Everllence

Four-stroke marine systems

LNG shipping

Cost-cutting dual fuel solutions

Moving big things to zer

Everllence is the world's leading provider of large-bore engines, turbomachinery, and integrated power systems. 250 years of experience in advanced engineering has prepared us well for our biggest challenge yet: to provide the technical solutions that will drive the global economy into a new carbon-neutral era.

The industries we serve are crucial for the world economy. Most of them are also hard to decarbonize. By providing sustainable solutions for marine transport, power generation, and industrial engineering we boost business and help to bring the world to net zero.

In the competitive field of LNG shipping, with its fluctuating fuel prices, we offer newbuild dual fuel engines and retrofits that enable alternative fuels. Our cost-effective propulsion systems comply with all emission legislation and meet strict safety requirements.

Versatile engines for complex tasks

Getting a good return on your investment
Although the market for LNG keeps on growing, building a vessel for the LNG supply industry is a major investment in complex technology that has to be amortized with a maximum of yearly operating hours. To future-proof your investment you need engines that can adapt to new environmental regulations and unpredictable fuel costs.

Success factors
Maritime transport of LNG has proven to be safe thanks to very high safety standards. However, LNG is highly valuable freight and delivery delays are costly; this means that cargo tank management is essential. The engines have to be capable of coping with different boil-off gas (BOG) qualities and quantities, in line with charter requirements.

Flexible propulsion solutions
Different LNG shipping applications have comparable requirements with a different technical emphasis: Reliability, flexibility, capital expenditures (CAPEX) and operating expenses (OPEX), emission regulations, and the energy efficiency design index (EEDI). Our new-build dual fuel propulsion solutions can be tailored to meet every need. Our expertise in retrofits extends the lifecycle of your vessels and avoids stranded assets.

Four-stroke engines for LNG vessels

LNG carriers		08 – 11
L35/44DF CD GenSet		3,360 – 5,040 kW
L35/44DF		3,060 – 5,300 kW
L51/60DF High efficiency		6,300 – 9,450 kW
L51/60DF High power		6,900 – 10,350 kW
L49/60DF		7,800 – 13,000 kW
V51/60DF High power		13,800 – 16,100 kW
V51/60DF High efficiency		12,600 – 16,800 kW
V49/60DF		15,600 – 18,200 kW

FSRU		12 – 15
L35/44DF		3,060 – 5,300 kW
L51/60DF High efficiency		6,300 – 9,450 kW
L51/60DF High power		6,900 – 10,350 kW
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V51/60DF High efficiency		12,600 – 16,800 kW
V49/60DF		15,600 – 18,200 kW

LNG feeder and bunker vessels		16 – 19
L23/30DF GenSet		625 – 1,320 kW
L28/32DF GenSet		1,050 – 1,890 kW
L35/44DF		3,060 – 5,300 kW
L51/60DF High efficiency		6,300 – 9,450 kW
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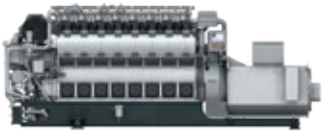
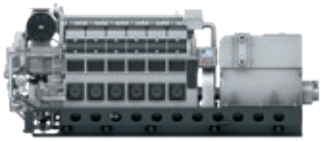


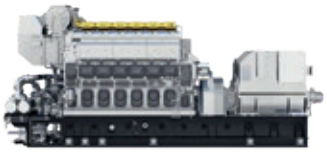
23/30DF
GenSet

625 – 1,320 kW



28/32DF
GenSet

1,050 – 1,890 kW

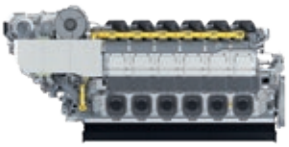


35/44DF CD
GenSet

3,360 – 5,040 kW

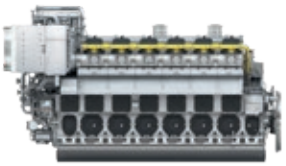
35/44DF
Propulsion

3,060 – 5,300 kW



49/60DF
Propulsion

7,800 – 13,000 kW
15,600 – 18,200 kW



51/60DF
Propulsion

High efficiency
6,300 – 9,450 kW
12,600 – 16,800 kW
High power
6,900 – 10,350 kW
13,800 – 16,100 kW

LNG carriers

LNG carriers have to deliver highly valuable freight on time, which means they require operational flexibility. Sailing through environmentally sensitive waters across the globe demands low emissions, and the operational safety of the propulsion system is paramount.

