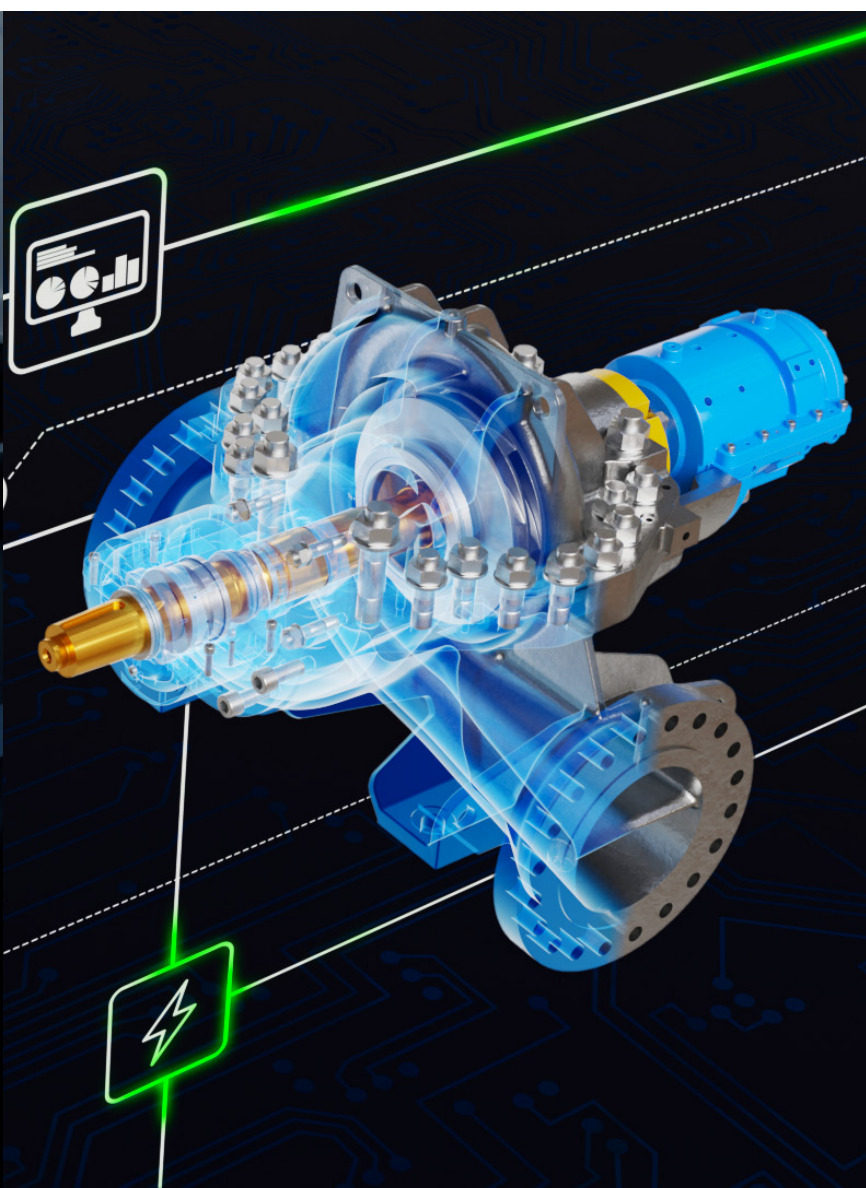


SULZER

Energy efficiency service for centrifugal pumps



Sulzer
EfficiencyPlus



Your solution: Sulzer EfficiencyPlus

Sulzer's EfficiencyPlus service is designed to help energy intensive sectors, implementing energy saving practices and solutions involving pumping systems. The service aims to support stakeholders in making informed decisions on operating, maintaining, and modifying existing pumping system with the objective to reduce energy consumption and lower carbon footprint through improving energy efficiency of these systems.

Sulzer EfficiencyPlus sets a **new standard** for the future of pump operations and energy efficiency solution, improving the operational, environmental and financial performance of pump operators around the world. Sulzer EfficiencyPlus is a suite of services that brings together the power of digital analysis, machine learning, and continuous monitoring and the technical expertise of our retrofit experts.

