

**WHEN RELIABILITY
IS KEY**



**EXTREME
ENVIRONMENTS
REQUIRE
RELIABLE
PRODUCTS**





THE MARINE ENVIRONMENT IS UNPREDICTABLE, EXTREME AND EXPOSES USERS AND PRODUCTS TO UNCERTAIN CIRCUMSTANCES

Andreas Isaksson, Managing Director – Spectre Marine AB

There are several examples of where **failure** of the boats propulsion system has had extreme consequences for the user. In bad weather when propulsion is needed to fend off waves; when you are far from safe haven with no opportunity to call for help, or when others depend on your arrival.

The reliability of the propulsion system can be the difference between **life and death**, yours or someone else's. Few products in the marine market are produced to continually function when exposed to punishing environments. The use of propulsion systems aimed at high volume markets such as pleasure marine applications can have **disastrous** consequences when assembled on heavy-duty products and used in demanding environments.

Pleasure market high volume products are built with a different design criteria in mind, and can sometimes prove not to be as reliable as those designed specifically for more demanding applications. Their design is such that they are usually built to withstand 10 percent full throttle during a driving cycle and not to run more than 50 hours between services. Such use is common in normal pleasure boat applications, but few customers with heavy duty applications can use these products in this way. Products designed and built for commercial type operations need to run hard and long hours. Users must be able to trust and rely on their products at all times. Failure is not an option - **They must not break.**

“Few products in the marine market are produced to continually function when exposed to punishing environments.”



ABOUT ANDREAS

Andreas Isaksson is specialised in planning and conducting custom made training programs for high-speed navigation. With a background from training CB 90 Crews in Swedish SF, Norwegian SF, Dutch SF, Faeroe Island SAR, US Amphibious forces, US Coast Guard, Brunei RPK, Singapore SF, Romania SF, Malaysian SF and Indonesia SF his experience is drawn from a global arena.

OXE DIESEL OUTBOARD ENGINE

OXE is the worlds first high performance diesel outboard setting new standards for durability, fuel-efficiency and low emissions for an outboard engine.

The OXE Diesel Outboard fulfills the NATO "single-fuel" directive and is an ideal solution for naval, military, rescue and commercial applications.

