High-performance product range

Four-stroke marine systems

MAN Energy Solutions
Future in the making
Our engineers and digital specialists focus on crosslinking engineering with the possibilities of today’s world: we shape the advancement of power generation, marine transport and industrial engineering. Whether engines, components or complex systems – we aim to deliver intelligent solutions that assure your competitiveness for years to come.

This mission is reflected in our new company name: MAN Energy Solutions. Our products and services utilize the latest technologies. We don’t react to trends; we create the next step. As your partner, we connect the dots in an ever-changing world, providing you with long-term solutions that boost your business and help to bring the world a step closer to carbon neutrality.

MAN Energy Solutions: future in the making.
To follow, or to lead?
The world in which we live is changing more rapidly than ever. A growing population and increasing demand for energy requires the shift towards more sustainable forms of energy generation. We are ready to tackle this challenge.

With the invention of the diesel engine, our visionary founder transformed the entire industry by creating a mechanism of – at the time – unknown efficiency. Transformation is in our genes. Today, the setting has changed, yet our pioneering spirit remains. We lead the industrial world towards a more sustainable future by combining our world-class engines, turbines, turbochargers, compressors, propellers, and reactors with the possibilities of the digital era. And we want you to join us. As your partner, we create customized solutions for your specific needs and support you in this time of change and transition. Together, we can pave the way for a climate-neutral yet economically successful future. Let’s get started.
The starting point of all our innovation is you. We focus on the individual requirements and goals of our customers and work on solutions to meet even the most specific needs. We benefit from our in-depth knowledge in the sectors of mobility, transport and energy, and draw from decades of technical and operational experience.

We are known for offering the industry’s most advanced products, which boast legendary quality. Closing supporting our customers with expert advice when it comes to developing the best possible solutions is one of our core competencies. When it gets tricky, we start to feel at ease.

Converting companies to more environmentally friendly and cost-efficient operation is a key issue for most of our clients. Our goal is to provide our customers with solutions that gradually reduce the consumption of fossil fuels. We don’t think “product”; we envision holistic solutions that meet our clients’ requirements and comply with even the most stringent legal regulations.

If you are looking to make your company future-proof, count us in.
To think ahead means to think holistically. That’s why we offer complete systems that are uniquely reliable for lasting performance. We support our clients to help them achieve their goals in rapidly changing environmental and regulatory conditions.

Digital and data-based technologies are the cornerstones for the development of future-proof drive and power generation systems. Take our intelligent energy management solutions for example. The energy management system in our battery-hybrid propulsion solutions controls the generation, storage and distribution of power onboard the ship. This optimizes the overall performance, further increases safety and system reliability, and results in maximum efficiency and lower operational costs.

Another application is to improve the availability of renewable energy: wind and solar power can be made more reliable by storing surplus power and using instant power top-ups from engine and turbine gensets fuelled by gas or bio fuels. Renewable energy systems can even be added to power plants to act as fuel savers and hybrid island power systems – digital solutions that will drastically help to reduce the carbon footprint.
Intelligent systems for low emissions and high cost efficiency
Cutting emissions from fossil fuels while maintaining high productivity levels is a complex task. One which requires an extensive skill set, especially when catering for diversified industries with different requirements.

To realize environmentally friendly – yet reliable – energy systems, different methods need to be combined and managed. With a close eye on our customers’ needs, we develop key components and smart management solutions that interact effortlessly to allow these systems to be operated both sustainably and efficiently – at a very high level.

MAN Energy Solutions is the world’s leading provider of large-bore diesel engines, turbomachinery, and integrated power systems. We produce four-stroke and two-stroke engines for marine and stationary applications, turbochargers and propellers, gas and steam turbines, compressors and chemical reactors. Our four-stroke systems expertise is focused on emission reduction, complete propulsion packages, electrical propulsion, dual fuel, LNG and digitized services.

It is our goal to minimize fuel consumption while complying with the most advanced emission regulations. MAN PrimeServ supports our customers all around the world with a comprehensive range of after-sales services.

When it comes to energy transition at sea, we are here to help: our latest series of LNG (liquid natural gas) engines significantly reduces emissions. Our hybrid-propulsion solutions offer a maximum of efficiency and extremely flexible use of power in all different working mode – whatever you are up to.

