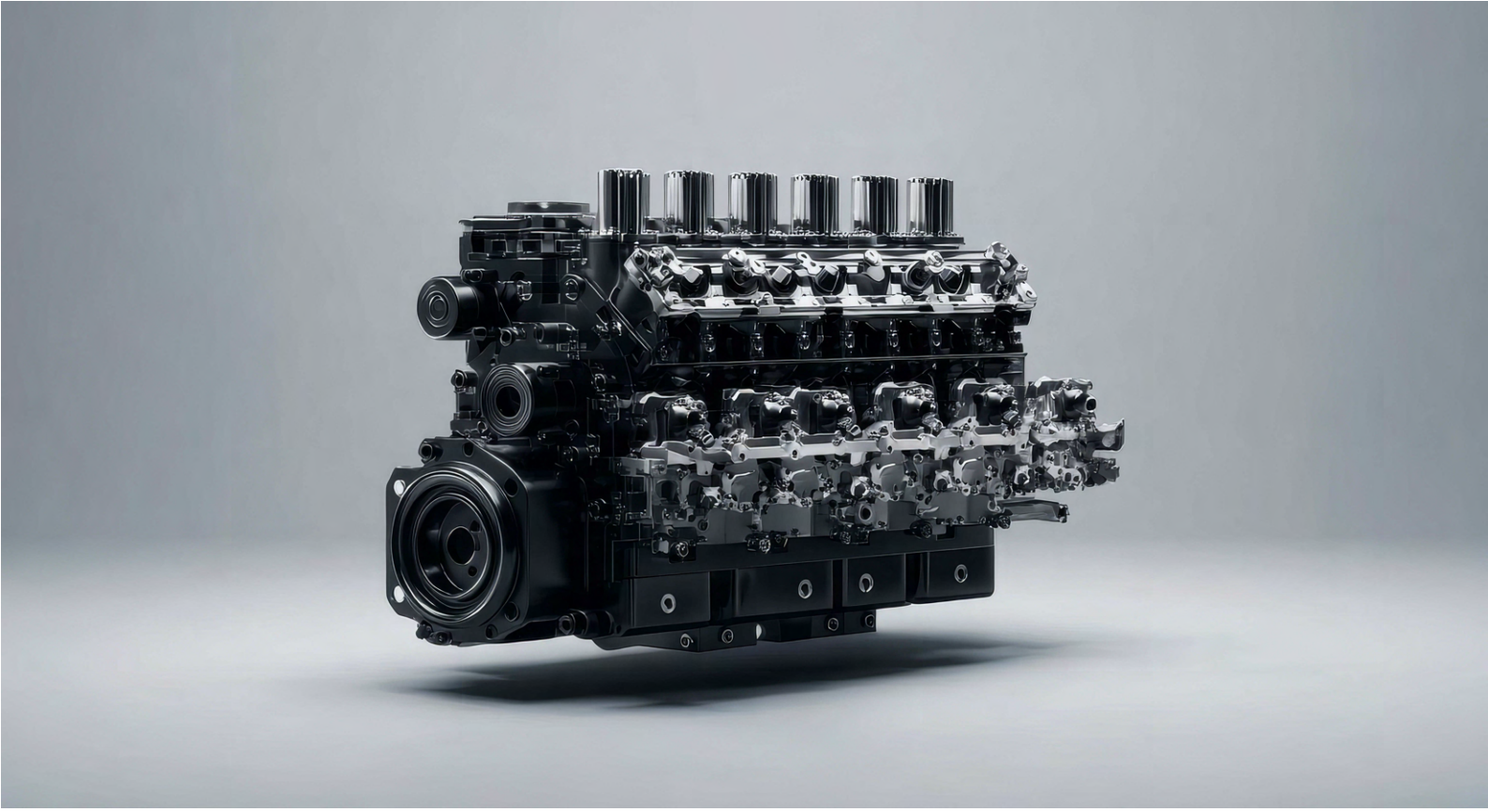


Engine Cooling Pumps

Case Study

Custom rotary sealing solution for high-horsepower engine cooling pumps

Improve the Reliability of Engine Cooling Pumps on Critical platforms

The Client

The client is a Global Leader in Heavy-Duty engine manufacturing, supplying powertrain solutions for demanding applications across Power generation, Mining, Marine and Oil & Gas sectors.

Their high-horse power engines operate in harsh environments where reliability and uptime are critical.

The Objective

To improve the reliability of engine cooling water pumps used in large capacity, high-horsepower engines by resolving persistent rotary seal failures.

The goals were to eliminate leakage, reduce maintenance and associated downtime, and protect against cross contamination between oil and coolant.

