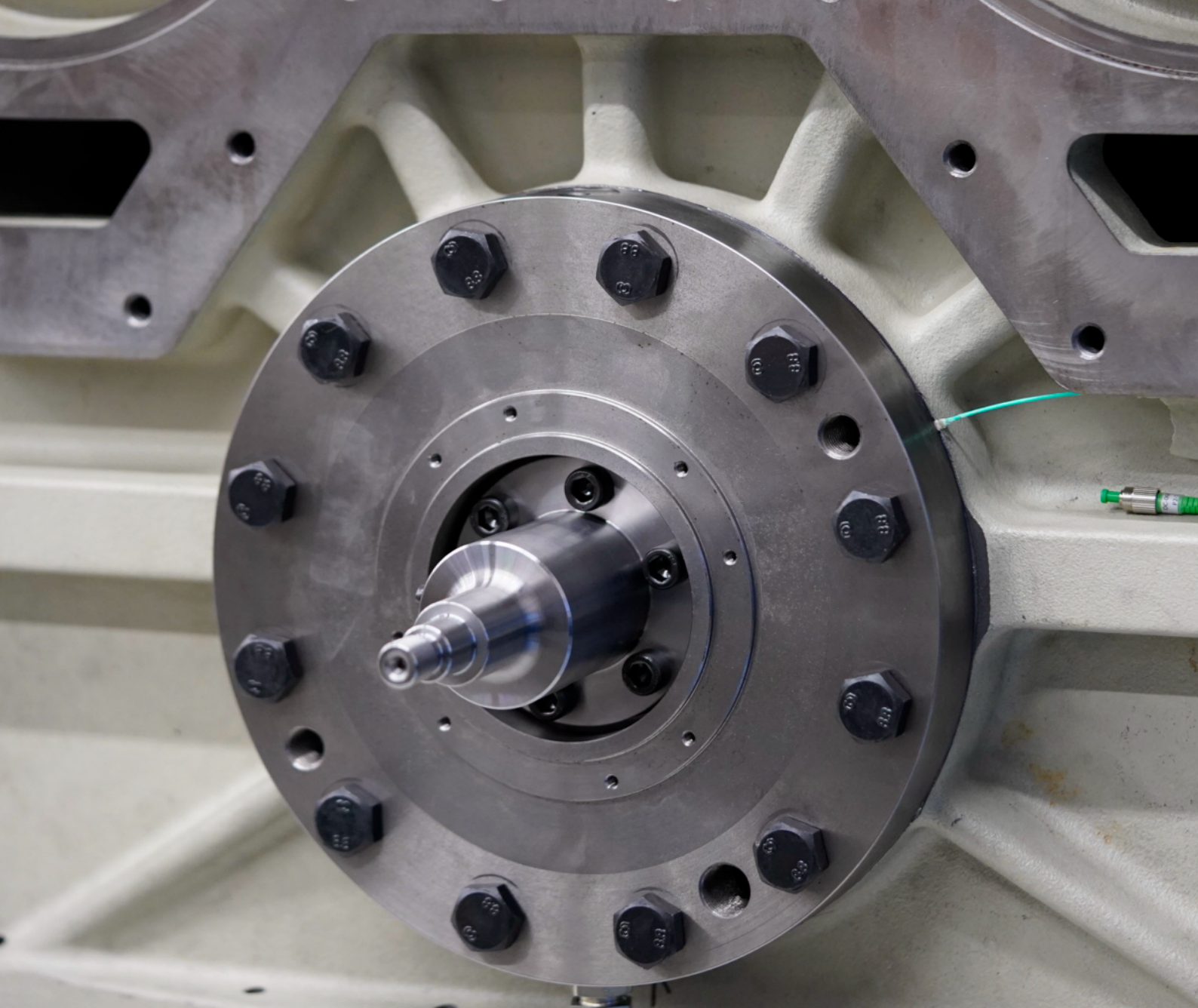




SENSING  360

LumiSens Propulsion

Direct propulsion shaft Torque
and Thrust measurements

The Sensing360 Lumisens Propulsion



Fleet Operators

Fuel is 60% of your OPEX. Yet most vessels have no idea what their propeller is actually doing. Measure torque and thrust directly at the shaft, inside the gearbox.. Real data your crew can act on every trip.

The result: 10–12% fuel savings per voyage, smarter hull and propeller maintenance timing, and CII compliance data. No batteries. No external hardware. No overhead.



OEMs

LumiSens Propulsion integrates directly into the gearbox. Protected, battery-free, measuring at the propeller shaft from day one. Clean to build, invisible for the operator to maintain.

Vessels equipped with Torque and Thrust can save 10–12% fuel per trip. That's the performance spec remembered.



Workboat Operators

Add-on sensors don't survive your world for long. Clamped hardware, dead batteries, exposed components in a harsh engine room.

LumiSens Propulsion sits inside the gearbox. Protected from the environment, powered without batteries, measuring torque and thrust directly at the shaft. It works when you need it, which is every trip.

Why Choose the Sensing360 Solution?

