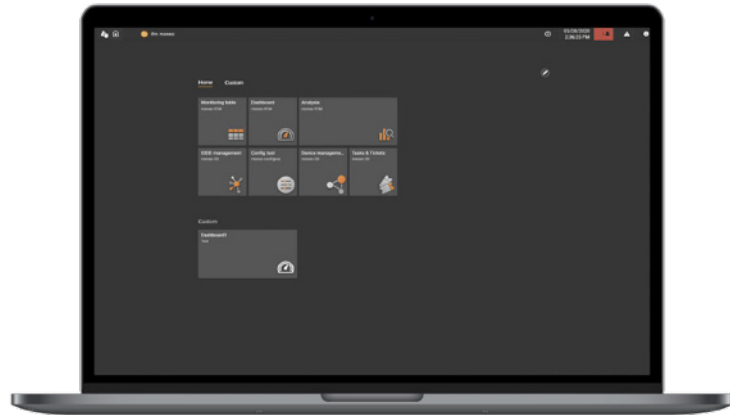


The moneo program converts vibration data to usable data. Alarms can be set before motor damage occurs.

moneo | RTM

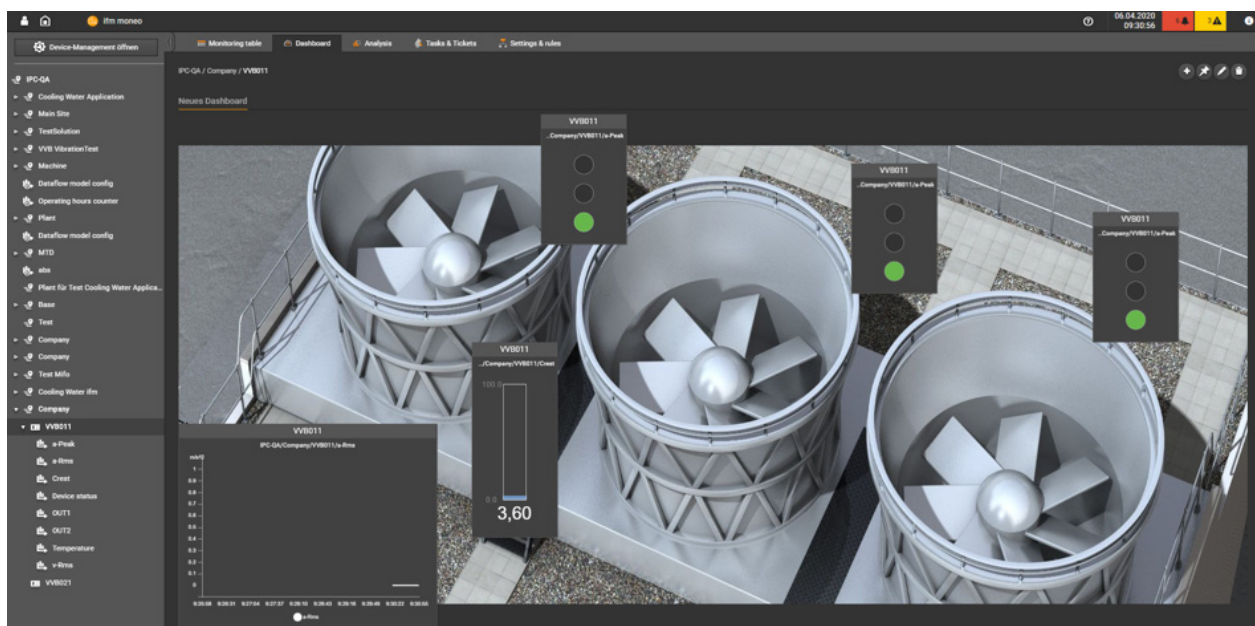
User-friendly software helps you align efficiency goals within one system.

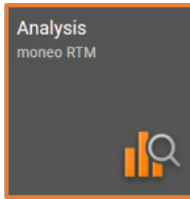
Monitoring table
Analysis
Dashboard
Tasks and Tickets
IODD Management
Config Tool
Device Management