AVAILABILITY

Order of pre-series production 2014

Serial pre-production starts mid 2015

Main Benefits

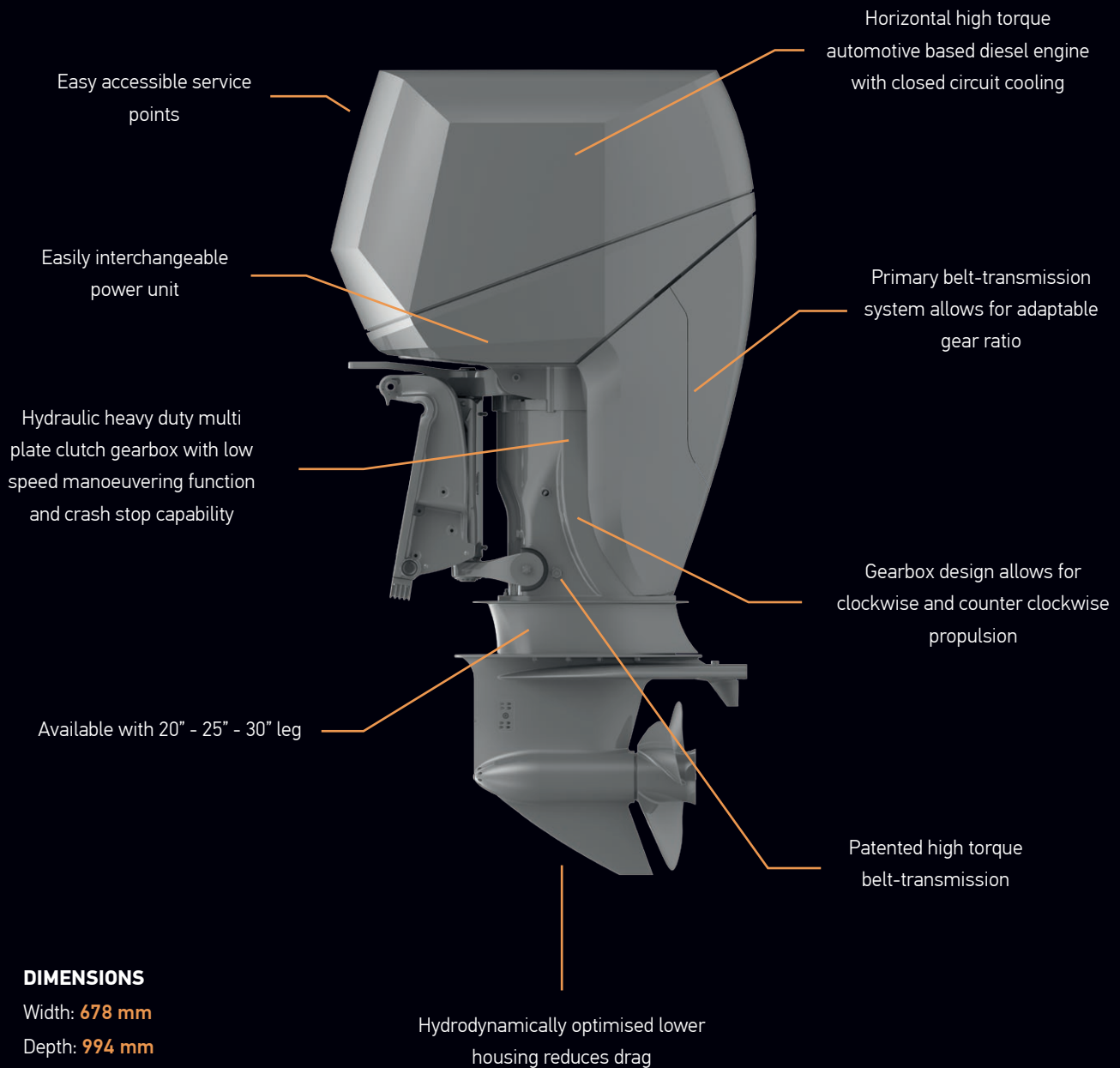
- Patented high torque belt-transmission
- Use of horizontal automotive based diesel engine
- Robust modular design
- Low drag coefficient of propulsion housing
- Directly replaceable with other outboards

The diesel engine is a proven robust design marinised in cooperation with the GM Group.

The compact design of the lower housing enables high efficiency and high speed capability

General data – OXE Diesel

Engine type:	Diesel, L4
Displacement:	2.0 L
Air system:	Turbocharged, intercooled
Torque:	350 NM
Durability	Designed to withstand 10 g
Power:	200 HP
Fuel:	Flexible: Diesel
Weight:	280 - 320 kg (depending on option)
Alternator output:	Up to 220 Amp
Shaft length:	20, 25 or 30"



DIMENSIONS

Width: **678 mm**

Depth: **994 mm**

Height (25" leg): **1880 mm**

SIGNIFICANT OPERATIONAL BENEFITS

The combined benefits of the efficient modern Diesel Engine and the robust transmission provide unique benefits for durability and increased range of operation.

Optimised for reducing life cycle cost for heavy-duty and commercial usage.

SERVICE INTERVAL:

200 h

OVERHAUL INTERVAL IN HEAVY-DUTY COMMERCIAL USE:

2000 h

ADVANTAGES

DIESEL

Diesel provides higher efficiency and torque, which give enhanced acceleration and lower fuel consumption. For a marine unit this is advantageous as it reduces the time to pierce through the planning threshold. The engine runs on EN590, ASTM D 975, NATO F76, F75, F54, Marine distillates DMX, DMA, (JP-5, JP-8, Jet A) fuel which creates high flexibility.