Direct propulsion shaft Torque and Thrust: Measuring direct on the bearings the exact loads, gives the reliable direct torque and thrust measurement

Capture dynamic events: We measure with high frequency, able to detect dynamic events and the effect on your driveline.

Multiple parameters sensed: Translate bearing loads to Torque, Thrust, but also temperature, rotation speed, shaft alignment and bearing condition.

Direct active alignment data: As we measure the exact load distribution, misalignment or unbalance is directly spotted by not uniform loads.

Driveline failure detection: With exact operation data together with vibration data, upcoming failures can be detect months in advance.

Gearbox-integrated: measurement happens direct at the bearing holding the shaft, inside the gearbox. No clamp-on hardware bolted to an intermediate shaft after the thrust bearing. You're measuring where it actually matters.

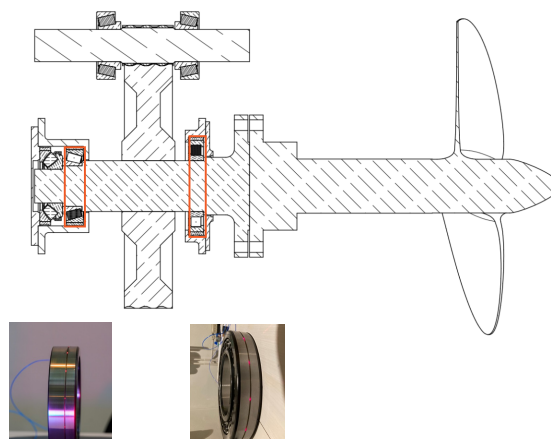
No batteries: Zero maintenance overhead. LumiSens Propulsion is powered through the gearbox. Set it and forget it.

More robust: protected inside the gearbox housing rather than exposed to the engine room environment. Less vibration risk, no mounting ring to worry about, no external moving parts.

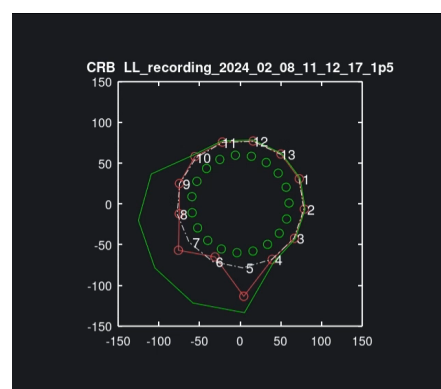
10–12% fuel savings per trip: not a theoretical maximum. A real, bankable number per voyage

How does it work?

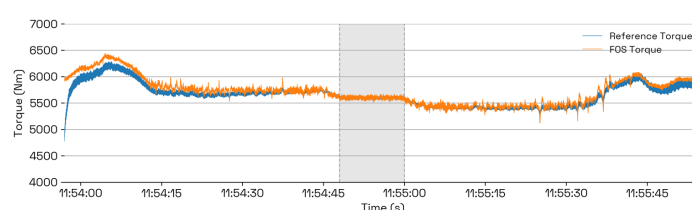
We instrument the bearings on the propulsion shaft. In general SRB, TRB and CRB bearings.



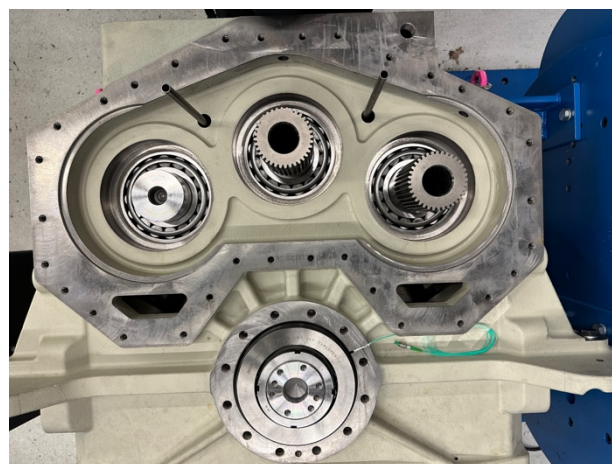
Measuring the exact bearing loads (Axial and Radial) loads

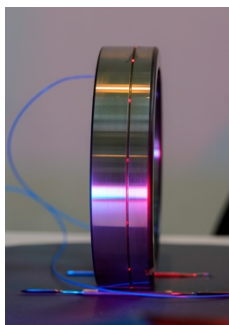


Axial load directly relates to the thrust and propeller condition, while the radial loads directly related to torque



Proven and integrated with respected gearbox OEMs in Marine

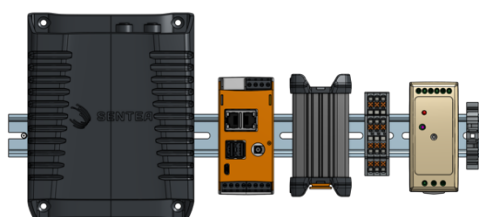




Fiber Optic Sensor Bearing Sleeve



Stand-alone Solution



Top-box Solution

LumiSens Propulsion

The system includes a Fiber Optical Sensor Bearing Sleeves (2-4 depending on the gearbox design) and a data processing module.