With growing concern about the state of our oceans, the marine industries are facing new challenges and increasingly tough regulations. With MAN ECO CONTROL, we provide you with all the key technologies to keep emissions, efficiency and operation under control – and you one step ahead. Whether you are operating your fleet in environmentally sensitive areas, under strict safety regulations or working under harsh conditions far out on the ocean; whether you are navigating the continents with valuable freight and changing fuel prices or protecting your homeland – MAN Energy Solutions is your partner of choice when failure is not an option.
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Turning power into movement

Propulsion optimization

Your ship’s operational profile is determinant. We adapt our packages to your needs and ensure that all of the components match optimally with the main engines, while you get all components from a single supplier. Moreover, when a ship’s profile changes, we can also retrofit propulsion packages.

In constant pursuit of energy efficiency

Our expertise in complete propulsion packages goes back to 1902, when we produced the first Alpha controllable pitch propeller. Starting from a complete understanding of the ship’s operational profile, we can now optimize all the relevant components: engine, gearbox, PTO, propeller blades, nozzle, rudder, and propulsion control system – including speed setting, maneuvering and load control.

Comprehensive expertise

No matter how complex your needs are, we can customize a solution that delivers the best propulsive efficiency and gives your ship a greener profile. Using RENK gearboxes, MAN Alpha shafts and propellers, and hybrid propulsion systems, we lower fuel consumption and emissions while ensuring reliability, durability and higher output.
Because every ship is different

Propulsion optimization
Quality components for maximum efficiency

RENK is a globally recognized manufacturer of special gear units and propulsion components including “power take-off”, “power boost”, “take-home” and “hybrid” concepts. The MAN Alphatronic 3000 propulsion control system not only optimizes the function of the propeller but also of the engine in terms of maneuverability and overall economy. Efficient MAN Alpha propellers and propeller shafts result in more energy-efficient transport and a reduced impact on the environment. MAN Alpha nozzles can be customized to adjust the propeller thrust and pulling performance to the vessels’ working patterns.

Benefits

All components tailored to your needs
Optimized for your ship’s operational profile

All components from one source
One point of contact, and one contract
Alternative routes to cost-effectiveness

Hybrid propulsion

In a hybrid system, mechanical and electric engines work together to provide power for propulsion and hotel loads, optimizing the fuel efficiency of vessels with a flexible power demand.

Flexibility and maximum efficiency optimally combined

The combination of mechanical power from diesel engines and electric power from electric motors provides the vessel with a broad operational capability. We offer fully tailor-made hybrid propulsion and power generation solutions, including all components such as main engines, GenSets, switchboards, converters, electrical motors, gearboxes and propellers.

Battery power

New battery storage solutions further reduce maintenance costs, fuel consumption, greenhouse gas emissions and noise production, while increasing revenue and technical efficiency. To this end, we have acquired a 40% share in Aspin Kemp & Associates (AKA), whose specialized expertise links battery storage systems and marine engines.
Flexibility meets reliability

Hybrid propulsion
MAN HyProp ECO: Fuel-efficient flexibility

A hybrid propulsion system is often ideal for vessels with flexible operational profiles and running hours with both high and low power demands. MAN HyProp ECO combines a diesel engine with a frequency-converter-driven shaft alternator/motor to create a highly redundant and reliable propulsion system.

MAN HyProp ECO allows several operating modes, so it is always possible to find the ideal mode in terms of propulsion train performance and fuel oil consumption. It is also open for shore connection and the integration of energy storage devices or batteries.

Benefits

Wide range of operating modes
Flexible power demand with fast system responses and high plant flexibility

High plant efficiency
Fuel oil consumption is lower, and fuel-related emissions such as SO$_x$ and CO$_2$ are also reduced
Going further with gas

Dual fuel and LNG gas supply

Natural gas is an environmentally friendly power source that contributes to profitability. Our dual fuel systems reduce emissions, increase fuel efficiency and power density and keep operation economical.

LNG expertise in action

Reliability, flexibility, capital expenditures, operating expenses and emission regulations are just some of the factors to be taken into account when investing in LNG technology. Our dual fuel propulsion solutions can be tailored to meet every requirement: from LNG technology for dual fuel propulsion to complete LNG handling systems (including carriers, floating storage and regasification units, feeder and bunker vessels).

Whether it’s a new engine, a retrofit or a complete gas system, we provide expert advice and the support of a global service network.