Future-proof flexibility

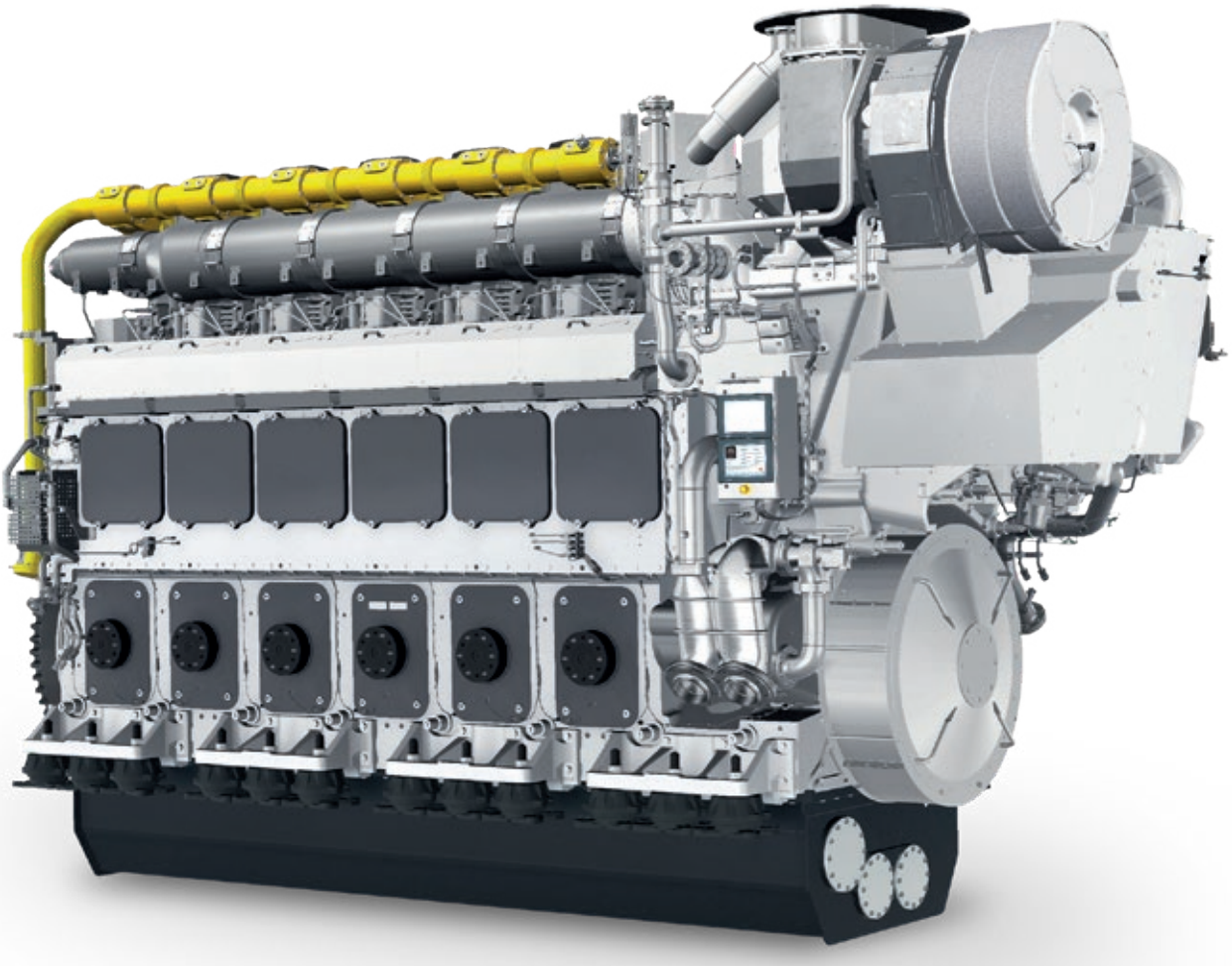
Navigating operational, contractual, and environmental challenges

Modern LNG tankers need highly reliable propulsion systems and service support that can ensure constant engine availability. Operational challenges include the fulfillment of all safety norms (IGF, IGC Codes) and high load flexibility. Careful management is necessary to maintain correct pressure in the cargo tanks and to handle the boil-off gas. Furthermore, the engines have to cope with varying power demands.

The new IMO regulations impose tough limits on nitrogen oxide (NO_x) and sulfur oxide (SO_x) emissions. In the future, even stricter standards will apply in Emission Control Areas (ECAs). In order to deliver their very valuable freight on time and cost-efficiently, the owners and operators of LNG carriers also have to factor in the fluctuating costs of HFO and LNG as fuels. Our multi-fuel engines and propulsion systems with fuel flexibility meet all these challenges.

49/60DF

Designed to adapt



With its high power density, the 49/60DF has already set new benchmarks for efficiency in both gas and liquid fuel consumption. What makes it even more attractive is its in-built ability to adapt to future conditions, including future fuels – the 49/60DF is already methanol-ready. Future compliance with environmental regulations is assured by its fuel flexibility and adaptable technologies. The new Dual-Fuel Electric+ (DFE+) concept adds operational flexibility that reduces carbon footprints as well as fuel bills.

Benefits

New benchmarks in efficiency
171.0 g/kWh liquid fuel
consumption at 85 % MCR*
6,990 kJ/kWh gas w
consumption at 85 % MCR*
* Higher values apply for 8L and 10L

Long-term CO_2 emissions compliance
Thanks to benchmark efficiency, low methane emissions and fuel flexibility

