
MAN
Power through uncertainty
MAN Energy Solutions
Future in the making
Reliable small-bore engines for the world's merchant fleet

Moving big things to zero

MAN Energy Solutions is the world's leading provider of large- and small-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.

Many years of experience ensure that our innovative marine engines and systems are always ideally suited to your business operations, both offshore and in harbors. MAN Energy Solutions: Future in the making.

Reliable and efficient

Small-bore engines for the world's merchant fleet

Regulatory and fuel-related uncertainty can make it difficult to plan investments for propulsion engines and GenSets. With our small-bore engines, you are prepared for future challenges and uncertainties.

MAN Energy Solutions has built its position as the leading designer and developer of small-bore engines for the world's merchant marine fleet on the basis of high reliability and efficiency.

Proven reliability

Our portfolio of small-bore engines is designed for lifelong operational reliability, availability and minimal downtime – they are ready and up running when you need them. Sturdy engine blocks, stiff crankshafts, and robust connecting rods are just some of the basic design characteristics which secure trouble-free operation and long overhaul intervals.

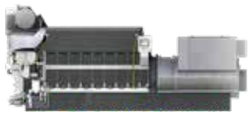
High efficiency

Efficient performance has a measurable effect on both the environment and your bottom line. Our dual-fuel engines let you select the most economic fuel type for the operating conditions. The cost-optimized port fuel injection concept is also designed for high reliability and cost-efficiency.

Future-proof solutions

The main uncertainties when chosing an engine have to do with the environmental and cost factors of fuel. Our answer to this is flexibility. Our single-fuel engines can run on conventional fuel types and also biofuel oils. Dual-fuel engines let you use methane as additional fuel type. Both the MAN L21/31DF-M and the MAN L27/38DF-M can use methanol as second fuel type. And our retrofitting expertise offers flexibility, now and in the future.

Four-stroke small-bore engines



MAN L21/31DF-M
GenSet

1,000 – 1,980 kW

MAN L21/31 Mk2
GenSet

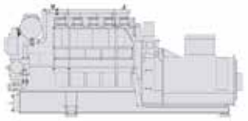
1,000 – 1,980 kW

MAN L23/30DF
GenSet

625 – 1,320 kW

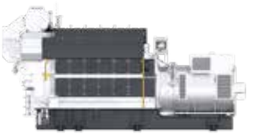
MAN L23/30H Mk3
GenSet

500 – 1,800 kW



MAN L23/30H Mk2
GenSet

550 – 1,184 kW



MAN L27/38DF-M
GenSet

1,980 – 3,690 kW

MAN L27/38 Mk2
GenSet

1,980 – 3,690 kW

MAN L28/32DF
GenSet

1,050 – 1,890 kW

MAN L27/38 Mk2
Propulsion

2,100 – 3,690 kW

MAN L27/38
Propulsion

2,100 – 3,285 kW

Set your course to net zero

MAN L21/31DF-M GenSet

Features

The MAN methanol-fuelled engine is designed to run on methanol, heavy fuel oil (HFO), and most biofuel oils.

The L21/31DF-M comes with a cost-optimised, low-flashpoint fuel supply system which makes it a competitive solution.

Furthermore, the port fuel injection (PFI) concept provides additional simplicity and an attractive capital outlay. It is based on proven components and uses a methanol injection nozzle installed outside the combustion chamber. This simplified design removes the risk of blocked nozzles in diesel mode and reduces investment costs thanks to its easy installation and integration with standardized components.

The MAN L21/31DF-M is ideal for many different applications.

Benefits

Green fuel flexibility
Can operate on methanol and biofuel oils

Highly efficient
Low fuel and lube oil consumption

Very robust
Long time between overhauls (TBO) and also no unscheduled maintenance and repair work

