Highly reliable and efficient solutions

Fishing vessels

MAN Energy Solutions
Future in the making

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Future in the making

MAN Energy Solutions is the world’s leading provider of large-bore diesel engines, turbomachinery, and integrated power systems. We make four-stroke and two-stroke engines for marine and stationary applications, turbochargers and propellers, gas and steam turbines, compressors and chemical reactors.

Our marine systems expertise is focused on emission reduction, complete propulsion packages, electric propulsion, dual fuel, LNG, and digitized services.

We have a long tradition of tailoring propulsion packages to the operational profiles of fishing vessels. Our overall aim is to combine the lowest possible consumption and emissions in a robust solution that will stand up to the harshest conditions.
For the future of fishing

A tough tradition

Fishing has always been a dangerous job carried out in harsh conditions. But now there are additional challenges: the growing demand for fish has to be met with more sustainable methods. This has led to international arrangements, strict fishing quotas, and attempts to manage fisheries scientifically. A hard job has become more complex, demanding flexible new fishing methods and equipment.

Modern fishing vessels require modern, robust technologies that can withstand extreme weather and uninterrupted operation. Failure is not an option. Fishing vessels typically operate in environmentally sensitive areas, so emission requirements will continue to be important. The growth of fish farming also depends on clean yet efficient vessels.

Robust systems for complex conditions

Our engines and systems have always proven to be up to the job. We develop our new technologies for high dynamic performance and well-balanced operating behavior while keeping down operating expenses (OPEX), capital expenses (CAPEX), and specific fuel oil consumption (SFOC). The result is not just forward-looking, but efficient and reliable.
Four-stroke engines for fishing vessels
<table>
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<tr>
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<tr>
<td>MAN 21/31</td>
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<td>Propulsion</td>
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<td>MAN 32/44CR</td>
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<td>Pelagic trawlers</td>
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<td>Live fish carriers</td>
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**Pulling strong Trawlers**
Trawlers catch fish by towing large nets, usually along the seabed (bottom trawling). Vessel sizes range from the smaller fresh fish trawlers to large factory and freezer ships on which the caught fish are processed and frozen.

Towing and hauling power

Trawlers need strong engines to tow their nets, plus more power for their trawl hauling gear and refrigerating equipment. Deep-sea trawlers need even stronger engines to tow the trawls at the right depth and speed.

Operating for long periods without interruption (24/7), trawlers spend weeks or even months at sea until the holds are full. Our propulsion engines and generators are designed to be robust and compact while delivering high output flexibility without pause.
Reliable high-power output  MAN 27/38
Heavy-duty propulsion and maneuvering power are at the core of the MAN L27/38’s performance characteristics. This solid and reliable engine delivers good performance over the entire load range with quick acceleration and immediate load response.

The proven reliability of this engine ensures long periods between overhauls and no unscheduled maintenance and repair work. Additional economic benefits derive from its low fuel and lube oil consumption – while adhering to legal emission limits. Noise and vibration levels are also reduced, providing comfort for the crew.

Benefits

**Reliability in operation**
Solid and compact design

**Long periods between overhauls**
32,000 hours TBO

**Low fuel and lube oil consumption**
Thanks to efficient fuel injection

**Convenient power take-off (PTO)**
100 % PTO from either end of the engine plus optional 50 kW PTO

**Environmental compliance**

The MAN L27/38 is compliant with the limits specified in Tier II of the emissions legislation introduced by the International Maritime Organization (IMO). It can comply fully with IMO Tier III in combination with the MAN SCR.

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**Solid design of marine head and connection rod**
Offers stiffness and high safety margins, ensuring an ideal housing so that the bearing is kept in a good, stable condition for a long time.

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

**Jet assist**
Supports rapid acceleration in partial-load operation. The charge air pressure is increased and the maneuvering characteristics are improved.

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**Further power solutions**
MAN 175D GenSet
MAN 32/44CR
Oceanic multitaskers

Pelagic trawlers
Pelagic, or midwater trawling, is the business of catching the fish (such as herring or mackerel) that live at various levels between the seabed and the surface. Pelagic trawlers use a wide range of advanced technologies to locate, catch and store fish in refrigerated seawater (RSW) or process and freeze the fish.

Complex power needs

Pelagic trawlers often operate over longer distances than bottom trawlers. They have to confront harsh weather conditions and comply with strict environmental regulations. Operating costs have to be kept low. And minimizing noise levels is important for crew comfort.

Vessels with such varied demands require highly reliable engines with a robust and compact design. They need power and operational flexibility for propulsion, for the winches, fish pumps and RSW systems as well as for processing and freezing.
Robust, adaptable operation

MAN 32/44CR
The load profile of the MAN 32/44CR can be completely aligned with the trawler’s operation. The result is superior performance over the entire load range. The MAN SaCoSone management system can detect a load increase at an early stage and improve the response of the engine by activating a boost injection in the common rail control.