COCKPIT

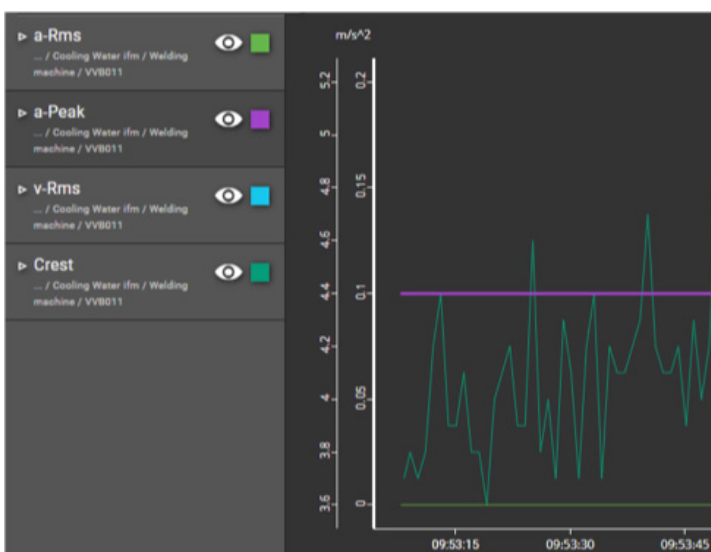
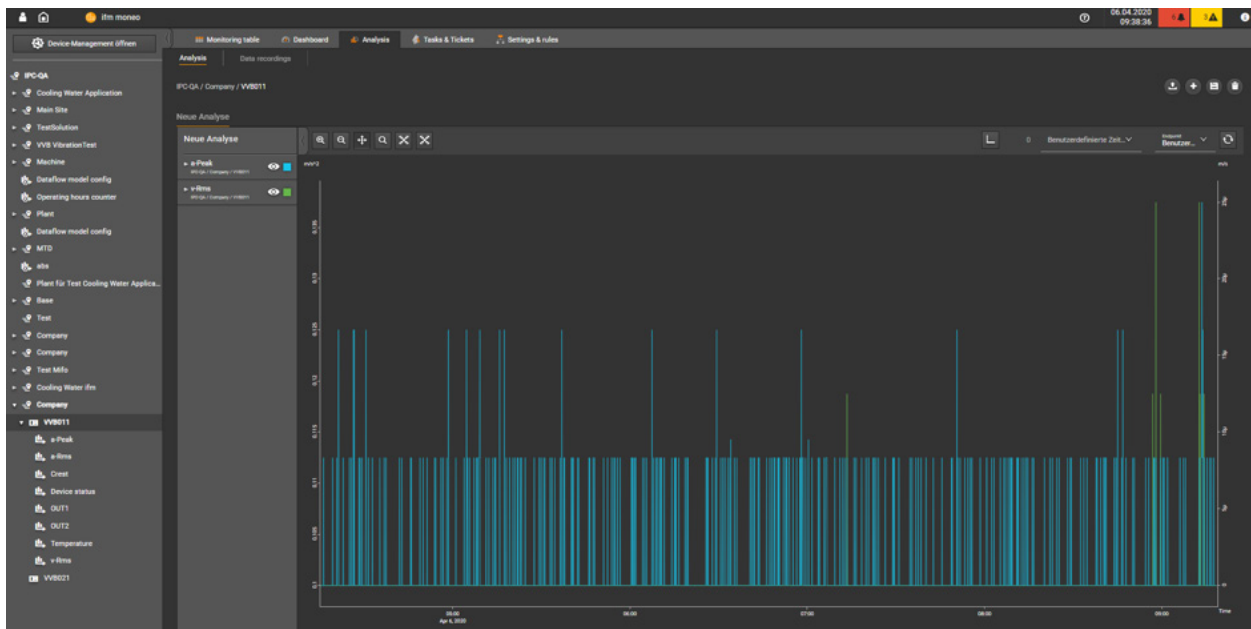
- Creation of customer-specific dashboards by drag and drop.
- Integration of plant graphics for better visualization of the measuring points.
- Display of the plant topology with all sensor data.
- Traffic light function for a quick overview of the machine condition.
- Flexible adding of further sensors.





ANALYSIS

- Display of relevant sensor values in the analysis chart.
- Detection of the machine condition through specific vibration values.
- Correlation of machine vibration and process values.
- Calculation of trend curves.
- Early detection of damage and malfunctions.