Dual fuel propulsion: Low emissions and costs

The possibility to switch over seamlessly from gas to diesel operation and vice versa ensures full flexibility. As we now supply both the engines and the complete fuel gas supply system equipment, we can work with ship designers to perfectly integrate the engines, tanks and systems.
A technology that pays

Dual fuel and LNG gas supply
MAN Cryo LNG fuel gas systems

In 2016, we acquired Cryo AB, a manufacturer of cryogenic equipment with more than 50 years’ experience in the storage, distribution and handling of liquefied natural gases (LNG). We therefore created the product brand MAN Cryo – the perfect complement to our dual fuel engines. We now offer one-stop solutions for comprehensive engine and fuel gas supply systems (FGSS), offshore and onshore bunkering systems and stationary distribution systems for regasification or fuel filling.

Benefits

Low emissions
Gas burns cleanly and with low NOx emissions

Low running costs
Gas is attractively priced

Fuel independence
Easy switch to diesel if gas is not available or is more expensive than diesel

One-stop provider
All components, training and support for gas propulsion and supply
The power of clean

Exhaust after-treatment

Selective catalytic reduction (MAN SCR) is the most approved means for NO\textsubscript{X} reduction. Our system covers a broad range of engines and is designed for customization.

Respecting the environment

The International Maritime Organization sets limits for nitrogen oxide (NO\textsubscript{X}) emissions and the sulfur content of fuel. Our proven exhaust gas after-treatment systems easily meet these regulations, even in Emission Control Areas (ECA).

MAN SCR – selective catalytic reduction

NO\textsubscript{X} can be efficiently minimized by using selective catalytic reduction and exhaust gas recirculation. The MAN SCR exhaust after-treatment system provides an integrated and intelligent solution for our entire portfolio of medium-speed engines. With reliable operation and the highest performance, it serves as a standard solution to meet the IMO Tier III emission limits.
A solution for every size

Exhaust after-treatment
The solution for less NO\textsubscript{X}

MAN SCR is the most tested and approved system for achieving NO\textsubscript{X} reduction rates up to 90%. By inducing chemical reactions in the engine’s exhaust gases, harmful substances are transformed into ecologically benign constituents.

Modular components

The MAN SCR system is available in fourteen different sizes as standard. In this way, it fully covers the entire portfolio of our four-stroke medium speed engines. Furthermore, we can offer you customized MAN SCR systems on demand.

Benefits

IMO Tier III compliance
For operation in emission control areas (ECA)

One source, one point of contact
For minimum costs, maximum flexibility and fast ordering

Efficiency and ecology
Reducing emissions while increasing fuel efficiency and power density
Making smart connections

Enhanced monitoring and machine analytics, 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

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: more 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 customer understanding and expanding our offering as well as improving our internal processes and your cost base.
Predicting and supporting

Data & connectivity
Online monitoring as standard

The MAN SaCoSone engine control system is the keystone of data management in all MAN engines. It ensures that the engine is monitored remotely, automatically and continuously. Since 2000, all of our engines have been delivered with integrated data interfaces for engine monitoring. This allows us to predict incidents and help you take corrective action with real-time advice, at sea or on land.

PrimeServ Assist

This online service transmits key engine data from any place in the world via secure data connections, providing valuable maintenance support and paving the way to the unmanned engine room.

Benefits

Automatic and continuous monitoring
Optimal operation keeps emissions low and saves fuel
Secure MAN PrimeServ connection worldwide
Higher level of reliability & availability
Fast troubleshooting and fault elimination
Incident prediction and corrective actions with real-time advice
High-speed marine power package

MAN 175D

Features

The MAN 175D diesel engine is a V type, available with 12, 16 or 20 cylinders, with 175 mm bore for mechanical or electric propulsion and onboard power generation. Running from 1,500 to 1,900 rpm, it features ratings from 1,440 to 3,700 kW. With its advanced common rail fuel injection system, the engine combines maximum fuel efficiency with the lowest possible emissions, making it a perfect investment for the future. The MAN 175D high-performance engine is IMO Tier III-compliant when fitted with MAN SCR (selective catalytic reduction).

Benefits

**Advanced, powerful and robust**
Peak performance and proven reliability based on cutting-edge technology and successful four-stroke engine tradition

**Adaptable to different applications**
Modular design with four auxiliary power take-offs (PTO)

**Environmentally friendly**
Full IMO Tier III compliance in combination with MAN SCR

**Easy to commission, operate and service**
Simple design reduces complexity
Advanced efficiency for business or pleasure

The MAN 175D is ideal for high cost-effectiveness, as it combines dynamic partial-load operation with economical endurance. With high-level emissions standards being considered from the outset, the MAN 175D is one of the most versatile marine engines able to meet all the challenges of many different applications.