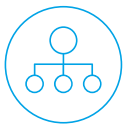
Setting a new standard

The result is an end to end market-leading energy efficiency, reliability and carbon reduction solution that delivers on its promise by improving the efficiency of pumping equipment, regardless of OEM, with rapid ROI.



Guarantees

Our proposal offers guarantees for efficiency improvements.



Prioritisation

The core principle of our approach, the pumps with highest energy savings potential and reliability issue are prioritized for retrofit.



Holistic & bespoke

The only energy efficiency solution that takes care of your pump throughout its lifecycle with best-in-class audit, digital, engineering and proactive support capabilities.



Data-driven

Our solutions are crafted and tailored to your specific needs. We combine your own operational data alongside Sulzer's extensive legacy data and world class engineering expertise.



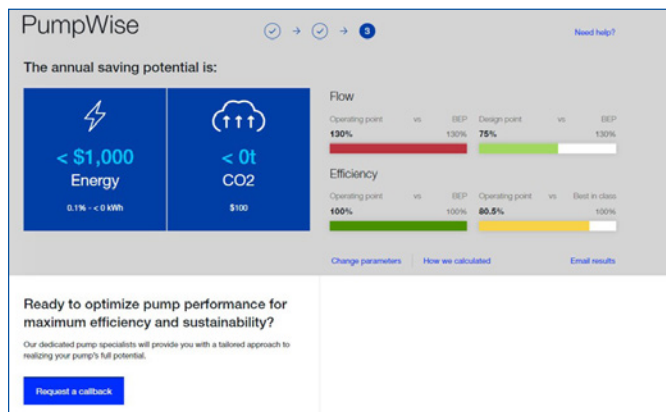
Complete proposal

Our proposals are designed to support management and budgeting approvals, offering not just technical solutions but also include comprehensive details on ROI, ESG, and financial metrics.

PumpWise – Proprietary pump calculator

Find out your pumps' energy savings potential

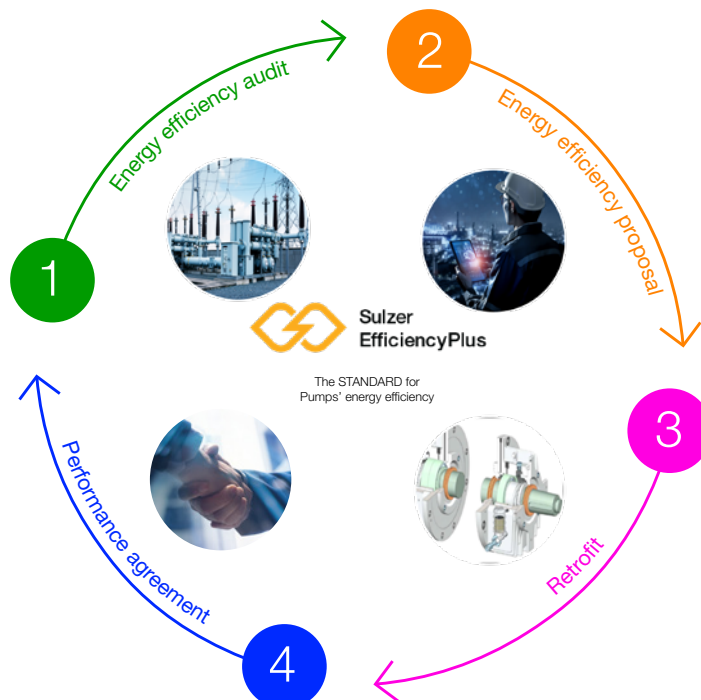
- Ascertains pumps' energy savings potential
- Using user-uploaded plant data, pump datasheets and operational data, PumpWise compares the pump's actual operating ranges, workload and efficiency with its best efficiency point and intended design to quantify the opportunity for improvement.
- The results provide an initial indication of the potential cost, carbon and tax savings