Low SFOC and OPEX, high reliability, ease of maintenance and low vibration emissions are just some of the additional advantages of the MAN 32/44CR.

**Benefits**

**Low fuel oil consumption**
Thanks to flexible setting of injection timing, duration and pressure for each cylinder

**Quick load acceptance**
Best dynamic ship operation in class

**Reliable IMO Tier III compliance**
With any fuel type and best economy thanks to our MAN SCR system

**Energy-efficient propulsion packages**
Maximal propulsion efficiency is essential for any fishing vessel. We tailor propulsion package performance to the ship’s operational profiles and optimize the matching of engine, gearbox, PTO, propeller blades, nozzle, rudder, and propulsion control system.

**Robust and compact design**
Essential properties on working vessels to allow safe maneuverability in the roughest weather conditions.

**Common rail technology**
The independent setting of injection timing, duration and pressure at any load point ensures optimum performance of the engine, especially in off-design conditions.

**MAN ECOMAP load optimization**
With the innovative MAN ECOMAP feature, you have the flexibility to run the engine according to different SFOC/power characteristics, each of them having its optimum efficiency at different load points.

**Further power solutions**
- MAN 21/31 GenSet
- MAN 175D GenSet
Looking for the big catch

Tuna purse seiners
Tuna is one of the world’s favorite fish, making it a very important commercial catch. Millions of tons are consumed per year and about 60 percent are caught in purse seiners. Tuna purse seiners search for, catch and deliver tuna back to shore.

Streamlined for strength and speed

Tuna purse seiners have to cover long distances on their search for tuna, even with the help of advanced technologies. When the vessel is full, they have to return to the onshore factory at high speed. Optimizing operating and maintenance costs and reducing vessels’ environmental impact are key challenges.

The engines face heavy-duty operation in both propulsion and auxiliary tasks, so they need reliable power availability, high output, flexibility and good partial-load performance. Keeping fuel costs low is essential.
Superior load capacity

MAN 32/44CR
The complex power demands of tuna purse seiners are perfectly met by the MAN 32/44CR with its superior load performance over the entire load range. MAN SaCoSone improves the load response significantly by activating boost injection in the common rail control. The optimized match for each load results in low SFOC/OPEX.

The engine’s load profile can be completely aligned with the vessel’s operational profile for excellent sea state capabilities.

**Benefits**

**Low operating costs**
Thanks to SFOC, thanks to the in-house development MAN ECOMAP

**Low life cycle costs**
Its high reliability ensures long TBO (time between overhauls)

**Long service life**
With main overhauls only necessary every 32,000 hours, servicing downtime is kept to a minimum

**MAN HyProp ECO fuel-efficient hybrid propulsion**
A hybrid diesel and electric propulsion system is ideal for vessels with flexible operational profiles and running hours with both high and low power demands. MAN HyProp ECO allows several operating modes, reducing fuel oil consumption and emissions. Used in combination with complete propulsion packages from MAN, efficiency can be raised even further.

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**Boost injection**
Significantly improves load response by activating a boost injection in the common rail control at a very early stage when a load increase is detected. Speed drops are avoided, recovery times are short and there is no additional air consumption.

**MAN ECOMAP load optimization**
With the innovative MAN ECOMAP feature, you have the flexibility to run the engine according to different SFOC/power characteristics, each of them having its optimum efficiency at different load points.

**High-efficiency turbocharger**
The higher pressure ratio increases the efficiency of the engine and therefore compensates for the increase in SFOC normally associated with lower NOx emissions.

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**Further power solutions**
MAN 27/38
MAN 175D GenSet
The art of aquafarming

Live fish carriers
The live fish carrier, or well boat, is a relatively new type of vessel which is steadily growing in demand. It is used to carry smolt (young fish) to the offshore farms and to carry live fish (usually salmon) from the farms to the factories. The vessels have a multitude of important functions, including treating diseases and sorting by size and refrigeration. And the better they do it, the better the salmon.

**Gentle factories**

The aquaculture industry requires efficient vessels with specialized functions such as carrying equipment for gentle handling of fish. The focus is on fish welfare, hygiene and quality. Live fish carriers may cover large areas with many different farms. The work includes a lot of dynamic positioning. Operation should be silent and OPEX low.

A fish carrier’s engines must be reliable, robust and compact, with low noise and vibration emissions. Suitable power must be combined with operational flexibility, low SFOC and good performance at low-load and high-load. Low maintenance and repair requirements are also a must.
Clean, quiet, and efficient

MAN 175D GenSet
The MAN 175D GenSet is perfectly suited for near-coastal operation thanks to its IMO Tier III compliance. Its ease of installation and commissioning results in a low CAPEX, while its low SFOC and low maintenance and repair requirements also keep OPEX down. The long TBO allows vessels to operate without overhauls between contracts.