Applications
Ferry
OSV
Workboat
Tug boat
Yacht
Naval defense
Reliable and user-friendly operation

MAN 21/31

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 MGO, MDO and 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 pick up 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
Standby pump connection is at the side of the engine.
Superior load change application and long TBOs

Many years of experience with the propulsion concept, together with customers’ requirements for reliability, economy and technical advancement, has 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.
Maximum power – minimum volume

MAN VP185

Features
The MAN VP185 is available in 12 V and 18 V configurations, with outputs of 2,000 to 4,200 kW over a speed range of 1,765 to 1,950 rpm. Its class-beating power-to-weight ratio is 2.69 to 2.88 kg/kW. It is IMO Tier III-compliant when fitted with MAN SCR (selective catalytic reduction).

This compact, high-speed engine is easy to install. Its water-cooled exhaust system helps to maintain a low engine room temperature whilst the two-stage turbocharging arrangement provides a wide torque curve.

Benefits
- Compact size
- Excellent power-to-weight ratio
- Minimized detectability
- Low acoustic and thermal signature
- IMO Tier III-compliant
  When fitted with MAN SCR
Proven power and reliability

The MAN VP185 has proven itself in many applications, from fast patrol boats to luxury yachts. In terms of performance, it has one of the highest power densities on the market. At the same time, its operation is simple and reliable which is essential in boats with small crews. The MAN VP185 is an ideal propulsion choice for high-speed coastal and offshore patrol vessels.

Applications
Naval defense
Lower emissions at lower costs

MAN 23/30DF

Features
The MAN 23/30DF is an inline dual fuel engine for power generation available with 5 to 8 cylinders with a bore of 225 mm 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 23/30DF 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 23/30DF is based on the successful MAN 23/30 Genset

Flexible installation
Engine and 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 23/30 GenSets in service around the world, it makes perfect sense to offer the MAN 23/30DF as an economical retrofit solution. The MAN 23/30DF continues the GenSet’s tradition of easy maintenance. The robust monoblock engine is made of cast iron. The engine frame and under-slung crankshaft restrict combustion and inertia forces to within the same component, thereby enhancing reliability, durability and availability.
Ready for business

MAN 27/38

Features

The MAN 27/38 is an inline diesel engine available with 5 to 9 cylinders with 270 mm bore (5 cylinders only available for GenSet). It runs on MGO, MDO and HFO, has an output of 1,500 to 3,285 kW and can be used for propulsion or as auxiliary GenSet. 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 application and long TBOs make the MAN 27/38 engine an ideal power source for many 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**
  Thanks to pump connection at the side of the engine

- **Reliability in operation**
  Long periods between overhauls and no unscheduled maintenance

- **Convenient power take-off (PTO)**
  100% PTO from either end of the engine
The proven reliability of this engine ensures long periods between overhauls and no unscheduled maintenance and 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.
Dual fuel for a flexible future

MAN 28/32DF

Features
The MAN L28/32DF is an inline dual fuel engine for power generation available with 5 to 9 cylinders with a bore of 280 mm and a stroke of 320 mm. It runs on MGO, HFO and 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 28/32H diesel GenSet

- **Long time between overhauls**
  20,000 operational hours

- **Full fuel flexibility**
  Not restricted by fuel market fluctuations

- **Safe & 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 28/32H 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 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
Lightweight powerhouse

MAN PA6B OG

Features

The MAN PA6B Offshore GenSet (OG) is a V-type diesel GenSet available with 12, 16, 18 or 20 cylinders with 280 mm bore. It runs on MGO and MDO and has an output of 4,200 to 7,400 kW. The original MAN PA6B OG has proven itself over uncountable running hours, as well as in starting and loading sequences. More than 1,000 PA-class engines are in service around the world.

The new MAN PA6B OG is IMO Tier II-compliant and surpasses IMO Tier III regulations with selective catalytic reduction (MAN SCR). It uses the latest engine safety and control system and the turbochargers have been optimized to meet the load requirements and operational profile for offshore generator sets on semi-submersible drilling rigs.

Benefits

Great power-to-weight ratio
High power density, low-weight engine

Compact design to reduce size of engine room
Improves variable deck loading capability

Black start capability
Engine start with load acceptance in less than 10 seconds

Higher deck load capacity on semi-submersible/self-elevating vessels
Thanks to compact design and excellent power-to-weight ratio
Compact, resistant, and durable GenSet

The MAN PA6B OG is an ideal solution for diesel-electric propulsion and power generation in the offshore segment. The engine is highly resistant to shock and can deal with tilts of up to 25°. It also copes well with load increases and long-term, low-load operation. The MAN PA6B OG’s impressive profile is rounded off by long maintenance intervals thanks to its proven design and the use of high-class OEM components.