Try now

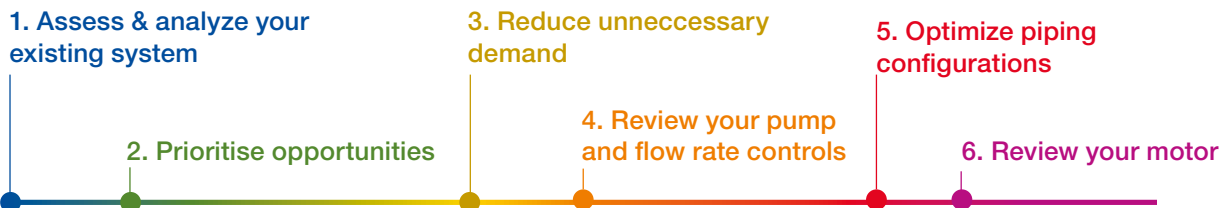
Your energy efficiency journey with us

4 simple steps on the pathway toward success



1. Audit

To understand the current position of the plant's pump assets and the root cause of inefficiencies, we conduct an initial audit of your installation through a robust methodological process.



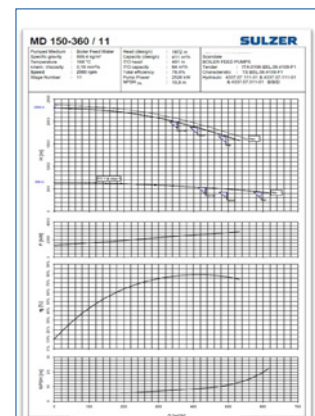
Prioritisation is the core principle of the audit process where we evaluate your entire system/facility holistically, it ensures that the pump(s) with the highest energy savings potential and with probable reliability issue is prioritized first. For plants embarking on such projects for the first time, it is an assured approach.



2. Energy efficiency proposal

Post audit, a bespoke proposal will be presented with the following components, which supports budgetary discussions and approval:

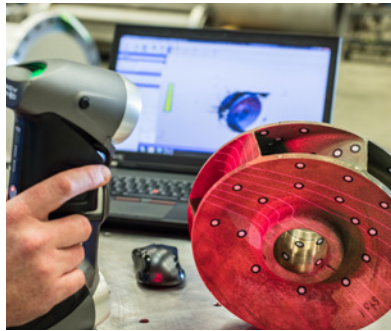
- Analysis of plant's pumping system(s)
- Audit prioritization flowchart
- Insights from PumpWise & associated digital tools
- Technical findings
- Sulzer's retrofit methodology and rationale
- Payback period
- Operation and maintenance cost savings
- Technical proposal



3. Retrofit

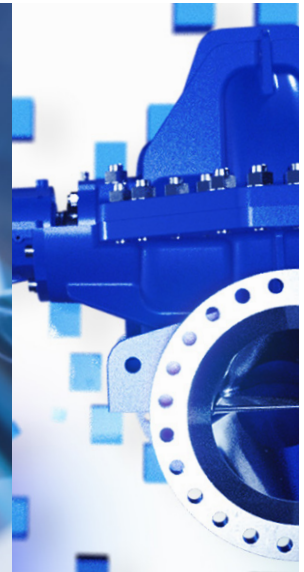
Our seasoned retrofit experts work with your teams to implement your chosen proposal, from process improvements and new equipment to retrofits. Retrofit applications that support energy efficiency include hydraulic rerates, additive manufacturing, reverse engineering, surface treatment, variable speed drive integration, removal of water-cooled bearing housing, and restoration and efficiency enhancement for worn parts etc.

Our retrofit philosophy works on the basis of delivering target solution with minimal impact to your existing pump, footprint and civil engineering infrastructure in a responsive timeline.



4. Performance agreement

Proactive asset support for continued uptime, reduced risks and costs through predictive maintenance all powered by our proprietary technology-BlueBox™. Additionally, receive dedicated support, guaranteed field service response time, tailored training, spare parts stock management and more.