Reduced carbon footprint with the new MAN L21/31DF-M methanol GenSet

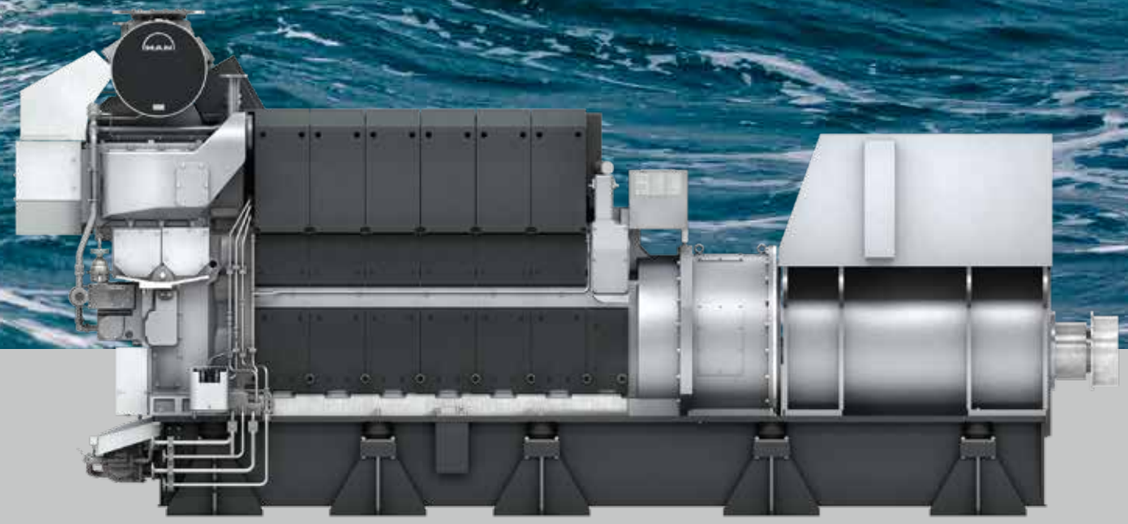
The new methanol-fuelled GenSet is a compact and reliable power source. It is based on the trusted MAN L21/31 GenSet with a proven track record.

It is a versatile power source and features outstanding load-step capabilities and extremely long TBOs. Furthermore, it is a perfect match for the MAN B&W ME-LGIM two-stroke methanol engine.

Applications
Container
Bulker
Ferry
PCTC
OSV
CSOV
Workboat

Reliable and user-friendly operation

MAN L21/31



Features

The MAN L21/31 is an inline diesel engine for propulsion or power generation. It is available with 5 to 9 cylinders with 210 mm bore (5 cylinders only available for GenSet). It runs on marine gas oil (MGO), marine diesel oil (MDO), and heavy fuel oil (HFO), and has an output of 1,000 to 1,980 kW. When fitted with MAN SCR (Selective Catalytic Reduction), it complies with IMO Tier III regulations.

This engine features a jet assist device that supports the rapid acceleration in partial-load operation of the main marine engines. This improves the maneuvering characteristics by increasing the charge air pressure of the turbocharger. With its outstanding load pickup capabilities and long time between overhauls (TBO), the MAN L21/31 is ideal for many different applications.

Benefits

Convenient power take-off (PTO)
100 % PTO is possible from either end of the engine

Clean engine design
The front-end box incorporates cooling water pumps, thermostatic valves, oil pump, cooler and filter

Very short installation length
The standby pump connection is at the side of the engine

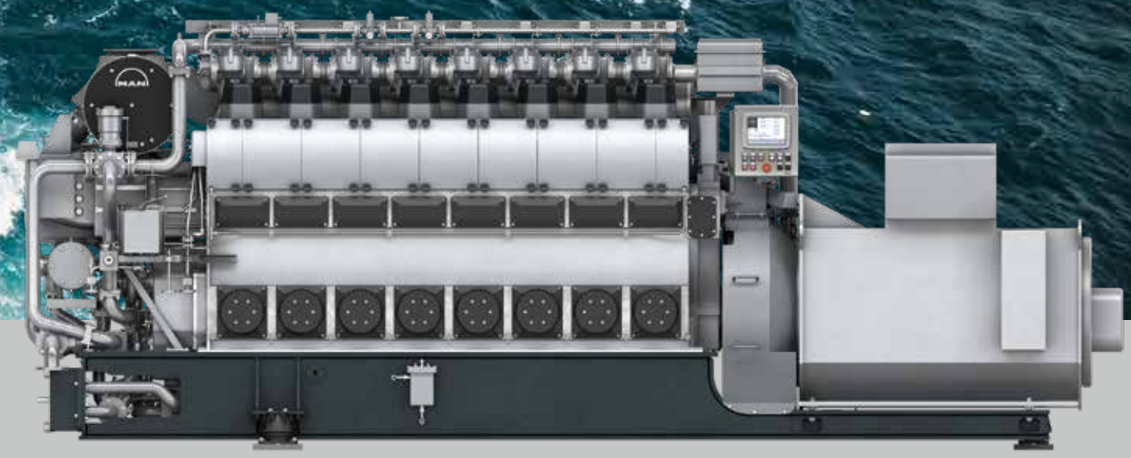
Superior load-change applications and long TBOs