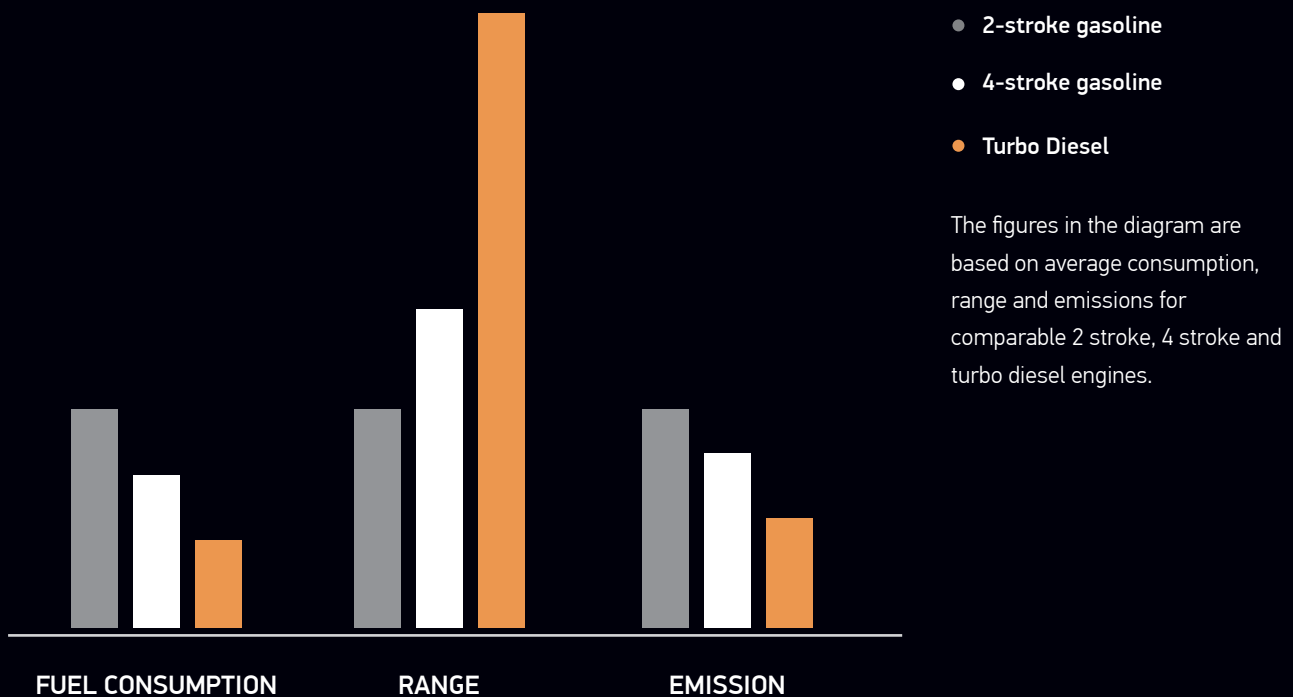
RANGE

The reduction in fuel consumption and the hydrodynamically optimised lower housing increases range, contributes towards greater distances to be covered safely and allows for extended operational time between refueling.

EMISSIONS

The use of highly refined automotive based engine technology provides for industry leading emission levels. The emission levels comply with: TIER 3, IMO, RCD, EPA.

COMPARISON



ENDURANCE

The OXE Diesel engine is designed to last. Longer service intervals mean lower maintenance costs and longer operation times. Longer TBO times means life cycle costs are kept at a minimum.

