

Technical Solution

CENTRIFUGAL PUMP

Process optimization

Fluid handling

Centrifugal pump

Optimized centrifugal pump performance

Ensuring that centrifugal pumps operate as close as possible to their Best Efficiency Point (BEP) is a key factor in optimizing performance and energy efficiency. SPM Instrument's solution for centrifugal pump optimization is a process-oriented monitoring tool that enables early detection of performance losses and mechanical issues. With clear insights into pump behaviour across different flow rates and operating conditions, operators can reduce wear, cut energy consumption, and extend service life.

Centrifugal pumps are vital in many industrial and municipal systems and use a large amount of energy. Optimizing their efficiency can greatly enhance the operational cost-effectiveness and sustainability of the entire facility.

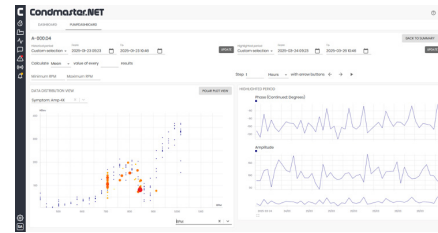
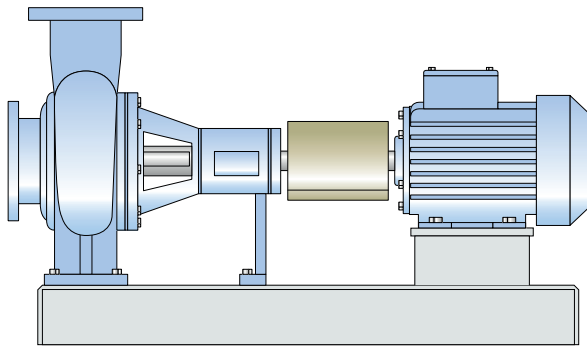
Benefits of pump performance monitoring include:

- real-time visualization of pump performance in an intuitive, web-based dashboard
- early detection of performance deviations, mechanical wear, and incipient cavitation
- fine-tuning of flow and head to reduce energy consumption
- fewer maintenance interventions and increased uptime
- extended service life of key components
- optimization at the true BEP, even as system condition evolves

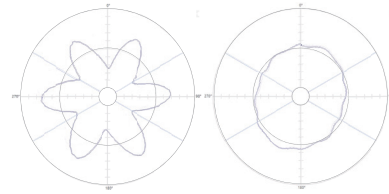
Double duty: One system, twice the impact

The pump optimization solution is a powerful yet accessible tool with a low investment threshold and fast return on investment, complementing SPM's high-performance condition monitoring systems by combining mechanical condition data with process performance indicators.

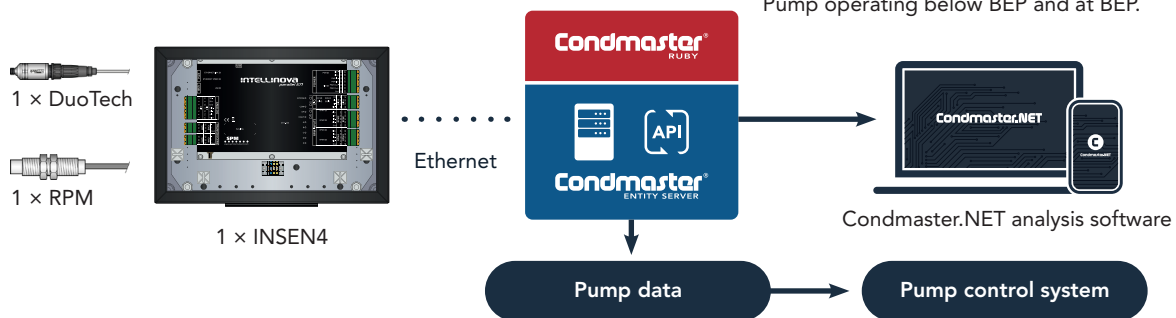
Plant operators can monitor pump efficiency and mechanical condition parameters with a single system, strengthening reliability-centered maintenance and process optimization strategies.



Condmaster.NET pump dashboard.



Pump operating below BEP and at BEP.



Unique, data-driven optimization of pump operation

The solution leverages high-definition shock pulse and vibration analysis to determine the pump's actual operating conditions and match them to its optimal performance range. Unlike theoretical BEP values from pump manufacturers, which do not reflect real-world wear-and-tear over time, this solution identifies the true BEP based on live operating data.

Using the 'View symptom distribution' function in Condmaster, operators can plot symptom values such as vibration or shock pulse against flow rate or RPM, thus enabling operators to identify how close the pump is running to its BEP and detect early signs of inefficiency, cavitation, or mechanical problems.

The web-based dashboard visualizes performance trends and BEP clearly and intuitively, supporting both day-to-day operations and long-term optimization efforts.

The pump optimization solution requires:

- Intellinova Parallel EN monitoring system
- DuoTech accelerometer
- RPM sensor
- Condmaster software license
- Subscription to the pump performance dashboard

Performance, productivity, and peace of mind

Early failure detection is crucial to maximizing equipment life and performance. With over fifty years of experience, SPM Instrument has the technologies, equipment, and expertise to offer efficient and flexible condition monitoring and process optimization solutions for all types of industry. Through a worldwide network of resources, we provide a complete line of measurement technologies and high-performance products for industrial condition monitoring.