Ready for further digitalization
With next-generation engine automation

Compact design
For increased power density

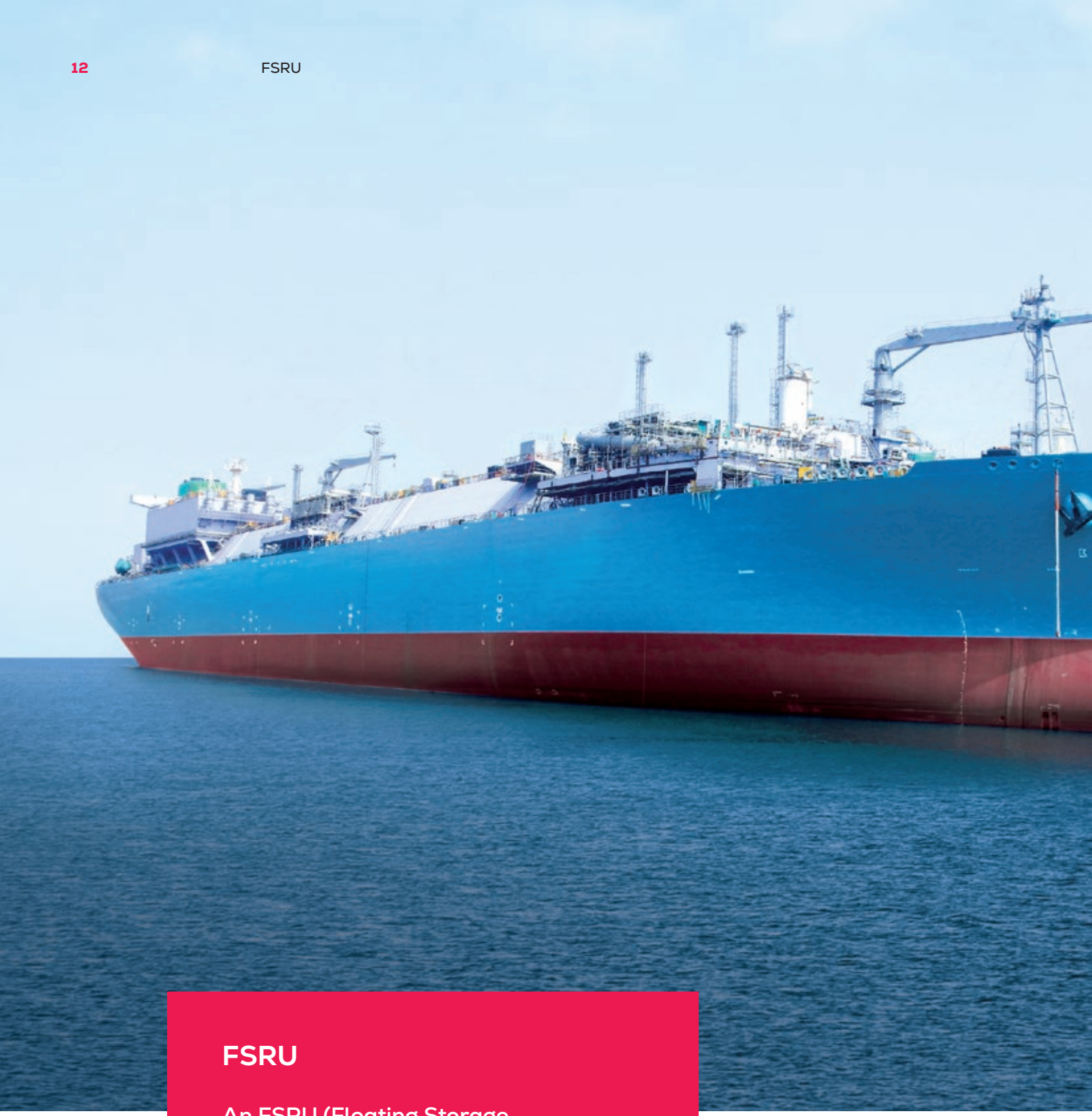
Alternative paths for emission compliance

Low methane slip and benchmark efficiency ensure vessels are emissions-compliant until approximately 2035. Solutions in response to more stringent regulations are easy to implement and include retrofittable exhaust gas after-treatment systems, replacing natural gas with bio gas or synthetic natural gas (SNG), and future fuels such as green methanol.

SaCoS 5000 and ACC 2.0
The 49/60DF features the new SaCoS 5000 engine automation system and the new Advanced Combustion Control ACC 2.0. Both features future proof your vessel for the digital age. While ACC 2.0 is essential for improved efficiency and robust in-field performance, the new SaCoS offers enhanced remote support features and options to attain the highest levels of cybersecurity.

Dual-Fuel Electric+ (DFE+)
The DFE+ concept uses ABB's Dynamic AC (DAC) technology and delivers the operational flexibility shipowners need to reduce carbon footprints as well as fuel bills for liquefied natural gas (LNG) carriers.

Further power solutions
35/44DF GenSet
35/44DF CD GenSet
35/44DF
51/60DF



FSRU

An FSRU (Floating Storage Regasification Unit) is a ship-based facility that receives LNG from LNG carriers and converts it back into gas for delivery to shore-based pipelines. It is a clever alternative to building a regasification system on land and thus a key element in the LNG supply chain.

The floating link

© MOL

Working with clean power

An FSRU is a promising business opportunity for owners and operators, but it does involve many technical, contractual, and environmental issues. The FSRU has to comply with coastal environmental regulations as well as the emission requirements of the ship's flag state. In terms of engine operation, safety comes first. Service support is important for high operational availability.

In terms of engine output, the operation of the regasification equipment usually requires less power than the propulsion. Careful cargo tank management is important to maintain pressure in the cargo tanks and handle the boil-off gas. Our dual fuel solutions make it easy.

LNG feeder and bunker vessels

Low gas prices are increasing the popularity of LNG as a maritime fuel. This, in turn, is driving the demand for feeder and bunker vessels that can efficiently deliver LNG to the ships that use it as fuel.