Applications
Offshore exploration
Offshore production
The MAN 28/33D STC is a V-type diesel engine available with 12, 16 or 20 cylinders with 280 mm bore. It runs on MGO and has an output of 5,460 to 10,000 kW and the best power-to-weight ratio in the medium-speed engine class. Its advanced STC (sequential turbocharging) system provides high torque at low rpm. The MAN 28/33D STC complies with IMO Tier II and IMO Tier III (with optional selective catalytic reduction).

Best power-to-weight ratio in its class
5.2 kg/kW, unequaled by any other medium-speed engine

High reliability and low maintenance efforts
All maintenance in situ; no removal from vessel necessary; no change of crankshaft

Sequential turbocharging provides optimum matching over all loads with only two turbochargers
Versatile performance

The masterful performance of this engine is not just down to advanced technology like STC, it also makes a clear statement with low fuel consumption and full environmental compliance at low costs. MAN 28/33D STC engines are ideal for naval applications as they offer an optimum combination of high power and rapid engine response as well as long endurance, and economical operation with low acoustic and thermal signature during cruising and patrolling missions. They are also ideal for fast ferries.

Applications
Naval defense
Fast ferry
Yacht
The drive for your needs

MAN 32/44CR

Features
The MAN 32/44CR is an L and V-type diesel engine available with 6, 7, 8, 9, 10, 12, 14, 16, 18 or 20 cylinders with 320 mm bore. It runs on MGO, MDO and HFO, and has an output of 3,600 to 12,000 kW. It is available for diesel-mechanic, diesel-electric and auxiliary applications. The main components are all developed in-house. Compliance with IMO Tier III NO\(_x\) emission limits is ensured when combined with MAN SCR (selective catalytic reduction).

Benefits
Low fuel oil consumption over the whole power range
Due to highly flexible future-ready common rail technology

Excellent engine load acceptance
Thanks to common rail with boost injection

Reliable IMO Tier III compliance
With any fuel type and best fuel economy thanks to MAN's closed-loop SCR system

Latest engine management system
MAN SaCoSone combines all the functions of modern engine management in one complete system
Versatile performance

With its high power output, low operating and maintenance costs and low exhaust emissions, MAN 32/44CR engines are multi-purpose “prime movers” for all marine applications, both commercial and governmental. Our current engine represents the latest technologies in the area of industrial-sized diesel engines operated at medium speed.

Applications
OSV
Cruise
Ferry
Naval defense
Fishing
Dredger
Offshore exploration
Offshore production
Icebreaker
Specialized vessel
**Ready for the future**

**MAN 35/44DF**

**Features**

The MAN 35/44DF is an inline dual fuel propulsion and auxiliary engine available with 6 to 10 cylinders with 350 mm bore. It is available for mechanical or electric propulsion and as an auxiliary GenSet. It runs on MGO, MDO and HFO, and natural gas and has an output of 3,060 to 5,300 kW. The MAN L35/44DF offers high output, dual fuel flexibility, and is IMO Tier II and IMO Tier III-compliant (in gas mode).

**Benefits**

- **Unrivaled power output in its class**
  530 kW per cylinder

- **Seamless switching over from gas to liquid mode**
  At any time, at loads between 10% and 100% – without the need for intermediate transfer to MDO and with no loss of engine power

- **Reliable power with all fuels**
  Operation with gas qualities down to MN ≥ 70 without power reduction

- **Future proof flexibility**
  LNG-ready solutions
Dual fuel flexibility

In the shipping industry, the choice of fuel for marine propulsion is becoming increasingly challenging. Highly flexible dual fuel engines offer an eco-friendly yet cost-effective solution. Engineering ingenuity enables ship owners to tap into component synergies and cut down their operating costs. The MAN L35/44DF engine’s unique design centers on gas operation and offers full operational flexibility thanks to the seamless switching over from gas to liquid.

Applications
- LNG shipping
- Cruise
- Ferry
- Workboat
- Dredger
- Fishing
Ultimate power, unrivaled efficiency

MAN 45/60CR

Features

The MAN 45/60CR is a diesel propulsion available in L and V configurations with 6 to 10 cylinders (L) or 12 and 14 cylinders (V) with 450 mm bore. It is suitable for mechanical or electric propulsion. It runs on MGO, MDO and HFO, has an output of 7,800 to 18,200 kW, and is IMO Tier III-compliant in combination with MAN SCR (selective catalytic reduction).