The Fiber Optical Sensor Bearing Sleeve is robust to environmental influences.

The Data Processing Unit provides a local data log or an optional local data feed. Additionally, frequency data is periodically captured for the purpose of condition monitoring.

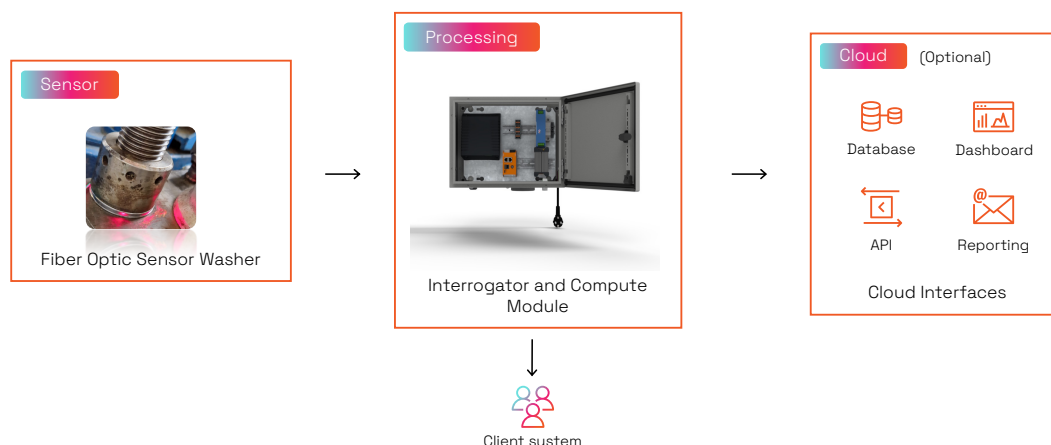
The Data Processing Unit is available as a cabinet mounted stand-alone solution with 230 V power supply or a top-box solution, requiring a 24 V DC supply.

Features

- Fiber optic sensor washer
- Local logging
- Robust to environmental influences
- Remote connectivity
- Stand-alone or top-box solution

Optional cloud connectivity provides:

- Cloud portal
- Dashboard
- API
- Reporting



Specification subject to change - The product's characteristics are exclusively governed by the data of the respective user manual
Sensing360 B.V. - Vondellaan 106 3521 GH Utrecht, NL - www.sensing360.com

Common features

Optical Bearing Sleeve	
Number of FBGs	10-12
Connector	LC/APC
Dimensions	Bearings up to 300 mm outer diameter
Operating temperature	-25 °C to +150 °C
Local logging	
Data	Strain ¹
Protocol	Ethernet ²
Sampling interval	Up to 25kHz
Interrogator	
Type	Sentea DM-4120
Channels	4 ³ - up to 4 bearings
Data processing unit	
Type	RevPi Connect 5
Connectivity	
Antenna type	SMA connector

Top-box version

Cabinet	
Mounting	DIN-rail NS 35/ 7,5 ZN
Dimensions	500 mm × 150 mm × 150 mm
Power supply	24 V DC
Operating temperature	-25 °C to +55 °C between 5% and 95% humidity (no condensation)

Stand-alone version

Cabinet	
Mounting	Wall mounting
Protection	IP65
Power supply	Multi-voltage power supply 100 V to 240 V / 50 Hz to 60 Hz / 50 W
Dimensions	380 mm × 380 mm × 210 mm
Operating temperature	-25 °C to +55 °C between 5% and 95% humidity (no condensation)

¹ Other processed data feeds on request

² Custom data feeds on request

³ Systems with more channels on request

Specifications

Performance	
Capacities	F_{axial} , F_{radial} , Load angle, Speed, Temperature, Vibration (FTT, Order)
Load rang	$100 < C/P > 0,2$ all load ranges bearing possible
Accuracy	1% Full Spectrum
Repeatability	1 %
Speed sensing	50 – 3600 rpm $\pm$
Temperature sensing	0 – 150 °C $\pm$ 0.5%
Loaded zone range	0-360° - 1° resolution possible
Mechanical	
Bearing sizes	20 – 300 mm outer ring diameter
Sleeve thickness	<u>Add-on</u> : 2-5 mm thickness – reduced ISO bearing size <u>Integrated</u> : 2 mm thickness – same ISO bearing size
Bearing types	ACBB, DGBB, SRB, CRB, TRB, CARB, SRTB, NRB,
Material	Standard >53 HRC optional to 60 HRC
Integration position	(1) Add to bearing as sleeve (2) Reduced bearing outer ring (integrated sleeve) (3) In housing (integrated in application)
Fit	Tolerance sleeve equal to bearing in application – all fits possible
Interface	
Output	Modbus (TCP/IP), Ethernet
Sample rate	Up to 24 kHz
API	Yes, Dtbdb(API, Optimized GUI)
Supply	24 Vdc or 220 Vac
Environment	
Protection	Up to IP67
Lubrication	All bearing oils and greases
Temperature range	-50 - 150°C
Safety	ATEX zone 0