Enabling the switch to gas

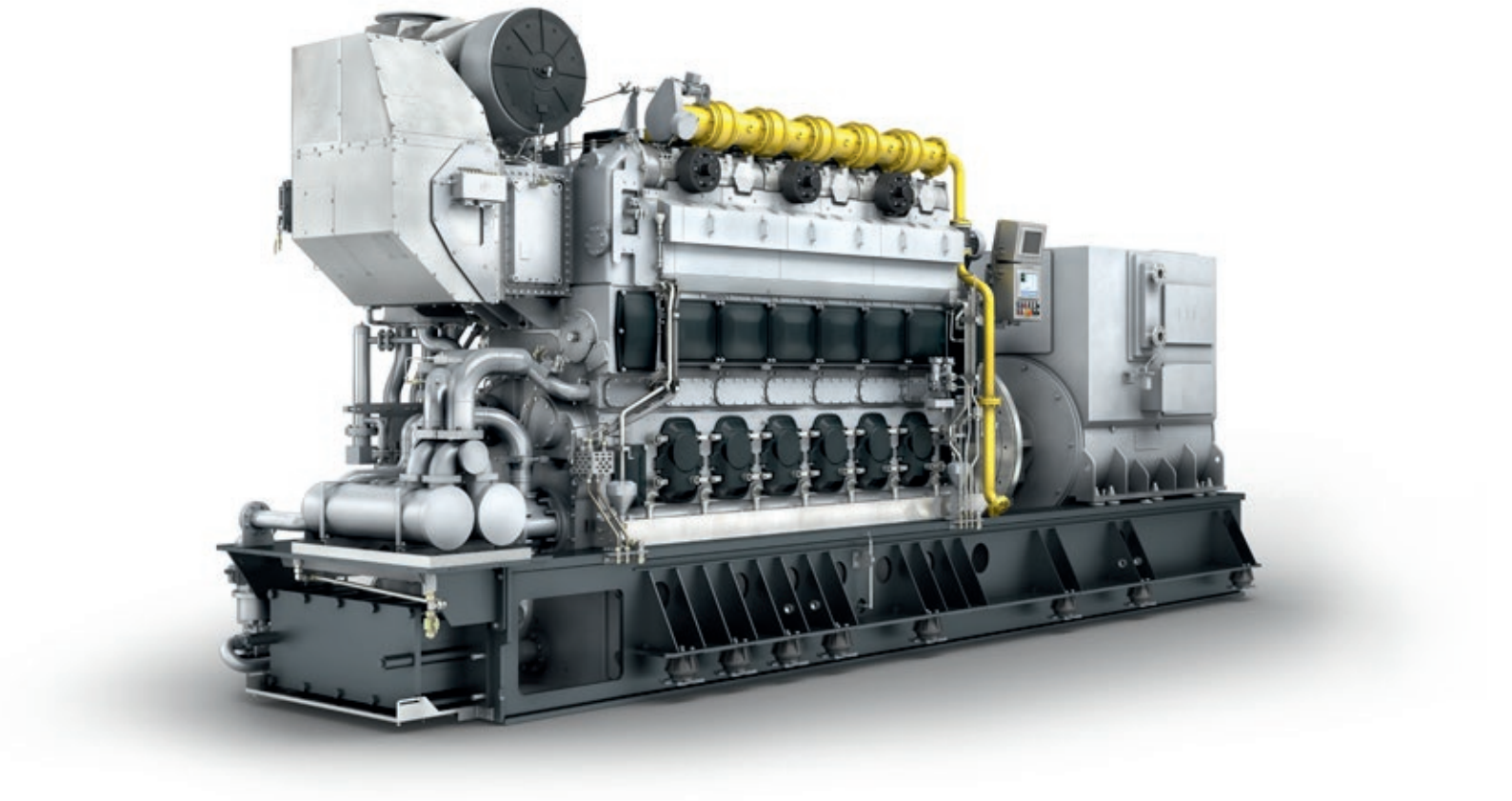
High performance with low consumption

Delivering LNG to marine clients is a challenging operation. Feeders and bunker vessels need high maneuverability to perform safely. They have to be available 365 days a year and must have low overall energy consumption – the less cargo they burn, the better. They should also be suitable for operating in noise-sensitive areas and comply with emissions regulations.

With their outstanding fuel economy, our dual fuel engines offer excellent solutions for operators who are looking for low CAPEX and OPEX and worldwide logistic support.

35/44DF

Lowest emissions, highest output



The 35/44DF allows you to harness all the benefits of dual fuel flexibility. It is ideal for mechanical and electric propulsion, and auxiliary genset applications. In gas mode, it complies fully with IMO Tier III standards. In liquid fuel mode, it fulfills IMO Tier II regulations.

The engine is equipped with a common rail injection system with injection pressures of up to 1,600 bar. With 530 kW/cyl., the engine yields the highest power output in its segment. The robust design is based on the 32/44CR. Its reliable technology reduces daily maintenance and maximizes TBOs while ensuring safe operation in all fuel modes. Its success is demonstrated by the increased vessel resale value.