The Challenge

The water pump design required two seals:

- A water-side seal to prevent coolant leakage
- An oil-side seal to prevent engine lubricating oil from leaking into or out of the pump

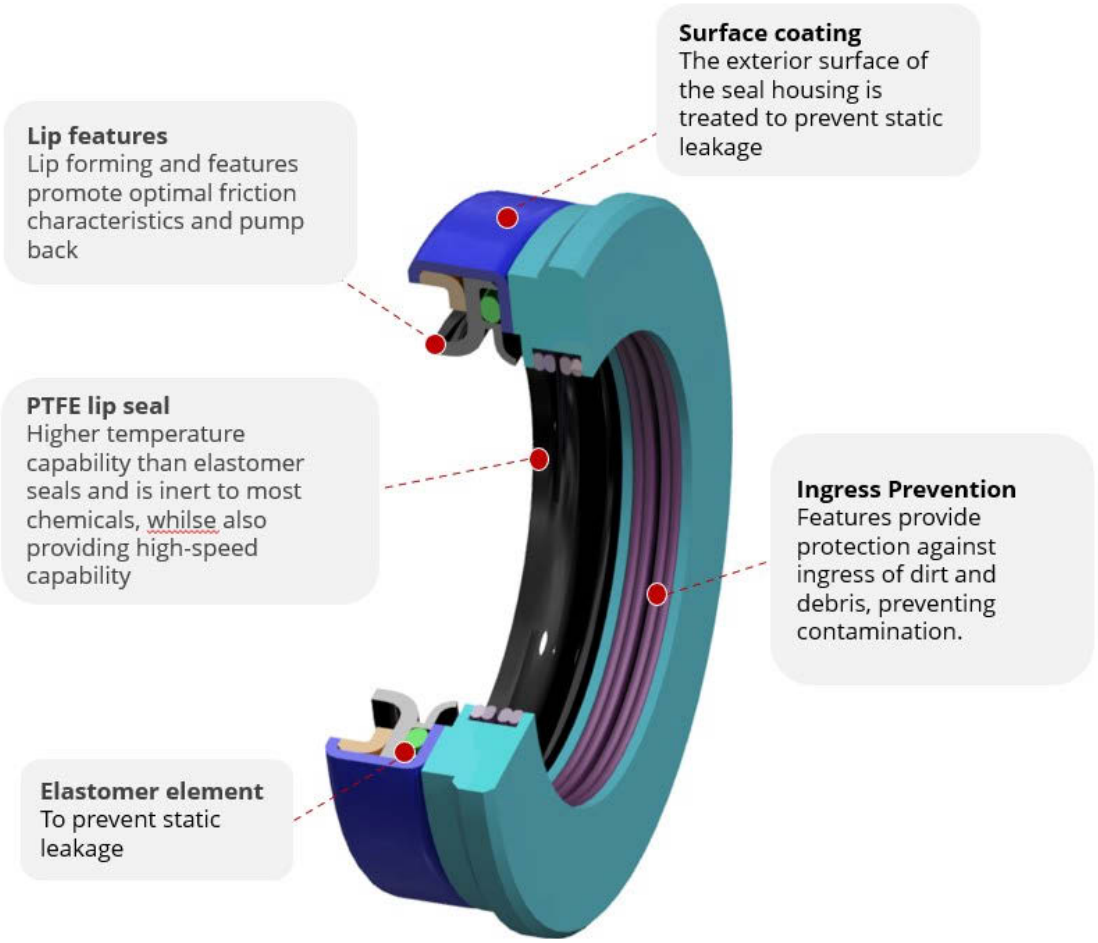
The existing oil-side seal was failing prematurely leading to:

- Dirt ingress and shaft wear
- Oil leakage
- Cross contamination risks
- Unscheduled maintenance
- Engine Damage

Protect your aftermarket with OEM branded, bespoke sealing solutions

The Solution

A dual sealing solution was developed, comprising a custom-engineered PTFE rotary shaft seal operating in tandem with a primary protective labyrinth seal, housed within a dedicated assembly. In close collaboration with the OEM's engineering team, FTL delivered a tailored solution designed to meet the exacting demands of high-horsepower engine platforms. The design incorporates several key features, including:



FTL operate around the Globe, supporting your worldwide projects

Addtional Value Adds

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

Benefit

Validation: Passed all test procedures

Long-term Reliability: No reported issues since implementation

OEM partnership: FTL are now the sole approved supply partner for this application.

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

Operational Efficiency: Over 250,000 seals delivered with no failures or delivery issues

Strategic Impact

As global power demands surge, driven by the rapid expansion of data centers and other critical infrastructure, sealing performance remains essential for system integrity, fluid compatibility, and long-term reliability. This project highlights FTL's ability to deliver robust PTFE sealing solutions for high-horsepower engines serving power generation and energy sectors.

As industries such as mining, marine, and oil & gas transition toward alternative fuels and lower-emission technologies, FTL's expertise ensures readiness for both current and future sustainability goals.