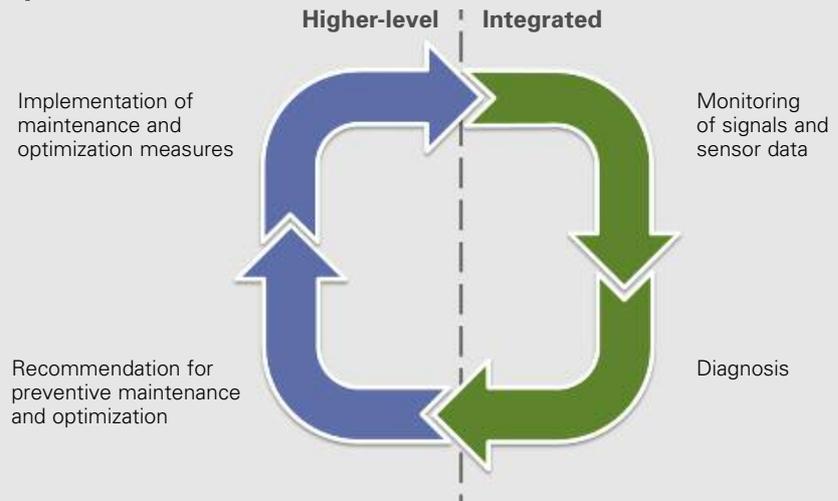


PLANT CONDITION ADVISOR



X-PACT® – PLANT CONDITION ADVISOR

The transparent plant



THE CHALLENGE

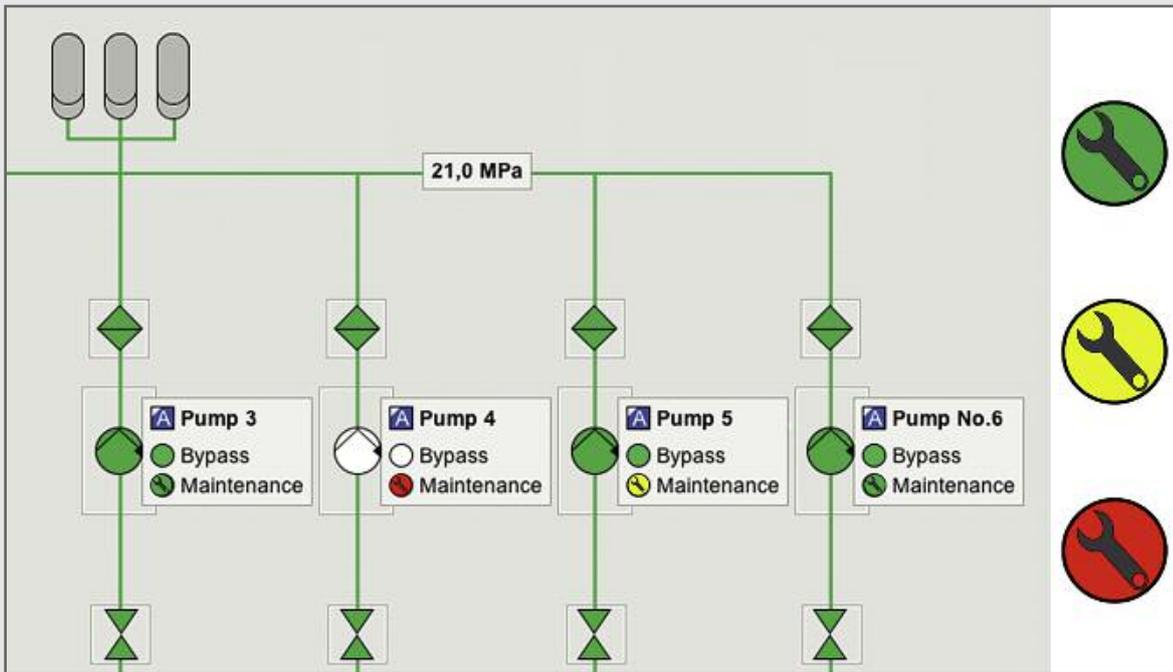
In view of the increasing level of cost pressure on the part of plant owners, optimized plant operation with the lowest possible maintenance costs is therefore indispensable. Unscheduled shutdowns with increased repair costs and production downtimes are greatly reduced by preventive maintenance and the stocking of spare parts.

Condition Monitoring Systems make it possible to optimize the manner of production, allow a completely clear representation of the plant status and thereby ensure a "transparent plant".

OUR SOLUTION

The functions of the Plant Condition Advisor are integrated into the basic automation and allow reliable condition monitoring of measured data and sensors. Intelligent evaluation algorithms enable both electrical and mechanical components to be monitored. The system is structured in a modular manner and can thus be expanded. The displaying of maintenance recommendations takes place in the HMI but they can also be forwarded to existing, higher-level maintenance systems.

The integrated Plant Condition Advisor System of SMS Siemag enables not only the monitoring of electronic plant components, such as intelligent field devices, I/O modules, controllers and network components, but also of mechanical plant and machinery such as pumps and valves. The monitoring allows early recognition of unfavorable operating states or attainment of the wear limits of individual plant parts.



CONTINUOUS MONITORING

To ensure completeness of the plant and machinery monitoring of the active individual components of the production plant is necessary. These components include pumps, motors, valves and cylinders, i.e. systems that are generally characterized by mechanical movements or other physical variables.