Benefits

Compliance with IMO Tier II and IMO Tier III standards
No after-treatment needed in gas mode; SCR option for liquid mode

Based on established technology
Design based on proven 32/44CR engine

Full fuel flexibility
HFO, MDO, MGO, and natural gas

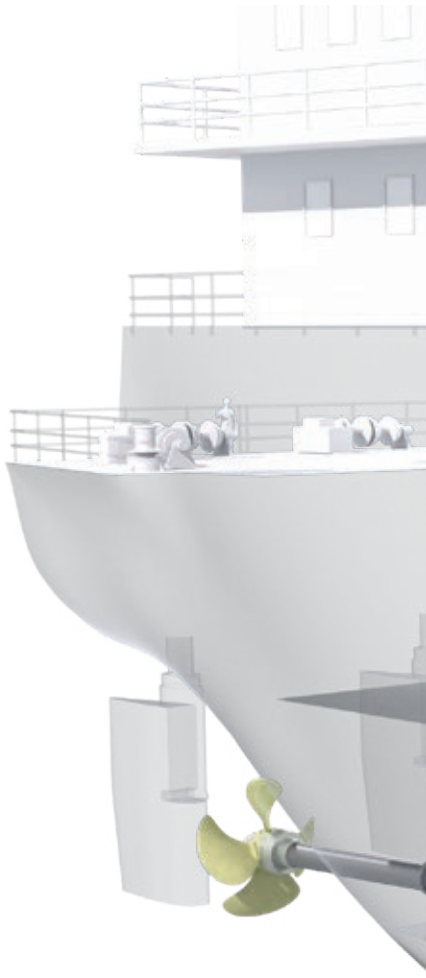
More intelligent ways to save costs

The HyProp Eco is a hybrid solution that results in higher propeller efficiency and lower fuel consumption. The 35/44DF is also available with Cryo fuel gas supply and bunkering equipment as part of the system supply.

SaCoS*one* (safety and control system on engine)
Combines all functions of modern engine management into one complete system. It controls the additional pilot injection system as well as the gas admission system assembly.