Benefits

**Fast load acceptance**
The engine ramps up from low-load to high-load operation within seconds

**Optimized operational expenses (OPEX)**
Optimized combustion ensures low SFOC throughout the entire load range. Minimum lube oil usage and long TBO, even at low load, enable low OPEX.

**Eco-friendly future**
Engine with focus on low emissions, particularly NOx and CO2. The proprietary SCR closed-loop temperature control system remains active throughout the entire load range, ensuring low urea and NOx emissions.

**Robust technology**
Designed for extreme robustness, first-rate reliability, and maximum efficiency, the MAN 175D is available in many engine and genset options and as a modular add-on. Depending on the vessel requirements, it is also available in various power ranges, in fixed-speed and variable-speed variants, and as a hybrid power solution.

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**Highest pressure in common rail injection**
The MAN 175D uses the latest common rail injection system technology to provide the highest fuel pressure and, as a consequence, offer premium efficiency and outstanding power outputs. This is coupled with high levels of responsiveness, meaning safer maneuvering even in the harshest environments.
Listening
to the sea
Fishery research vessels
Fishery research vessels are equipped with extensive and wide-ranging scientific equipment for analysis and measurements as well as different tools for trawl fishing, water sampling, and sampling from the seabed. They are capable of worldwide operation, are classified for ice navigation, and can carry out a wide range of investigations within arctic research, marine biology research, climate and environment research, geological research, and fishery research.

Silent operators

As acoustics are so important for underwater research, low-acoustic-signature operation is crucial for fishery research vessels. That requires quiet and compact propulsion systems that can deliver a high number of running hours, and last for a very long time.

Reliable, high-power generation with low fuel consumption is essential, while hybrid systems are an option. Power generation for onboard equipment must also be quiet and efficient.
Made for quiet strength

MAN 175D
Packing state-of-the-art technology into a minimum volume, the MAN 175D is characterized by clear-cut design: Easy to commission, easy to operate, and easy to service. The powerful engine has a high power-to-weight ratio and is fully compliant with current environmental standards. Maintenance costs are kept low thanks to high engine availability and minimum servicing downtime.

Benefits

**Economic operation**
Long time between overhauls (TBO), combined with low total cost of ownership (TCO)

**Best power-to-weight ratio in its class**
Most powerful high-speed engine in the market with up to 2.9 kg/kW and max power of 4,400 kWm

**Low exhaust emissions**
Complies with IMO Tier II and Tier III (with optional MAN SCR)

**Low acoustic signature**
The low engine weight allows a wide selection of single and double resilient mountings (for gensets) to further reduce structure-borne noise and vibrations – key for meeting standards for the underwater noise of research vessels (ICES Cooperative Research Report 209).

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**Optimized for low-load application**
The MAN 175D is capable of extended low loads with high efficiency for silent operation during acoustic data collection.

**Highly efficient genset option**
The MAN 175D is available with a permanent magnetic alternator for increased efficiency.

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**Further power solutions**
MAN 175D GenSet
Flexible, efficient and clean

The fishing industry faces a major challenge in complying with strict environmental standards without sacrificing propulsion efficiency and ship performance. On vessels with flexible operational profiles and running hours with both high and low power demands, a hybrid propulsion system is often the best solution.

MAN HyProp ECO

MAN HyProp ECO propulsion combines the CP propeller, the diesel engine and the electric shaft machine (alternator/motor). The system overcomes the constraint on constant speed propulsion machinery by utilizing variable speed drive (VSD) technology at the shaft generator/motor. This means that the power take-off/power take-in (PTO/PTI) operates with variable propeller speed and optimal utilization of the diesel engine is thereby achieved, which is not possible in a conventional PTO/PTI installation with constant propeller speed.

Battery power

MAN battery-hybrid systems use batteries as an additional, independent source of power for propulsion and hotel loads. Combining combustion engines and battery power onboard a vessel optimizes engine operation and loading, resulting in higher efficiency of the complete power train. A battery-hybrid propulsion solution reduces fuel consumption, exhaust emissions and noise. At the same time, it increases the reliability of the complete power train as well as its performance due to its faster system reaction times.

Benefits of hybrid propulsion

- Large variation of operating modes
- Flexible power demand with fast system responses and a high plant flexibility
- High plant efficiency
- Reduces fuel consumption, exhaust emissions and noise
- One-source solution
- Optimized package tailored to your vessel’s needs to ensure the highest efficiency in all operating modes
10–15% reduced fuel oil consumption
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

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.

Fishing vessels must always be ready for action and so is our service team, offering continuous support, dedicated training and fast delivery of spare parts wherever your fishery operations take you.

For more information, please visit www.man-es.com/services
Get your engines started …

An interactive experience
Download our MAN Brochure Store app from the App Store or Google Play Store. Use its exciting interactive features to explore our complete range of products and services. Suitable for iPhone, iPad, and Android.
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