Benefits of Sulzer EfficiencyPlus



- Improve reliability, performance and longevity of equipment

- Increase overall energy efficiency of plant and decrease power costs



- Increase mean time to maintenance (MTBF)

- Minimize risks, downtime, and disruption



- Reduce Scope 1, 2 and 3 carbon emissions, supporting ESG progress

- Demonstrate credentials to ESG ratings agencies, investors, and other monitoring bodies



- Minimize exposure to current and future carbon taxes

- Maintain control of your operations and meet your business priorities

Why choose us?



Engineering heritage

Leverages on 190+ years of pump engineering expertise and experience.



Track record

Over 5000 global pump retrofit, upgrades and modifications across 20+ OEM brands.



Industry expertise

In complex industrial pump applications engineered by industry specialists.



Customer centricity

There's no one size fits all solution, but only the right solution and approach that matches all of your needs.



Flexibility

We adapt to your needs, whether it is schedule, technical requirements, supply chain, geography and more.



Global experience, local support

More than 130 service centers and 1000 experts across all continents of the globe, we've offered support to clients located in the most remote places on earth.



Case study: Pumps' energy efficiency enhancement contribute towards offshore platforms' carbon reduction exercise

Service: Sulzer Efficiency+, OEM-X line, Retrofit, PumpWise

Location: North Sea, Norway

Customer: Equinor

Operational cost savings/year:
5.3 million Euros

Energy cut/year: 2800 MWh

Carbon emissions cut/year:
7751 tons



Challenge

Equinor was ambitious and keen to reduce its carbon emissions as part of their wider carbon reduction exercise.

While looking at their cluster of 4 offshore platforms for carbon reduction potential, they looked at all equipment inclusive of 4 high-energy Lean Amine pumps of British origins.

Sulzer was approached for a targeted solution for the 3rd-party pumps with a power consumption reduction guarantee as part of the contract. The project taps on Sulzer's OEM-X line and Energy efficiency solution.

Solution

Our experienced retrofit specialists conducted an in-depth audit and field assessment combined with our proprietary calculator- PumpWise and extensive hydraulic engineering tools, before devising the optimal solution.

It was identified that efficiency dropped 3% below expected hydraulics. A comprehensive energy efficiency proposal was shared, helping our customer to secure budget and buy-in from their management for the project.

The hydraulic re-rate entailed:

- New internal hydraulic bundle, designed to fit within existing barrel.

- Existing end covers, barrel closure, bearings, seal and drive coupling would be retained
- Power savings were to be obtained by a combination of Modern Sulzer hydraulics
- Tighter running clearances with a combination of PEEK and SUME coated wear parts

Impact

The project was delivered within 15 weeks. Downtime was minimized with the design and manufacture of the new hydraulic bundle carried out in advance and coincided with the platform's scheduled overhaul.

The site footprint and interfaces remained unchanged and testing verified 5% in excess of power savings by first retrofitted pump when ran in parallel with unmodified pumps.

Case study: Speedy energy efficiency-based solution supports chemical plant's energy savings ambitions

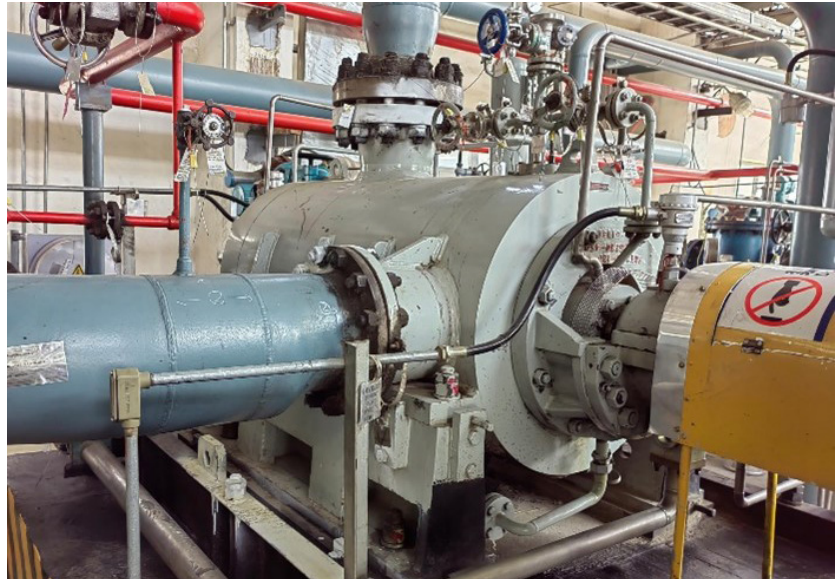
Service: Sulzer EfficiencyPlus, Retrofit, PumpWise