Further power solutions
23/30DF GenSet
28/32DF GenSet
51/60DF

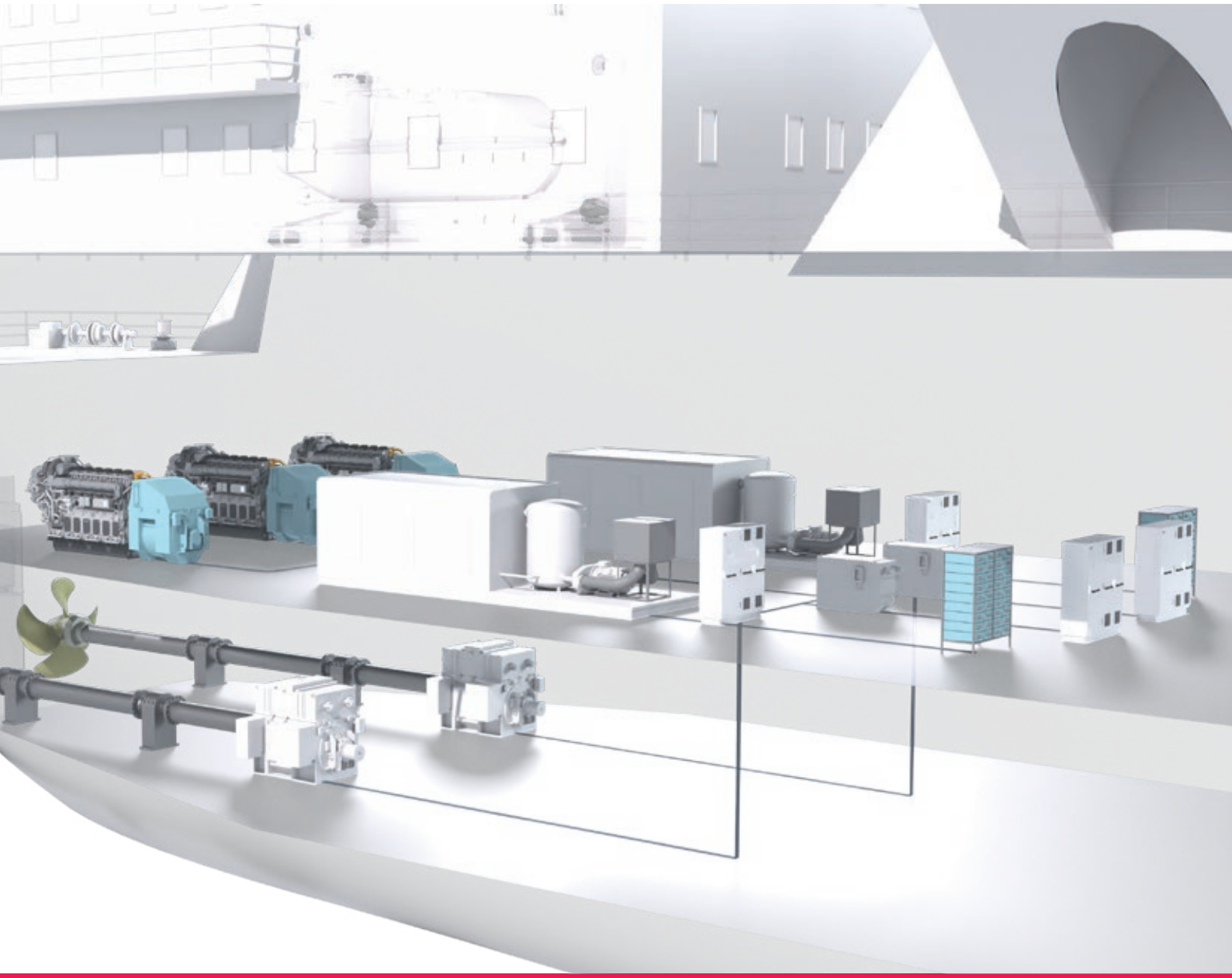
Dual-Fuel Electric+ concept



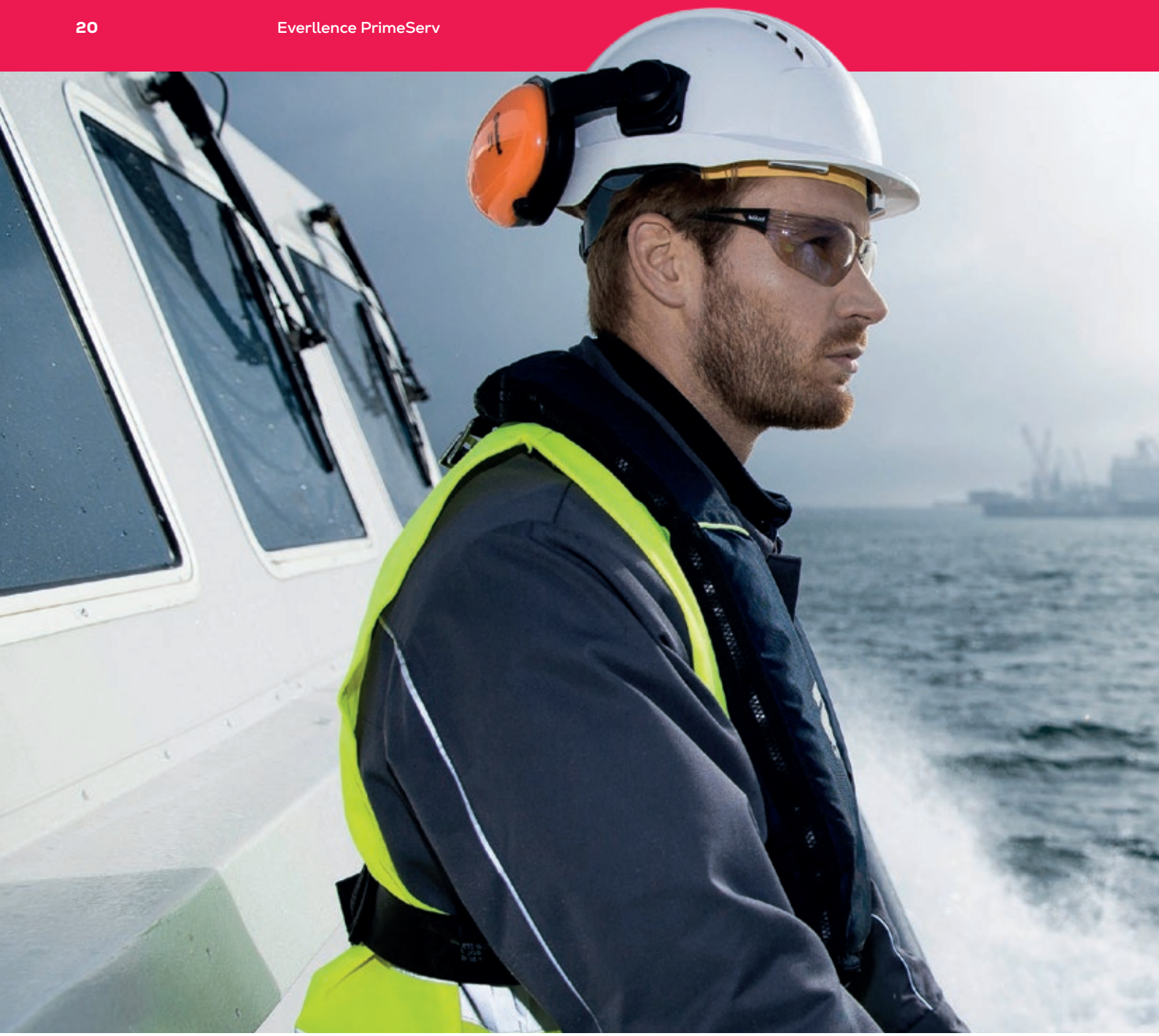
Revolutionary flexibility ensures path to regulation compliance until 2050

Customers want to be able to make the best use of their assets to react quickly to changing market conditions. The new Dual-Fuel Electric+ (DFE+) concept is driven by the demand for efficient and flexible propulsion. It will deliver the technology necessary to reduce the CO_2 footprint and the fuel costs for LNG carriers while providing the certainty of long-term compliance with emission regulations.