Many years of experience with the propulsion concept, together with customers' requirements for reliability, economy, and technical progress, have resulted in this attractive 1,000 rpm engine with a cylinder output of 220 kW (GenSet). The MAN L21/31 engine is the ideal power source for small to medium-sized tankers, cargo vessels, ferries, RoRo vessels, large fishing vessels, tugs, workboats, and supply vessels.

Applications
Ferry
OSV
Workboat
CSOV
Fishing

Lower emissions at lower costs

MAN L23/30DF



Features

The MAN L23/30DF is an inline dual-fuel engine for power generation available with 5 to 8 cylinders with 225 mm bore and a stroke of 300 mm; the crankshaft speed is 720, 750 or 900 rpm. It runs on marine gas oil (MGO) and liquefied natural gas (LNG), and has an output of 625 to 1,200 kW.

Based on the popular MAN 23/30 conventional diesel GenSet, the MAN L23/30DF is ideal for many applications requiring economical power, reliability, and full compliance with IMO Tier III regulations.

Benefits

Classic engine design and easy operation
The MAN L23/30DF is based on the successful MAN 23/30 GenSet

Flexible installation
Engine and gas valve unit (GVU) can be up to 100 m apart

Long time between overhauls
36,000 operational hours

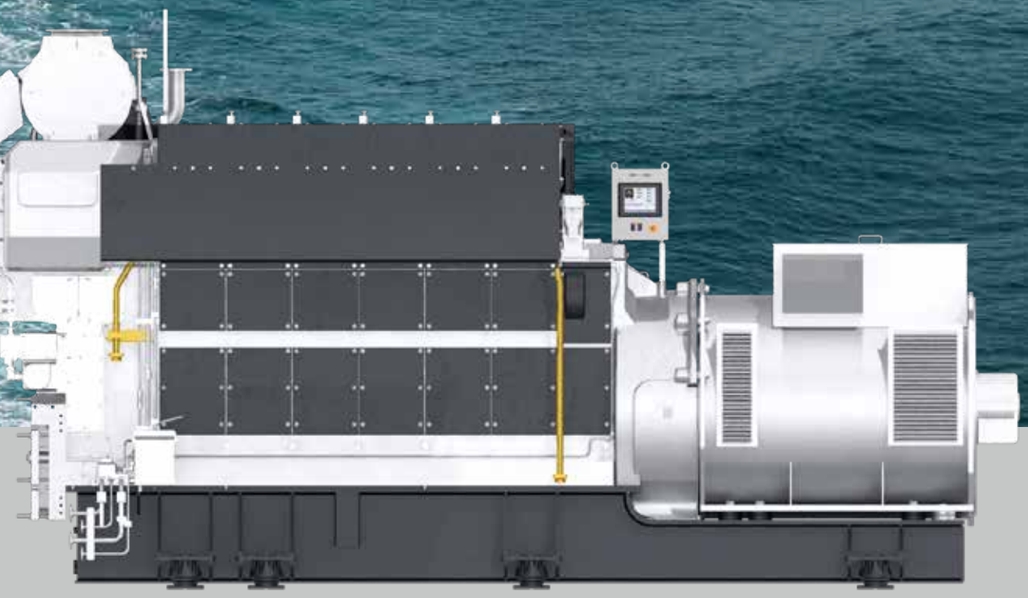
A practical solution available as retrofit

With over 14,000 MAN L23/30 GenSets in service around the world, it makes perfect sense to offer the MAN L23/30DF as an economical retrofit solution. The MAN L23/30DF continues the GenSet's tradition of easy maintenance. The robust monoblock engine is made of cast iron. The engine frame and underslung crankshaft restrict combustion and inertia forces to within the same component, thereby enhancing reliability, durability, and availability.

