CRUISE + FERRY
Intelligent and reliable engine solutions
MAN Diesel & Turbo is the world’s leading provider of large-bore diesel engines and turbomachinery. Our portfolio includes two-stroke and four-stroke engines for marine and stationary applications, turbochargers and propellers, as well as gas and steam turbines, compressors and chemical reactors.

Our commitment to minimizing fuel consumption while meeting even the most advanced emission regulations plays a vital role in safeguarding the environment for future generations.

POWERING THE WORLD — RESPONSIBLY
Safety first
The cruise and ferry industry goes hand in hand with the highest standards of safety. Our engines contribute to the overall safety of your ship, its passengers and its crew by means of reliable design and quality.

Environmental and economical factors
Passenger vessels typically sail in environmentally sensitive areas, so their engines must meet stringent emission regulations. At the same time, operating costs must be kept low to ensure the best possible economic result in an increasingly competitive environment.

Intelligent power for your business
We offer a wide range of highly efficient and reliable Common Rail engines for cruise ships and ferries. Common Rail technology allows the independent setting of injection timing, duration and pressure. This flexibility provides the highest possible degree of freedom of optimization in fuel consumption, NOx and smoke emissions.
FOUR-STROKE ENGINES FOR CRUISE SHIPS AND FERRIES
Engineering for environmentally friendly holidays

The growing awareness of the cruise industry’s environmental role together with ever more stringent emissions regulations, especially in coastal areas, is an important factor in the design of new cruise ships. The ships must also be economical to operate, so as to keep holiday prices attractive.

Today’s cruise ships must accommodate high demands for non-stop reliable, comfortable and silent power generation onboard. We offer highly efficient and reliable Common Rail (CR) propulsion engines and GenSets, which – thanks to their fully electronic injection system – allow the highest possible degree of freedom of optimization in fuel consumption, lowering NO\textsubscript{x} and smoke emissions while ensuring the utmost passenger comfort.

Cruise Ships

Once the preserve of the very rich, cruises are now affordable to many and this segment is experiencing significant growth. Cruise lines are building spectacularly complex ships that operate all-day, practically every day of the year.

Cruise + Ferry
MAN 48/60CR: Efficient, quiet and clean

Our Common Rail technology can be used in combination with a wide range of marine fuels – from high quality distillates down to low quality HFO – and allows for improved fuel consumption and emissions, especially in off-design conditions. By adding MAN’s innovative ECOMAP feature, the inherent flexibility potential of our fully electronic injection system can be used to our customers’ maximum benefit. Furthermore, project specific, tailor-made engine seatings ensure the lowest level of structure-borne vibrations for the highest degree of passenger comfort.

Benefits

- Powerful engine
  1,200 kW per cylinder in the speed range of 500/714 rpm
- High efficiency
  Optional ECOMAP function enables use of different engine performance characteristics
- Low maintenance costs
  MAN quality and maintenance friendly design ensures long service intervals
- Economic and reliable compliance with IMO Tier II NOx emission limits
  In combination with MAN SCR (Selective Catalytic Reduction) and intelligent catalyst regeneration algorithm

Committed to the future

MAN Diesel & Turbo’s development agenda is focused on the matured, risk-controlled introduction of new technologies. Our commitment to continuous innovation without compromise on quality and reliability enables our customers to plan with confidence while staying ahead in terms of technology.

Further power solutions

MAN 32/44CR  MAN 35/44DF  MAN 51/60DF

ECOMAP

The innovative ECOMAP feature gives the operator the flexibility to run the engine along different SFOC (Specific Fuel Oil Consumption)/power characteristics, each of them having its efficiency optimum at different load points. There is no need to modify anything in the engine’s hardware – it works on the basis of the Common Rail technology and the jetronic electronic management system.
Improving performance

Fast Ferry operators provide rapid shore-to-shore connections with high power, low weight ship designs that ensure their economic viability against other means of transportation. At the same time, they have to ensure passenger comfort with low noise and vibration levels as well as compliance with stringent emission limits in their typical areas of operation.