SAFETY

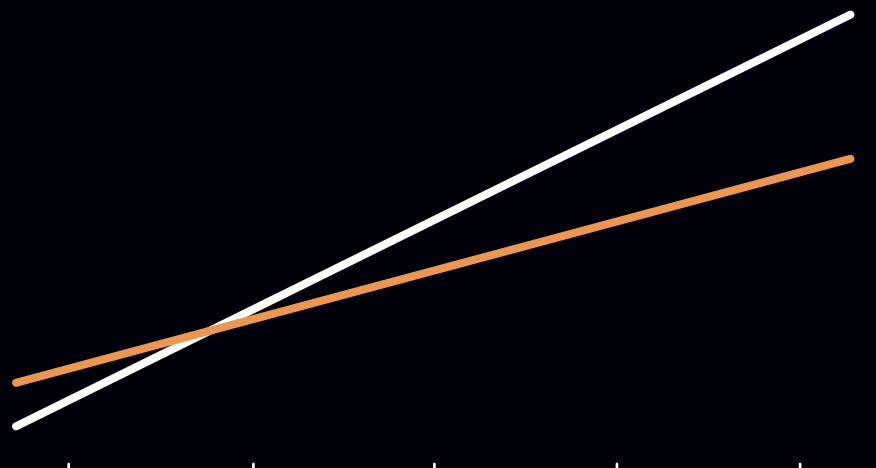
Diesel is a less flammable fuel and therefore safer to work with in hazardous environments. Robust design and crash stop capability leads to safe operation in fierce conditions. The OXE Diesel is designed to be safe in any environment.

MAINTENANCE

Easily accessible service points and a modular design create a user-friendly environment. The reliable and readily available automotive powerhead keeps costs of maintenance and spareparts low. The modular design gives the user opportunity to change parts and maintain the outboard without having to replace the complete unit.

LIFE CYCLE COST

Purchase (0h)	Year 1 (1000h)	Year 2 (2000h)	Year 3 (3000h)	Year 4 (4000h)
------------------	-------------------	-------------------	-------------------	-------------------



- Standard 200 hp gasoline outboard (AVG: 40 (2\$) L/h + maintenance 1\$/h)
- OXE Diesel 200 hp outboard (AVG: 20 (2\$) L/h + maintenance 0.75\$/h)

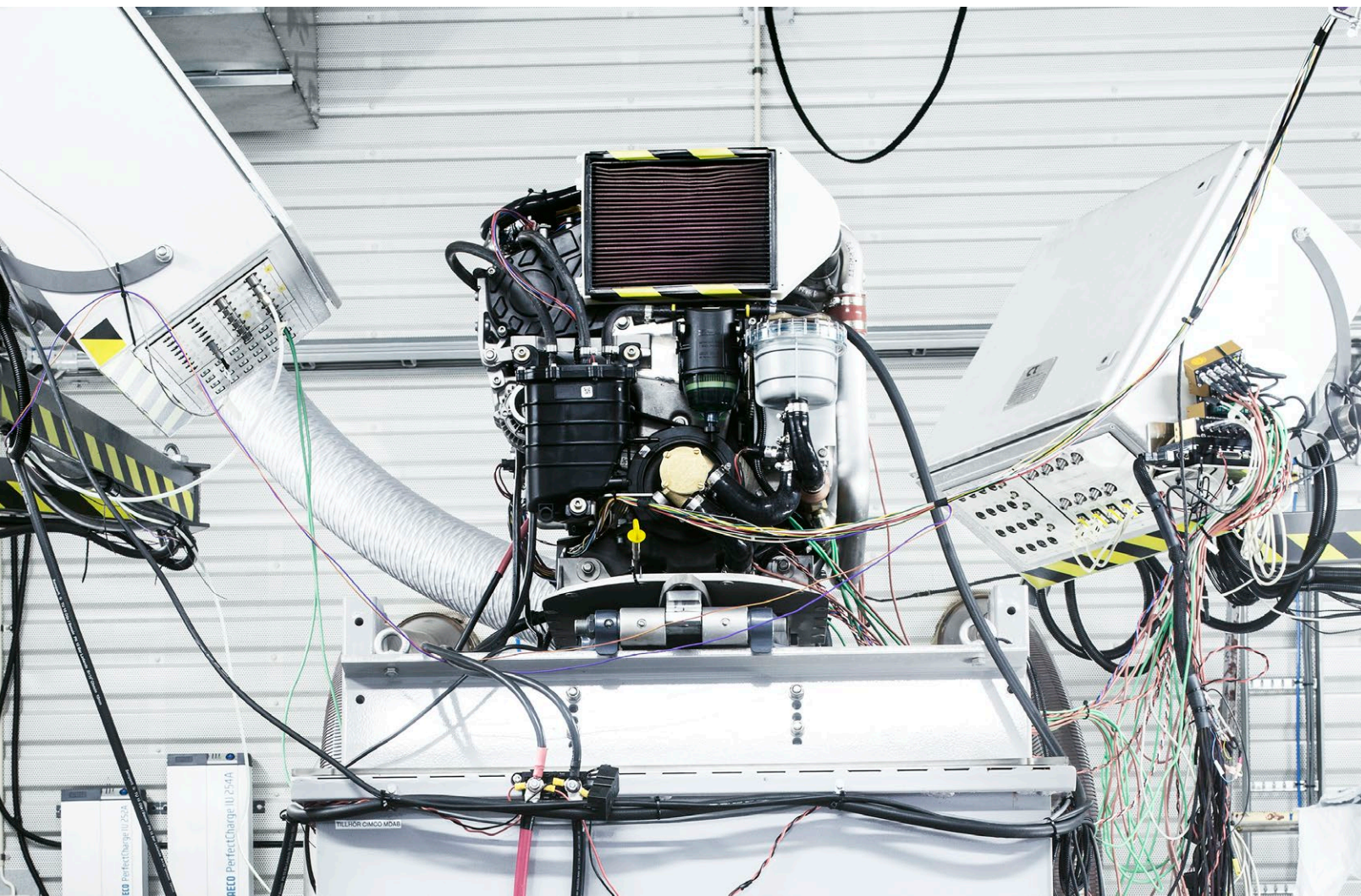
Break even period with 2\$/l fuel 0.25\$/h maintenance difference = 900 hours