Applications
LNG shipping
Cruise
Ferry
Cargo ship
Tanker
Bulk carrier

Methanol-fuelled power

MAN L27/38DF-M



Features

The MAN L27/38DF-M is the latest addition to our small-bore portfolio. It comes in a configuration from 6 to 9 cylinders with 270 mm bore and a stroke of 380 mm. It runs on marine gas oil (MGO), heavy fuel oil (HFO), most biofuel oils, and methanol. It has an output of 1,980 to 3,690 kW.

The MAN L27/38DF-M can be operated with methanol from day one onwards, and relies on a long track record of more than 20 years experience with biofuel oils (power plant application).

This engine type can be used as an auxiliary GenSet or for diesel-electric propulsion.

Benefits

Green fuel flexibility
Can operate on methanol and biofuel oils

Highly efficient
Low fuel and lube oil consumption

Very robust
Long time between overhauls (TBO) and also no unscheduled maintenance and repair work

Supporting net-zero shipping

The MAN L27/38DF-M is a methanol-fuelled GenSet which delivers good performance over the entire load range with a quick acceleration and immediate load response.
Long time between overhauls (TBOs) are also valid for the MAN L27/38DF-M and no unscheduled maintenance or repair work are expected.

Applications

Ferry
Cargo ship
Tanker
Bulk carrier

Ready for business

MAN L27/38

Features

The MAN L27/38 is an inline diesel engine available with 5 to 9 cylinders with 270 mm bore (5 cylinders only available for GenSet). It runs on marine gas oil (MGO), marine diesel oil (MDO), low sulfur fuel oil (LSFO), heavy fuel oil (HFO), and most biofuels, has an output of 1,500 to 3,690 kW, and can be used as auxiliary GenSet or for diesel-electric propulsion. It features a jet assist device that supports the rapid acceleration in partial-load operation of the main marine engines. This improves the maneuvering characteristics by increasing the charge air pressure of the turbocharger.

Superior load-change applications and long TBOs make the MAN L27/38 engine an ideal power source for several different types of vessels. It offers full IMO Tier III compliance with the addition of MAN SCR (Selective Catalytic Reduction).

Benefits

Clean engine design
The front-end box incorporates cooling water pumps, thermostatic valves, oil pump, cooler and filter

Very short installation length
Due to pump connection at the side of the engine

Reliability in operation
Long TBO and no unscheduled maintenance

Convenient power take-off (PTO)
100 % PTO from either end of the engine

Reliability and economy in operation

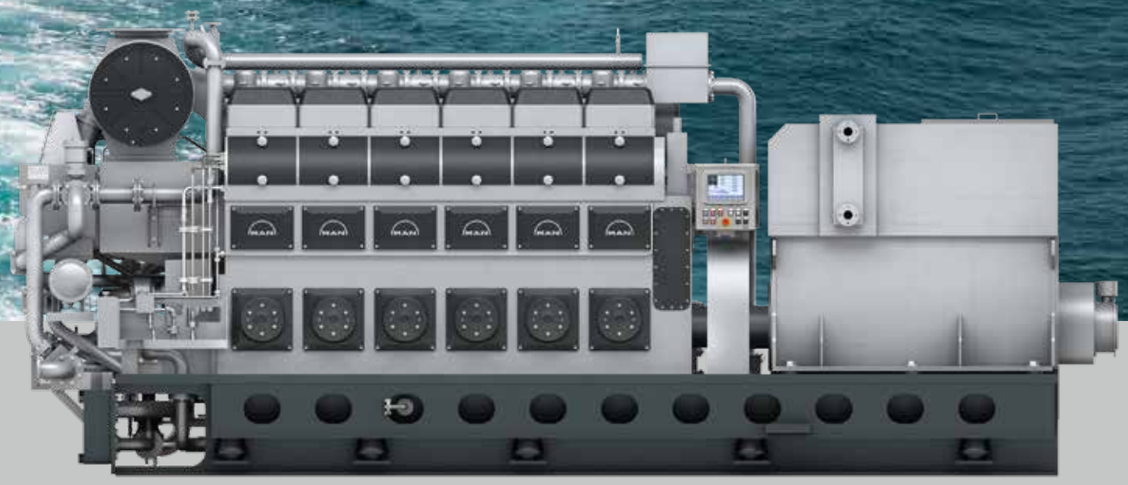
The proven reliability of this engine ensures a long time between overhauls and no unscheduled maintenance or repair work. Additional economic benefits are derived from its low fuel and lube oil consumption – while adhering to legal emission limits. The compact engine is easy to install in a broad range of vessels.