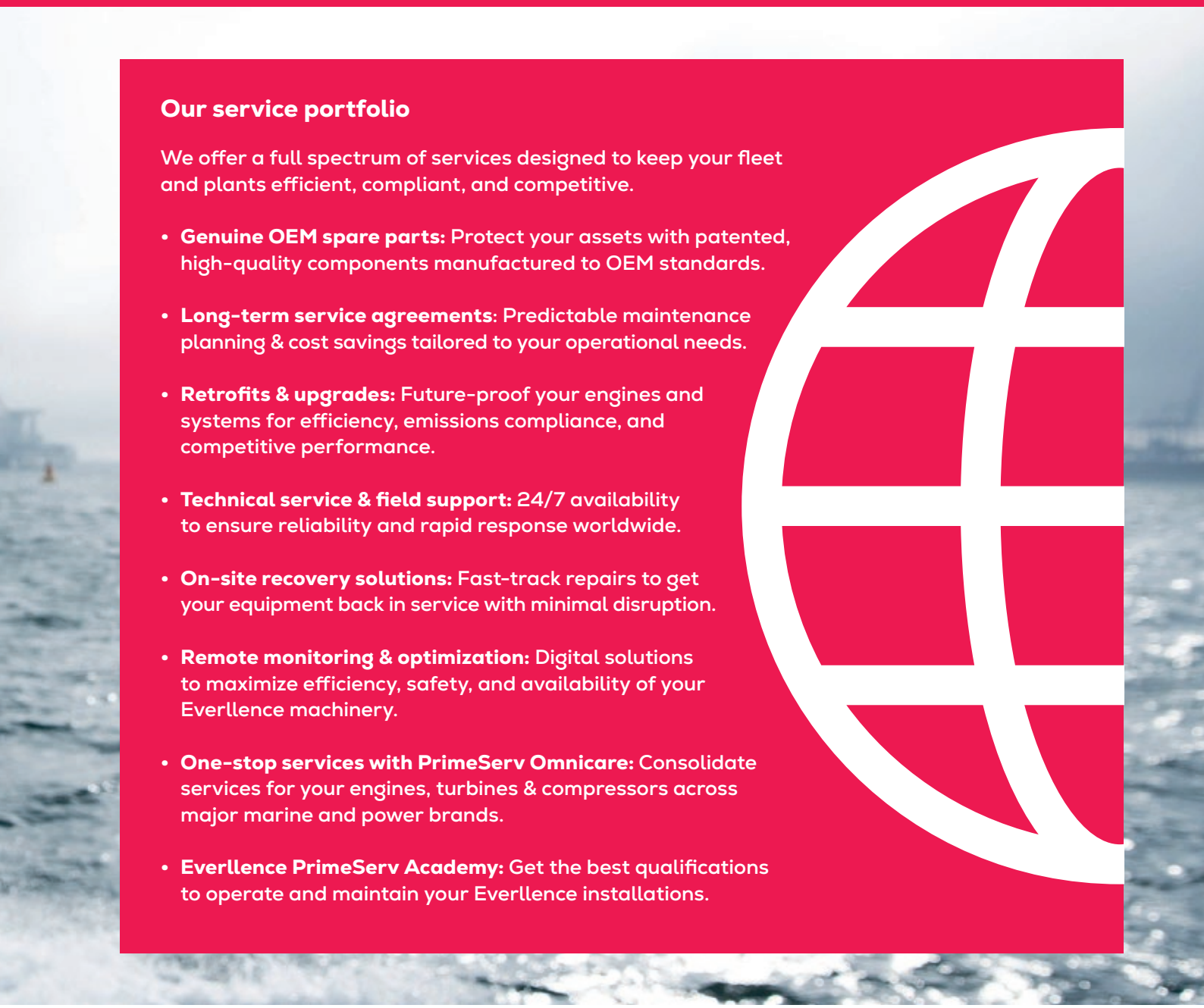
The DFE+ propulsion concept for LNG carriers is based on the new 49/60DF engine and ABB's Dynamic AC (DAC) power distribution and control system. Compared to conventional dual-fuel diesel electric (DFDE) propulsion, which is characterized by engines operating at constant speed over the entire engine load, DFE+ propulsion can operate at variable speed, delivering better efficiency with significant reduction of methane slip over the whole engine map.



Variable-speed applications are well established for liquid-fuel systems up to 10 MW. However, torque requirements and the low efficiency of first-generation dual fuel engines – including limitations in the e-systems design for diesel-electric propulsion systems over 10 MW – prevented the use of variable speed for propulsion systems over 10 MW. ABB's DAC technology enables the operation of propulsion systems above 10 MW at variable speed with all the accompanying benefits. In combination with the second-generation, high-efficiency 49/60DF engine, with Air Lubrication System interface (ALSi) as an add-on, this DFE+ concept provides customers with next-level efficiency and flexibility.



From dock to deep sea and on any site – your trusted service partner



Our service portfolio

We offer a full spectrum of services designed to keep your fleet and plants efficient, compliant, and competitive.

- **Genuine OEM spare parts:** Protect your assets with patented, high-quality components manufactured to OEM standards.
- **Long-term service agreements**: Predictable maintenance planning & cost savings tailored to your operational needs.
- **Retrofits & upgrades:** Future-proof your engines and systems for efficiency, emissions compliance, and competitive performance.
- **Technical service & field support:** 24/7 availability to ensure reliability and rapid response worldwide.
- **On-site recovery solutions:** Fast-track repairs to get your equipment back in service with minimal disruption.
- **Remote monitoring & optimization:** Digital solutions to maximize efficiency, safety, and availability of your Everllence machinery.
- **One-stop services with PrimeServ Omnicare:** Consolidate services for your engines, turbines & compressors across major marine and power brands.
- **Everllence PrimeServ Academy:** Get the best qualifications to operate and maintain your Everllence installations.

Our global service network ensures fast response, expert support and maximum efficiency for your engines and systems – helping you stay ahead with reliability you can trust.

We offer comprehensive service solutions:

Sales & spare parts: Genuine OEM parts, expert consulting, and CRM-based support to optimize availability and performance.

