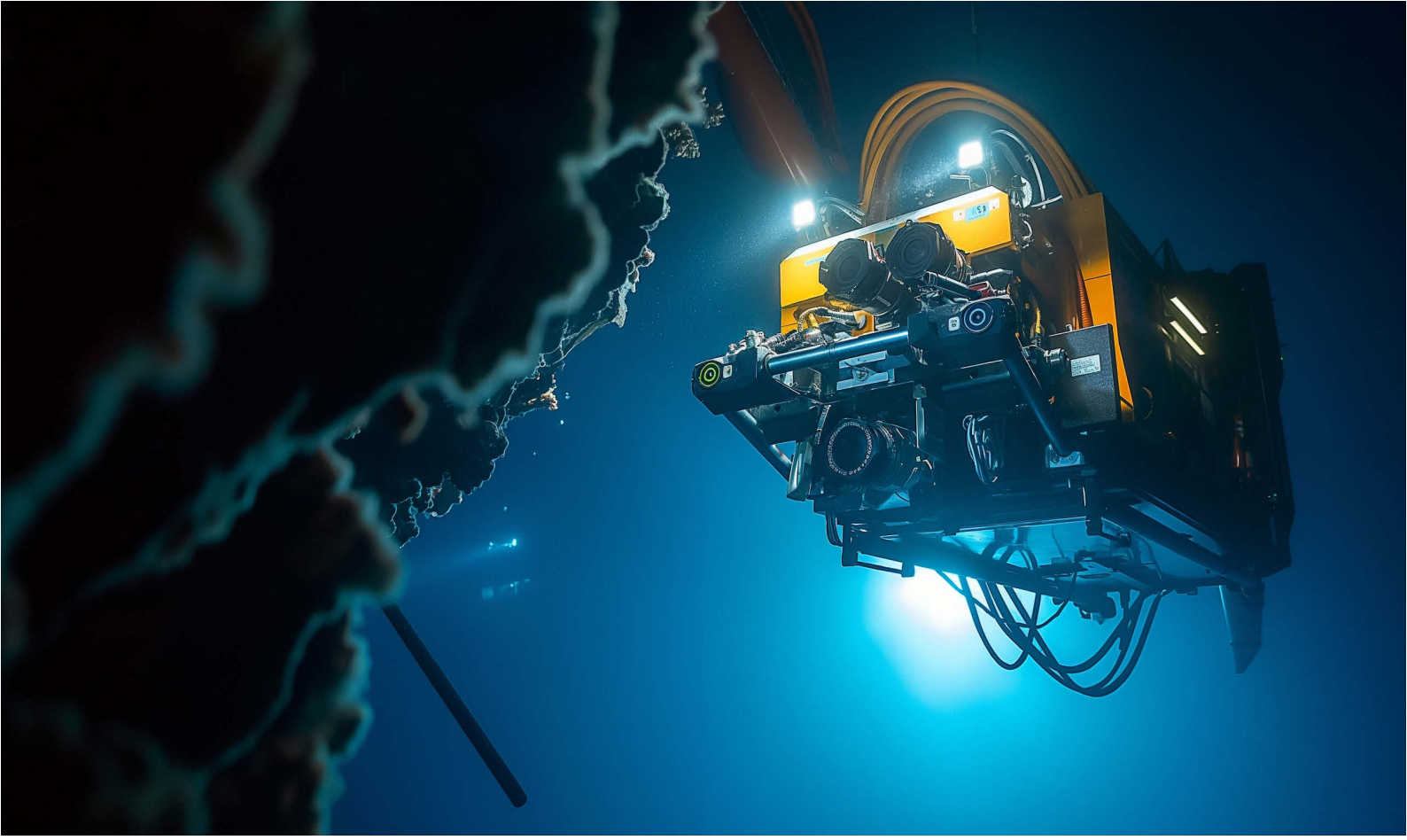

ROV Thrusters

Case Study

High-performance sealing for high-speed, compact thrusters for Subsea ROVs

Sealing the Future of Subsea Power

The Client

The client is a Leading Subsea Technology Company operating in the Subsea Robotics and Offshore Energy industry. The client set out to develop a class-leading range of compact, high-power thrusters for remotely operated vehicles (ROVs).

These thrusters are designed to perform reliably in demanding underwater environments, supporting advanced offshore operations with enhanced power, efficiency, and durability.

The Objective

To develop a class-leading range of compact high-power thrusters for the offshore ROV market that deliver:

- Minimal friction losses
- Maximum service life
- Simplified maintenance
- Bidirectional shaft rotation
- Reliable operation under subsea pressure

The Challenge

All initial trials with a range of elastomeric and PTFE seals failed to achieve the demanding functional and durability requirements. Key issues included:

- Fluid ingress due to continued failure of test seals
- Costly downtime
- Environmental risks
- Inadequate performance under high-speed and high-pressure conditions

Advanced Materials. Proven Performance.

The Solution

FTL engaged early in the project lifecycle, leveraging deep sealing expertise to deliver a customer-engineered rotary shaft sealing solution featuring:

- Advanced PTFE materials for low friction and chemical resistance
- Optimised lip geometry for extended service life
- Pressure-balanced design to withstand subsea pressure
- Guidance on shaft sleeve materials and finishes
- Cartridge-style installation for simplified maintenance
- Aftermarket protection and support

Sustainable Sealing for Offshore Success

Addtional Value Adds

- No transport sleeve required, removing errors during the installation process
- Individual packaging to prevent damage during transit and assembly
- Laser-etched part numbers for traceability and aftermarket protection
- Reliable delivery and stocking requirements to fulfill monthly build requirements and aftermarket sales

The Benefit

First-time success: Passed all functional and performance tests

Long-term Reliability: Consistent performance in demanding subsea environments

OEM trust: FTL became the seal supplier of choice

Quality: Full batch traceability and consistent delivery to meet monthly build and aftermarket demand.

Operational Efficiency: Over 15,000 seals delivered with zero non-conformance reports or failures

Sustainability and Strategic Impact

FTL Technology's PTFE shaft seals help protect critical components, minimise enviromental risk, and ensure mission continuity in demanding subsea enviroments.

As offshore industries evolve towards smarter, safer, and more sustainable operations, proven sealing technologies from FTL remain essential to performance and progress. This project exemplifies how early engineering collaboration, material innovation, and application expertise can deliver lasting value in the most challenging subsea conditions.