Our answer is a set of engines that deliver the necessary power quietly with minimum impact on payload and operating costs.

Fast Ferries

When quick shore-to-shore connections become too long for bridges or inconvenient to be reached by driving around the coast, that’s where fast ferries come in. Their task: to transport passengers and vehicles quickly, safely, reliably, and on time.
High speed, fast acceleration, and continuously high power – the MAN 28/33D STC really moves. The compact yet powerful engine has a high power-to-weight ratio and is fully compliant with current environmental standards, producing NOx emissions that fulfill IMO Tier II and EPA Tier II regulations.

Benefits

- **Economic operation**
  - Lowest TCO (Total Cost of Ownership) on the market
- **Low maintenance costs**
  - Due to long TBO (Time Between Overhauls) intervals and on-board maintenance
- **Best power to weight ratio in its class**
  - 5.3 kg/kW, unequalled by any other medium speed engine

Easy on maintenance and costs

Maintenance costs are kept low thanks to high engine availability, and with main overhauls only necessary every 32,000 hours, servicing downtime is kept to a minimum. As a result, you can count on low overall operating costs and best-in-class SFOC.

Further power solutions

MAN 175D

**STC (Sequential Turbocharging)**

Two identical yet independent turbochargers provide high torque at low rpm. Fuel injection quantity, rate, and timing are precisely managed by microprocessors. For perfect torque and acceleration control.

**SaCoSy** (Safety and Control System on engine)

Combines all functions of modern engine management into one complete system. Fully integrated it forms one unit with the drive assembly.
Improving economic performance
As well as dealing with environmental concerns, ferry operators have to keep operating costs on a low level to ensure their viability in a very competitive business environment. We offer a wide choice of efficient diesel engines (running on heavy fuel or distillate) that make an economic difference and comply with IMO Tier III NOx limits through the addition of our exhaust-gas-cleaning MAN SCR system. Our closed loop system control, complemented with an intelligent regeneration algorithm for the MAN SCR, enables the engine and the catalyst to operate with minimum urea consumption and best possible fuel efficiency. Of course, we also offer dual fuel engines that are IMO Tier III compliant when running on gas.

RoRo Passenger Vessels
Modern ferries place high demands for reliability and comfort on their main engines. Growing public awareness with respect to ship emissions and, especially, the expected increase of future NOx emission controlled areas in important regions of ferry operation has made environmental compliance another key factor for modern RoRo passenger vessel designs.
MAN 32/44CR: State of the art

With our advanced in-house CR (Common Rail) technology the MAN 32/44CR improves fuel economy and reduces emissions, particularly in off-design conditions. In combination with the MAN SCR system it provides reliable compliance with IMO Tier III emission regulations regardless of marine fuel type.

These technological solutions have been developed in-house and work perfectly together to achieve best economic performance even under the most demanding emission regulations.

Benefits
- Future-proof Common Rail technology
- For outstanding flexibility and off-design performance
- Reliable IMO Tier III compliance
- With any fuel type and best economy thanks to our MAN SCR system
- Intelligent fuel savings
  - Thanks to our innovative ECOMAP feature (Optional)

Dual fuel option
The MAN 32/44CR can be converted to its dual fuel variant 35/44DF. Running your vessel on gas gives you the option to comply with the most stringent emissions regulations without the need for any exhaust gas cleaning. We support, you decide.

Common Rail technology
Independent, flexible setting of injection timing, duration and pressure at any load point ensures optimum performance of the engine, especially in off-design conditions. Our fully in-house developed Common Rail system represents the core of a technology that can look with ease and confidence into the future.

ECOMAP
With the innovative ECOMAP feature you have the flexibility to run the engine along different SFOC/power characteristics, each of them having its efficiency optimum at different load points. ECOMAP does not require hardware modifications – it works on the basis of the Common Rail technology and the existing electronic management system.