MAN’s newest engine is suitable for use in a wide range of marine applications, especially ultra-modern cruise vessels, large RoPax ferries and mega dredgers. Its primary focus is reliable power generation, performance flexibility and superior efficiency.

Benefits

- Highest power output in its class
  1,300 kW per cylinder

- Lowest SFOC in its class
  Just 166 g/kWh^1

- Full compliance with IMO Tier III regulations
  In combination with MAN SCR

- Field-proven common rail injection system with innovative MAN ECOMAP function
  Matching a wide range of load profiles

^1 SFOC @ 85% engine load
A new standard for a more efficient marine industry

The game-changing technology of the MAN 45/60CR engine creates new opportunities for the marine industry and allows owners and operators of large ships to meet the challenges of the future today. Its impressive power, efficiency and performance flexibility provide the basis for low operating costs and increased life cycle profitability. High-quality key components, modularized sub-designs and easy-to-install interfaces combine to make the engine a multitalented performer.
Quietly efficient and clean

MAN 48/60CR

Features

The MAN 48/60CR (common rail) is an L and V-type diesel propulsion engine available with 6, 7, 8, 9, 12, 14, 16 or 18 cylinders with 480 mm bore. It has an output of 7,200 to 21,600 kW. The advanced common rail injection system of the MAN 48/60CR was designed for operation with heavy fuel oil (HFO) and it can also be operated with marine diesel oil (MDO) and marine gas oil (MGO).

The MAN 48/60CR was designed for all main marine applications and can be used in single and multi-engine plants, for diesel-mechanic and diesel-electric drives. The optional MAN SCR (selective catalytic reduction) ensures it fully complies with IMO Tier III emissions standards.

Benefits

Powerful engine
1,200 kW per cylinder in the speed range of 500/514 rpm

Intelligent fuel savings
Optional MAN ECOMAP function enables use of different engine performance characteristics

Low maintenance costs
MAN quality and maintenance-friendly engine design ensure long service intervals

Most economic and reliable
Compliance with IMO Tier III in combination with MAN SCR and intelligent SCR regeneration

Lowest level of vibrations
Tailor-made engine seatings ensure the highest possible passenger comfort in cruise ships
Facing tomorrow’s challenges today

The MAN 48/60CR is a striking combination of top performance, operational flexibility and reliability. High power output as well as low fuel consumption and exhaust emissions meet the market requirements of today – for every kind of marine application. The economic and ecological performance of the engine is determined by the in-house development and production of the key components.

Applications
Cruise
Ferry
Naval defense
Dredger
Dual fuel genius

MAN 51/60DF

Features
The MAN 51/60DF is an L and V-type dual fuel engine available with 6, 7, 8, 9, 12, 14, 16, or 18 cylinders with 510 mm bore. It is suitable for mechanical or electric propulsion. It runs on MGO, MDO, HFO, and natural gas, and has an output of 6,300 to 20,700 kW. For every engine version there is a high-power (HP) and high-efficiency (HE) variant.

Fuel consumption in liquid fuel mode is the best in its class. The MAN 51/60DF engine satisfies IMO Tier III requirements in gas fuel operation and in liquid fuel operation (by means of MAN SCR). It is available as main engine propulsion and as power source for floating processing or power generation units. Its high configuration flexibility makes it ideal for multiple applications.

Benefits
- **Highest power output in its class**
  Up to 1,150 kW per cylinder with 10% overload margin in both diesel and gas mode

- **Full environmental compliance in gas and liquid fuel operation**
  IMO Tier III in gas mode and with MAN SCR in liquid fuel mode/starting capability gas mode

- **High operation flexibility**
  Top load acceptance in gas mode above 500 kW per second/transfer from diesel to gas and vice versa up to 100% MCR

- **Possibility of simultaneously fuelling with liquid fuels and gas**
  The fuel-sharing operating mode contributes even further to an LNG carrier’s operation flexibility.
Clean, clever, compact

With the MAN 51/60DF, we have created a highly efficient dual fuel engine that produces low emissions and can be conveniently switched from gas mode to liquid fuel mode without interruption. Combined with a state of the art safety concept, this multi-fuel capability makes this option the ideal drive solution for LNG carriers.
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.

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
Worldwide service

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