Location: Xinjiang, China

Customer: Chemical plant

Energy savings post retrofit:
28%

Project payback period:
15 months



Challenge

The customer had identified its set of lean methanol pumps underperforming on an efficiency perspective. The initial plan was to adapt the pump to new process requirements by reducing the head of the pump from 1'027 m to 870 m.

The plant's engineers changed their plan after being made aware of our Sulzer EfficiencyPlus service, and were open to new options as it met their plant's ambitions to reduce energy wastage while rectifying the pumps' underlying operational pain points and adapting to new process requirements.

Solution

Sulzer's retrofit engineers conducted an on-site inspection and delivered an initial energy savings potential assessment utilizing PumpWise. The potential was positive with a substantial amount of energy and monetary costs savings.

The technical proposal entailed a drop-in replacement with Sulzer's GSG 100 pump with bespoke customization in alignment with process requirements.

Impact

The project was delivered in 5 months time, aligned with the plant's scheduled shutdown.

The compact inline design with short bearing span and minimized footprint foundation was a perfect fit to replace the baseplate which minimized undue civil engineering works.

The pumps' first 120 hours of operations yielded positive results with 28% energy savings and a payback period of 15 months based on their energy cost.

Case study: Energy efficiency audit brings light on substantial reliability & energy savings performance uplift

Service: Sulzer EfficiencyPlus, PumpWise, OEM-X line

Location: Greece

Customer: 480MW Combined Cycle Power Plant

Forecasted operational cost savings/year: Between 160-360k Euros

Forecasted energy savings post retrofit: 28%

Forecasted carbon reduction/year: 320 Tons

Forecasted project lead time: 5 months



Challenge

In a bid to drive operational and energy efficiency for the power plant in alignment with the local government's push for reducing carbon emissions in energy intensive industries, the 480MW combined cycle power plant in Greece took proactive action on this regard. The plant's engineers also saw the opportunity for an expert to evaluate their critical pumps' efficiency and reliability since both attributes have strong correlation.

While evaluating its big machinery, pumps were evaluated as well. The plant approached Sulzer for initial audit coupled with proposal with regards to its pumps as its OEM of Italian origin were not able to offer a comparable technical advisory.

Solution

An in-depth evaluation was made using PumpWise for the pumps' operating conditions using its past 12 months' data. 2 bespoke technical options were proposed after an in-depth assessment:

1. Hydraulic de-staging
2. Voith replacement with variable frequency drive

The proposed approach was to go for option 1 as the shorter-term plan due to its relative execution simplicity. Option 2 will be executed as part of the medium to longer term plan, if the plant decides to go ahead.

Impact

The plant's O&M team were presented with an elaborate proposal which spelt out the technical offering. They also had a clear idea of the tangible benefits such as potential savings in terms of energy costs and carbon reduction potential. This eased the case for budget approval with senior management with explicit cost and benefit analysis.

The project was slated to be delivered in 5 months, aligned with the plant's scheduled shutdown. The potential monetary cost savings also meant that funds could be channeled for new cleaner energy investments to future-proof the energy group's business.

The Sulzer Services division is your partner for uptime and enhanced performance for your rotating equipment and more. Our dedicated people provide unrivalled service and expertise to meet your operational needs – anytime, anywhere.

Through a network of over 100 service sites around the world, Sulzer provides cutting-edge parts as well as maintenance and repair solutions for pumps, turbines, compressors, motors and generators. We service our own original equipment, but also all associated third-party rotating equipment run by our customers, maximizing its sustainability and life cycle cost-effectiveness. Our technology-based solutions, fast execution and expertise in complex maintenance projects are available at our customers' doorsteps.

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