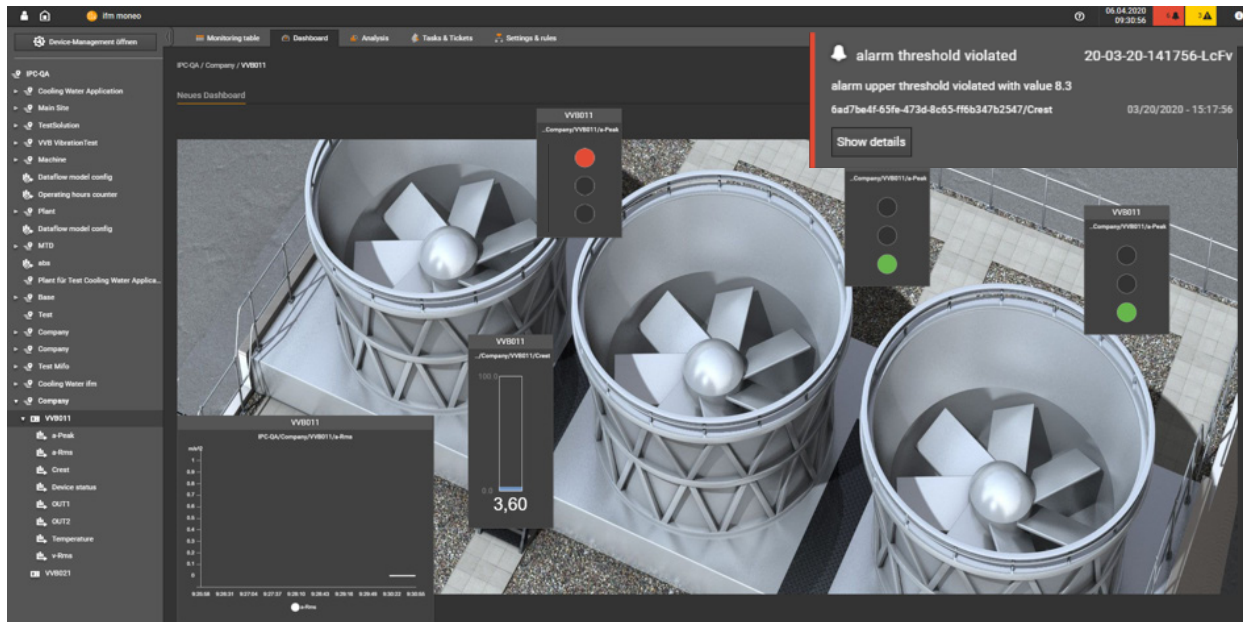
ANALYSIS DETAILS

- Detailed analysis of the machine condition:
 - v-RMS (fatigue)
 - a-RMS (friction)
 - a-Peak (impact)
 - crest factor
- Possible detection of the following types of damage:
 - misalignment
 - soft foot
 - soiling
 - bearing damage



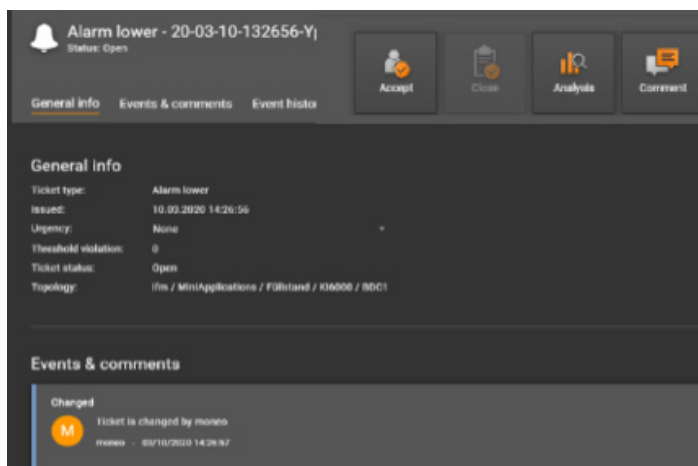
TASKS AND TICKETS

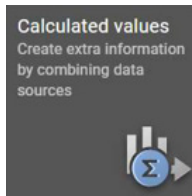
- Integrated alarm function for limit value monitoring.
- Automated ticket generation in the event of an alarm.
- Configurable tickets with defined recipients.
- Alarm-escalation strategies.
- Linkage of alarms.



TASKS AND TICKETS DETAILS

- Using a predefined wizard an alarm strategy can be configured.
- A generated alarm ticket over a lifetime can be managed.
- Comments can be added to the ticket, for example the cause of the error or a maintenance strategy.
- The time of the limit violation in the data analysis can be viewed via an analysis button.





CALCULATED VALUES

- Process information through simple configuration of sensor data.
- Creation of operating hours counters using vibration values.
- Duty point dependent monitoring of the machine.



CALCULATED VALUES DETAILS

- The vibration value of the sensor is used as data source input for the Data Flow Modeler and added to an application-specific offset.
- Using a relational operator, the modulated vibration value is compared with a numerical constant, threshold for the operating hours counter.
- If the vibration value is higher than the threshold value, the operating hours counter is activated and the customer can determine the real operating hours of the application.

Overview of moneo | RTM System Components for Improving Vibration Monitoring

Application	Machines	Large Machines		Small Machines	
Part No. Order	VVB001	VVB010	VVB011	VVB020	VVB021
Power [kW]	Universal	300-500.000	300-500.000	15-300	15-300
Revolution [U/min]	Universal	120-600	>600	120-600	>600