Further power solutions
MAN 21/31 GENSET  MAN 23/30DF GENSET
MAN 27/38  MAN 28/32DF GENSET
MAN 35/44DF  MAN 48/60CR  MAN 51/60DF
Ensuring commercial reliability
Driven by the global growth, the mobility of wheeled cargo – both domestically and internationally – has increased rapidly in recent decades. Sustaining this increase depends on reliability and punctuality. Without reliability there can be no planning of local transport logistics or global supply chains. We offer a wide range of highly reliable engines for powering ferries. Large ferries sailing in international waters or smaller ones operating on local routes, all of them benefit from our advanced engine portfolio, whether for operation on conventional marine fuels or LNG.

RoRo Cargo Ferries
RoRo Cargo Ferries play an essential role in connecting the roads and railways of regions separated by sea. Loading and unloading take little time, because the cargo is simply driven on and off board. This enables the just-in-time delivery of products such as food.

SUSTAINABLE TRANSPORT SOLUTIONS
MAN 48/60CR: Power for reliable logistics

The MAN 48/60CR combines high power output with low fuel consumption. It delivers top performance, operational flexibility and ultimate reliability.

Benefits
- **Fuel savings**
  - Thanks to Common Rail technology and our innovative ECOMAP optional feature
- **Low maintenance costs**
  - Maintenance-friendly design with long service intervals
- **High reliability and availability**
  - Due to well-proven, robust design

Dual fuel solutions

Our dual fuel engine derivatives and conversion solutions are safe and powerful. We also offer complete solutions for gas-burning propulsion plants with dual fuel engines, onboard LNG storage and fuel gas supply systems (thanks to the recent acquisition of Cryo AB).

**Common Rail safety concept**

All high-pressure pipes are screened or have a double wall design. Flow-limiting valves at each cylinder prevent uncontrolled injection. Redundant high-pressure pumps and sensors safeguard the operating ability. In single engine plants, the Electronic Control Units are redundant as well.

**SaCoDe** engine management system

Ease of operation, outstanding reliability, and fast commissioning are the key features of the **SaCoDe**. The system is highly standardized and its modules can be exchanged quickly.

Further power solutions

- **MAN 21/31 GENSET**
- **MAN 23/30DF GENSET**
- **MAN 27/38 GENSET**
- **MAN 28/32DF GENSET**
- **MAN 32/44CR GENSET**
- **MAN 35/44DF GENSET**
- **MAN 51/60DF**

**Cruise + Ferry**
IMPROVING YOUR ENVIRONMENTAL PERFORMANCE

Equipped for strict emissions regulations
We are firmly committed to reducing emissions with minimum impact on your operating costs. This includes an active partnership with environmental institutions and development banks. For our customers, it means engines and system packages that are extremely well matched with integrated, intelligent and dynamic controls.

Benefit from overall system competence
MAN Diesel & Turbo unites the core technologies and competencies, which influence decisively the performance of our products, under one roof: injection systems, turbocharger, controls for both, engine and after-treatment systems. This enables us to design and implement highly efficient emission-reduction packages for both new buildings and retrofits.

Selective Catalytic Reduction (SCR) is the most field-tested and reliable system for achieving NOx reduction rates up to 90%. Due to a chain of chemical reactions taking place between catalyst and exhaust gas, harmful NOx substances are transformed into ecologically benign constituents.
MAN PrimeServ

MAN PrimeServ is the dedicated MAN Diesel & Turbo 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 spare parts, as well as maintenance, repair and comprehensive individualized service plans.

MAN PrimeServ’s aim is to provide:

- 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 PrimeServ

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.eu/primeserv
All data provided in this document is non-binding. This data serves informational purposes only and is not guaranteed in any way. Depending on the subsequent specific individual project, the relevant data may be subject to changes and will be assessed and determined individually for each project. This will depend on the particular characteristics of each individual project, especially specific site and operational conditions.

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

Explore our latest news via an app
DieselFacts brings you the most recent news from the world of two-stroke and four-stroke engines, including the latest technical papers, in-depth features and videos.