Technical service & maintenance: Precision repairs, reconditioning and lifecycle optimization for long-term efficiency.

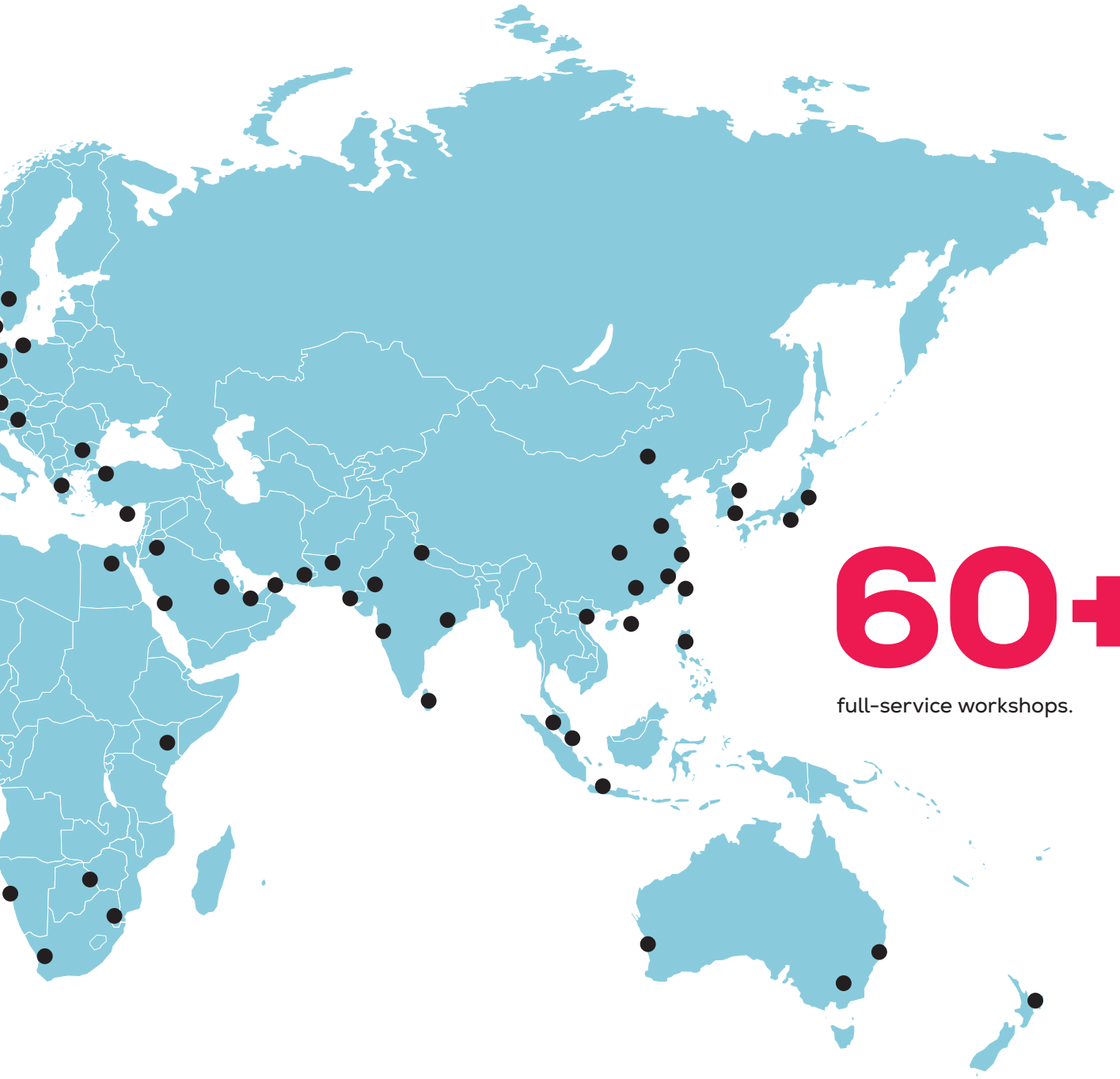
On-site recovery & field service: Emergency response and proactive service, wherever you need us.

100+

locations worldwide.

Our global service at a glance

Did you remember to order spare parts? No problem – we did. We also checked lube oil, engine condition, scheduled maintenance and installed updates. As your service partners, we keep your business running smoothly, securing efficiency and safety 24/7, around the world, on-site and online. We're here for what matters most: your peace of mind.



60+

full-service workshops.

Service is digital – service is smarter
Service has evolved, and so have we. Everllence PrimeServ doesn't just help you maintain your assets, we help you future-proof them. As you navigate the shift towards carbon-neutral operations, our digital service solutions ensure that your technology delivers on its promise.

Powered by expert insight, our real-time support and analytics based on remote monitoring keep your equipment performing at peak efficiency – year after year, without interruption. Because service isn't just about fixing problems – it's about preventing them.

Our location types:
- Sales offices – Spare parts sale & consultation.
- Workshops – Maintenance & repair.
- Flagship service centers – Full spectrum of all services, sales & reconditioning.

Find out more
www.everllence.com/services/service-locations

Everllence

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MAN Energy Solutions SE has been renamed to Everllence SE and its products are being rebranded from “MAN” and/or “MAN Energy Solutions” to “Everllence”. As this is an ongoing process, any reference to “MAN” and/or “MAN Energy Solutions” is actually a reference to “Everllence”.

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