Applications

LNG shipping
Ferry
Cargo ship
OSV
Tug boat
Fishing

Dual-fuel for a flexible future

MAN L28/32DF



Features

The MAN L28/32DF is an inline dual-fuel engine for power generation available with 5 to 9 cylinders with 280 mm bore and a stroke of 320 mm. It runs on marine gas oil (MGO), heavy fuel oil (HFO), and liquid natural gas (LNG), and has an output of 1,000 to 1,800 kW.

The MAN L28/32DF complies with IMO Tier III regulations (when fitted with MAN SCR) while offering the economic benefits of full fuel flexibility and high efficiency regardless of fluctuations in the fuel market.

Benefits

Classic engine design and easy operation
MAN L28/32DF is based on the successful conventional MAN L28/32H diesel GenSet

Long time between overhauls
20,000 operational hours

Full fuel flexibility
Not restricted by fuel market fluctuations

Safe and reliable operation
Design is based on engine types with decades of service experience

Competitive CAPEX
Simplified fuel injection system

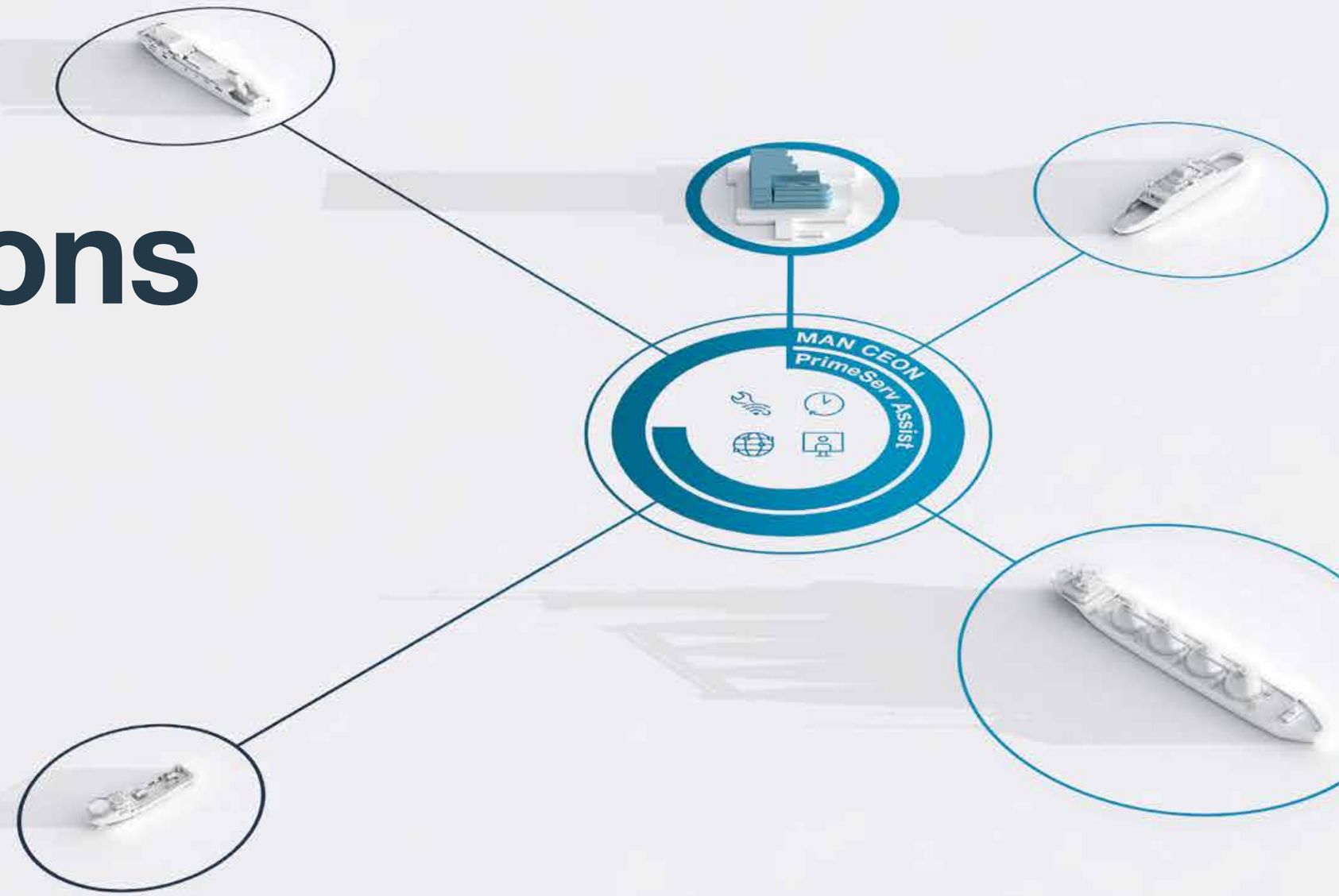
Exploring the possibilities of clean-burning gas