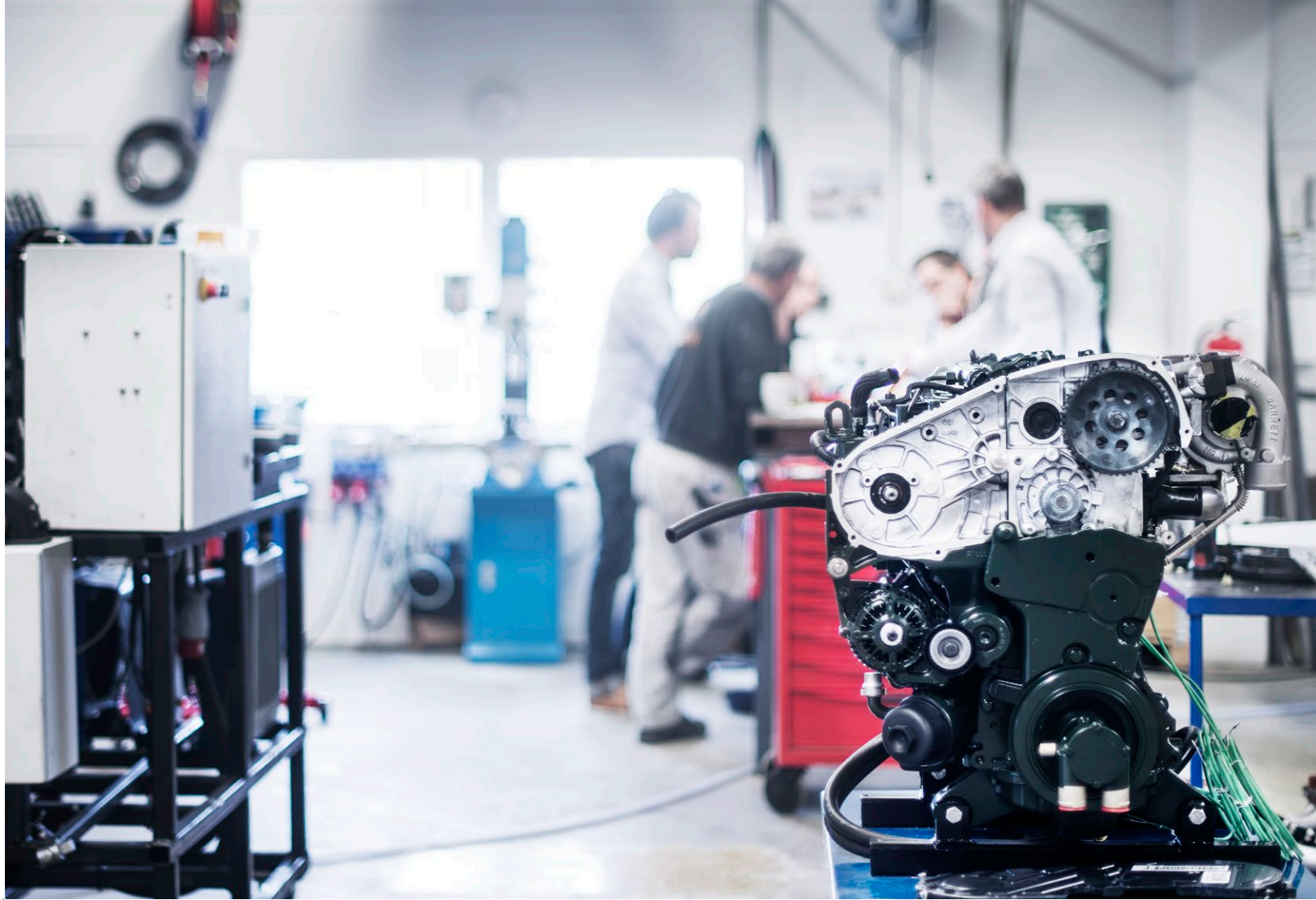
OXE REPRESENTS RELIABILITY, STRENGTH, AND ENDURANCE

