SUCCESS STORY ALLSEAS PIONEERING SPIRIT (NL)

Charting a greener course: 82% pump energy savings on the Pioneering Spirit

Energy efficiency at sea: Technical retrofit of the Pioneering Spirit

Allseas, established in 1985, is a global leader in the offshore energy sector, specialising in complex projects such as pipeline installation and heavy-lift operations. While the company is known for its record-breaking Pioneering Spirit — a vessel capable of lifting offshore platforms weighing up to 60,000 tons — it applies the same technical rigour to reducing energy consumption. Through the Belimo RetroFIT+ programme, Allseas has implemented the Belimo Energy Valve™ to achieve a massive 82% reduction in pump energy consumption on its flagship vessel, lowering the power demand from 600 kW to 120 kW and resulting in annual savings of EUR 700,000.

BUILDING TYPE
Ships

PROJECT
RetroFIT+

TRADES
Cooling

PRODUCTS
Belimo Energy Valves

BELIMO®

Optimising complex systems

Since its foundation in 1985, Allseas has prioritised technical innovation to stay ahead of the market. This approach extends to the internal systems of its vessels. The Pioneering Spirit utilises an extensive cooling infrastructure for two primary purposes: providing comfort for up to 500 employees in accommodation areas and managing process cooling for technical equipment, such as winch rooms, frequency drives, and hydraulic oil coolers. Traditionally, these maritime systems were designed as static 3-way circuits with constant flow rates. In such systems, water is continuously pumped at maximum power to ensure reliability under extreme conditions, such as high humidity or high temperatures. However, this leads to significant energy waste when the ship operates in cooler regions like the North Sea, as the pumps continue to run at full capacity regardless of the actual thermal load.

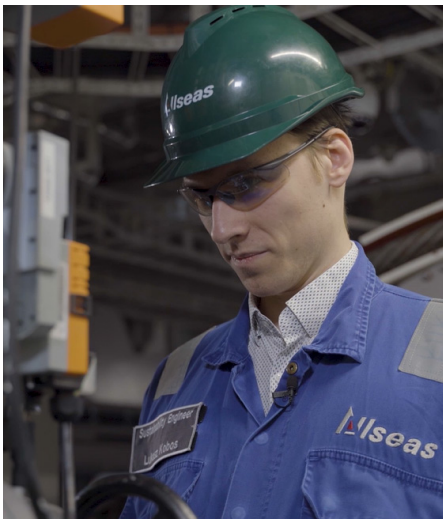
From 3-way to 2-way control

In a collaborative engineering effort, Allseas and Belimo converted the outdated 3-way circuits into a modern 2-way pressure-controlled system. A central element of this upgrade was the installation of 175 Belimo Energy Valves. This included the integration of DN 150 units — the largest available size — specifically for the ship's massive hydraulic oil coolers. These Energy Valves are used to cool the central hydraulic power unit located in the engine room, ensuring that cooling is delivered exactly when the consumer requires it.

Quantifiable results and operational impact

Following the commissioning of the Belimo Energy Valves, Allseas recorded a major shift in performance metrics:

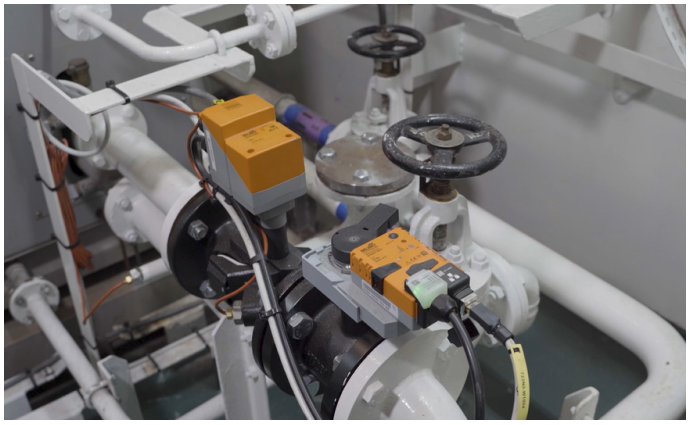
- **Reduction in electric power:** The power consumption of the pumps was reduced from 600 kW to 120 kW.
- **Efficiency gains:** The optimised hydronic system resulted in total energy savings of 82%.
- **Financial impact:** These efficiency gains translate to annual cost savings of approximately EUR 700,000.
- **Return on Investment (ROI):** Due to the significant savings, the project is expected to achieve payback within three years.



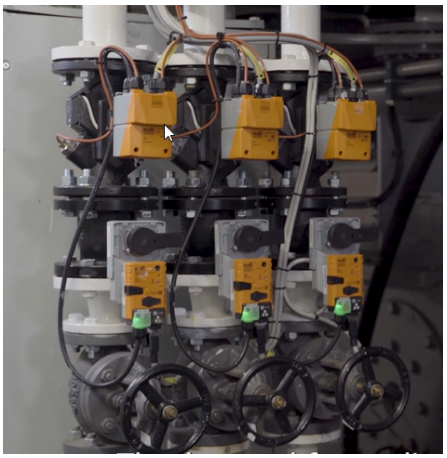
"Because the retrofitted cooling system is enormous, we managed to decrease the power consumption of the pumps by 82%, bringing it down from 600 kW to 120 kW."

Lukasz Kobos
Sustainability Engineer
Allseas

- **Technical stability:** The technical team observed that the pumps now run at a better efficiency point, with a significant decrease in noise and vibration levels.
- **System longevity:** Since the upgrade, pump cavitation has been completely eliminated.



The installation of 175 Belimo Energy Valves ensure energy- and thus cost-efficient operation of the Pioneering Spirit.



The Belimo Energy Valve™ unifies data recording and power monitoring in one device.

Data integration and future outlook

The Belimo Energy Valve™ integrates energy data recording and power monitoring into a single unit. This allows Allseas to check the benefits of the installation in detail, noticing that pumps now run at a much better efficiency point. By reducing the energy demand of the cooling pumps, the ship's engines do not have to work as hard, which directly reduces overall emissions. Following the successful results on the Pioneering Spirit, Allseas is now planning to upgrade the rest of the fleet, proving that even the most massive offshore operations can be optimised through smart, data-driven technology. "Saving 82% on the cooling system is a significant achievement. It demonstrates that by combining technical expertise with innovative control technology, we can achieve massive energy savings and strengthen our position as a pioneer in the offshore sector," says Lukasz Kobos, Sustainability Engineer at Allseas.

All-inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air conditioning systems. The focus of our core business is on damper actuators, control valves and sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range of actuator and sensor solutions for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries furthermore ensure short delivery times and comprehensive support throughout the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation, and maintenance.

In short: Small devices, big impact.

- 5-year warranty
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

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