The MAN L28/32DF engine is based on the proven MAN L28/32H workhorse, recognized worldwide as an ultra-reliable and robust engine with long TBOs. The engine is available in two versions: New build or retrofit. Designed to complement the four-stroke MAN 51/60DF or a two-stroke dual-fuel MAN B&W ME-GI engine as part of a complete power package, the engine's ability to run on gas offers unprecedented possibilities.

Applications
LNG shipping
Ferry
Cruise
Cargo ship
Tanker
Bulk carrier

Making smart connections

Data & connectivity



Enhanced monitoring and machine analytics, and new standards in security and data privacy are set to lead the way to a better future for your business.

The digital power of MAN Energy Solutions

Digital fleet management, remote monitoring, and predictive maintenance are already essential to the marine business. At MAN, we make data work at many levels, connecting engines, ships, services, supply chains, people, and ideas. Our main objective for all marine applications: Greater efficiency.

Making the most of digitization

Using cutting-edge digital technology allows us to improve performance and minimize downtimes. Our remote connections enable live data analysis, ensuring quick, effective solutions. Our energy management system for battery-hybrid propulsion controls the generation, storage, and distribution of power onboard the ship, resulting in maximum efficiency. Multiple digitization initiatives are increasing our understanding of our customers and expanding our offering as well as improving our internal processes and your cost base.

Predicting and assisting

Data & connectivity

Secure Connectivity as standard

In order to benefit from data-driven services, a cyber secure and scalable digital infrastructure is key. Since 2000, all of our engines are equipped with the necessary hardware to collect sensor data. This data can be easily transmitted via ship or plant network to our MAN CEON cloud platform that stores and pre-processes the data. Both on-site hardware, the transmission into the cloud storage as well as the data in the cloud are following latest cyber security standards.