OXE is the Swedish name for an OX. We wanted a name that reflects the fundamental concepts from which this product has been developed - **reliability**, **strength**, and **endurance** – all significant attributes of an OX.

Using OXE as the product name also pays tribute to the **hard work**, **stubbornness** and **relentless effort** the team has spent to fulfil the demands of the heavy-duty marine market, transferring them into a product worthy of trust.

The OXE Diesel is designed to withstand the punishing conditions experienced in marine environments. Stress tests on hulls from the Swedish coast guard have shown that engines in their heavy-duty high-speed boats are regularly exposed to forces of up to 7 g. In order to be reliable, products must be able to **withstand** and **endure** these kind of forces. The modular design and robust construction of the OXE Diesel enables it to endure forces of up to 10 g, one of the requirements needed to comply with the SOLAS regulations.





Christer Flodman, Technical Manager

We started this project with a mission to design the first generation of high output diesel outboards, our keywords were **durability**, **endurance** and **performance**. These words are now embedded within this product.

The patented technology has enabled us to design a robust drive unit that will effectively transfer high torque diesel power. Combined with a modular layout and proven diesel technology, this ensures for an extremely robust heavy-duty product.

From decades of experience within diesel engines and drivetrains the team has strived for quality and state-of-the-art design. This, together with leading Swedish manufacturers from the Marine, Automotive and Aeronautical industry, has given us a winning concept.

EXTREME ENVIRONMENTS REQUIRE **RELIABLE** PRODUCTS

ENDURING PRODUCTS THAT DO NOT BREAK

PRODUCTS THAT CAN BE **TRUSTED**

TRUSTED WITH YOUR LIFE

www.oxe-diesel.com

CIMCO MARINE DIESEL AB

info@oxe-diesel.com

Metallgatan 19a Engelholm,
SE-262 72 Sweden