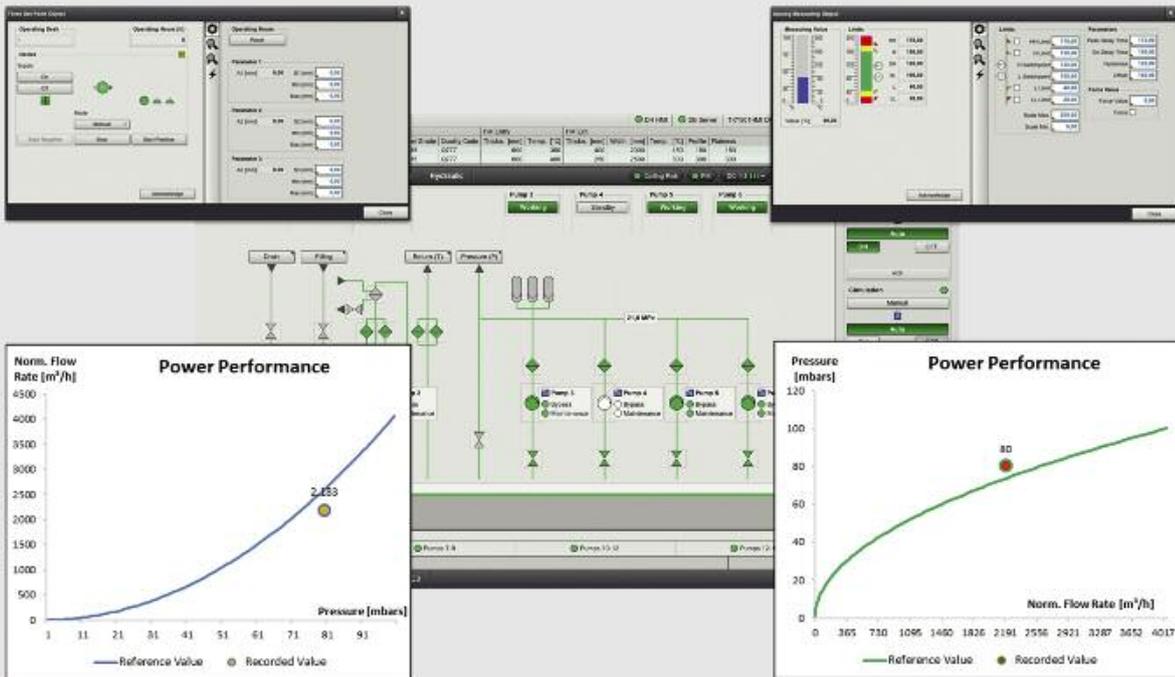
In addition to the monitoring of individual components, specific functions are implemented for the production plants, from the iron and steel plant to the strip processing line.

PUMP MONITORING FUNCTIONS

The pump monitoring system first of all ascertains whether a fluid is flowing inside the piping and then checks whether the pump is working at its operating point. This is made possible by prior recording of the pump characteristic curve. Moreover, in speed-controlled pumps, the operating efficiency corresponding to each operating point is compared with a characteristic curve generated on the basis of the ideal condition.

The pump monitoring systems also includes the following functions:

- Monitoring of no-load operation
- Determination of the pump's operating point
- Recording of pump and plant characteristic curves
- Calculation of the STP flow rate, compensated according to pressure and temperature.



MOTOR MONITORING SYSTEM

Depending on its design, involving additional measuring sensors, the motor monitoring system can perform various monitoring functions that extend beyond mere motor protection. These include the recording and evaluation of the current input. This makes spectral analysis possible and enables statements to be made regarding the condition of the bearings, the rotor, the stator or the coupling. This analysis can be expanded by means of additional vibration transducers, thus enabling more detailed statements to be made regarding the components listed above.

The following functions are possible:

- Monitoring of starting current
- Misalignment monitoring with a vibration sensor
- Analysis of power input
- Monitoring of operating hours of the motor
- ...Bearing defects ... Lubrication problems, etc.

VALVE MONITORING SYSTEM

The valve monitoring system differentiates between switching valves and control valves. For switching valves, the relevant running times are recorded for individual switching operations, which in turn allows a trend analysis. If this analysis shows a continuous increase, the plant operator is informed in connection with a previous maximum value. For control valves, the degree of positioning of the valves is set relative to the STP flow rate. This enables a statement to be made regarding a possible incorrect position or valve wear.

The following functions are possible:

- Analysis of the ratio between position and standard flow rate
- Evaluation of the switching cycles with trend analysis
- Calculation of the STP flow rate, compensated according to pressure and temperature.

Evaluation (Higher-level system)	<ul style="list-style-type: none"> • Diagnosis • Evaluation • Recognition of operating states • Repair schedule • Adaption of the operating practice 	
Display on the plant HMI	<ul style="list-style-type: none"> • Visualization • Trend display • Logging 	
Calculations in the automation system	<ul style="list-style-type: none"> • Determination of characteristic values • Graduation • Signal conditioning 	
Measuring	<ul style="list-style-type: none"> • Digital signals • Analog signals • Trigger signals 	

FUNCTIONS

General functions that are integrated into our automation systems:

- Valve monitoring
- Motor monitoring
- Flow monitoring
- Trend display
- Statistical functions
(e.g. min, max, mean value)

Further specific functions

are available for automation systems in the following areas:

- Iron and steel plant
- Continuous casters
- Hot rolling mills
- Cold rolling mills
- Aluminum plants
- Strip processing lines

HIGHLIGHTS AND BENEFITS

- Integration into the basic automation system
- Faster run-up
- Preventive maintenance
- Allows optimized stocking of spare parts
- Enhanced plant availability

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MEETING your **EXPECTATIONS**