Data-driven services as benefit

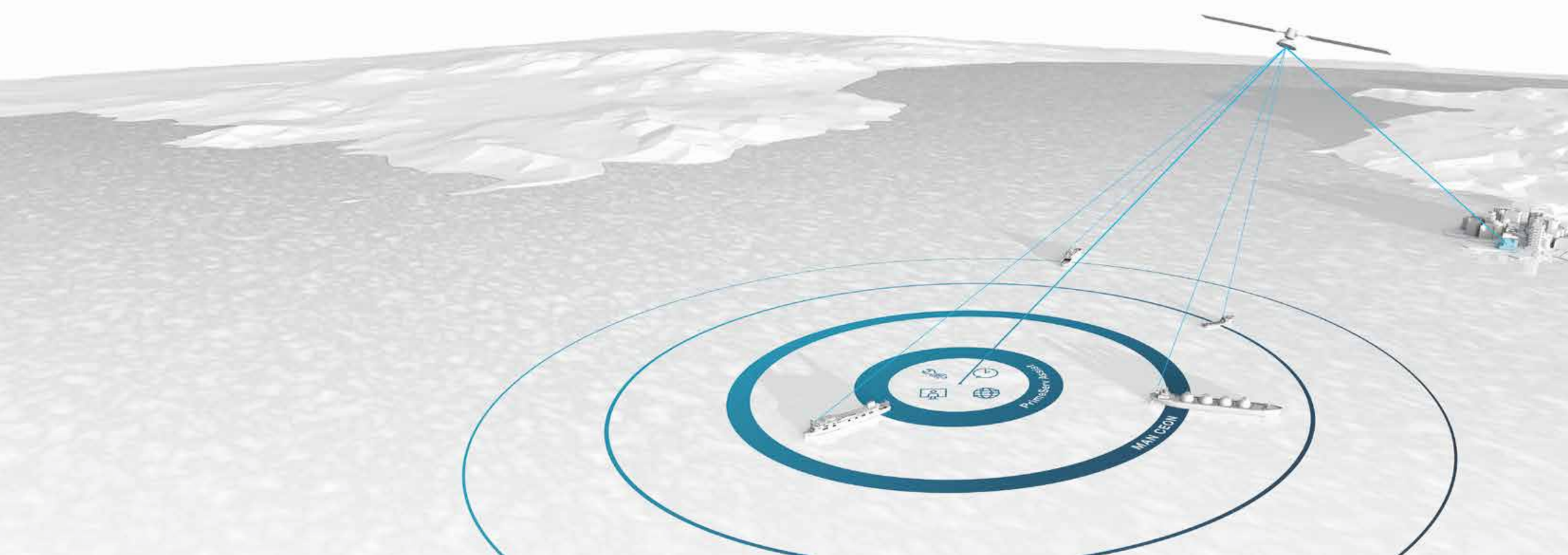
With the introduction of PrimeServ Assist in 2019, we provide decision makers on customer side a solution to optimize operation and maintenance of vessels and plants. The offerings combine real-time data analysis and human OEM experts to pro-actively assist anywhere, anytime. This service is available for all MAN products including propulsion engines, gensets, propellers, SCR systems, Battery-Energy-Storage-Systems and Fuel Gas Supply Systems.

Benefits

Increased availability
Continuous monitoring to detect degradations before they turn into breakdowns

Increased efficiency
Pro-active OEM expert advice to optimize fuel efficiency and reduce emissions

Optimized maintenance
Component condition monitoring to dynamically plan maintenance tasks



MAN PrimeServ

Service with passion

MAN PrimeServ is the dedicated MAN Energy Solutions service brand. Via a network of over 100 service centers worldwide, MAN PrimeServ provides 24/7 service across the globe. Our range of services includes technical support, consulting, and OEM spares, as well as maintenance, repair, and comprehensive individualized service plans.

365
days a year

24
hours a day

MAN PrimeServ provides:

- Prompt delivery of high-demand OEM spare parts within 24 hours
- Fast, reliable, and competent customer support
- Individually tailored O&M contracts
- Ongoing training and qualification of operators and maintenance staff
- Global service, 24 hours a day, 365 days a year
- Diagnosis and troubleshooting with our high-performance online service

MAN Energy Solutions and legacy brands

MAN PrimeServ is our brand name for high-quality aftersales support for the entire MAN Energy Solutions product portfolio. Through refinements to our products and repair techniques, we ensure and reinforce our technological leadership and technical expertise as an original equipment manufacturer (OEM) for the brands united under MAN Energy Solutions.

Worldwide service

100
service centers worldwide

We offer retrofitting and upgrade services to bring engines and turbochargers already in service up to the very latest standards of performance and efficiency.

Using the latest digital technology, we enable you to maximize the performance and availability of your MAN equipment by accessing real-time data analysis, remote support, and rapid solutions. We also offer an extensive range of training courses at MAN PrimeServ Academies around the world.

Our service does not vary according to location. We know that a vessel may be built in Asia, operated in Europe for ten years, and then move to Africa for the next ten years. That does not alter our focus on dedicated training, fast delivery of strategic spare parts, a comprehensive approach, or our tailored maintenance contracts.

For more information, please visit
www.man-es.com/services

MAN PrimeServ

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