



Products
services
portfolio

Retrofit & upgrade

MAN PrimeServ

4-stroke propulsion &
propeller solutions

Optimized equipment

Your partners for retrofit solutions

Reliability, greater efficiency and compliance with new environmental legislations are just some of the benefits our advanced retrofit solutions provide.

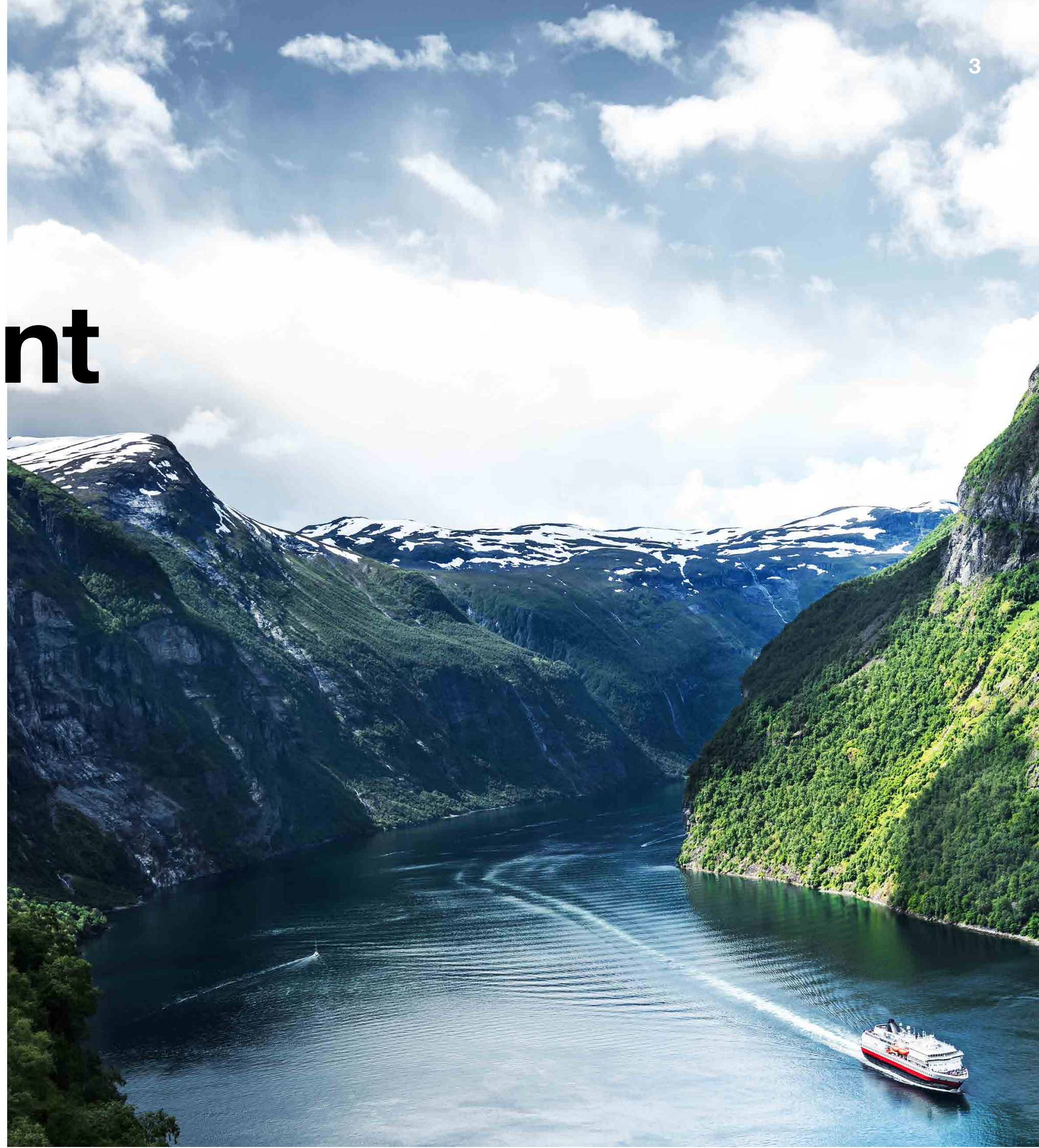
Keeping your equipment consistently up to date

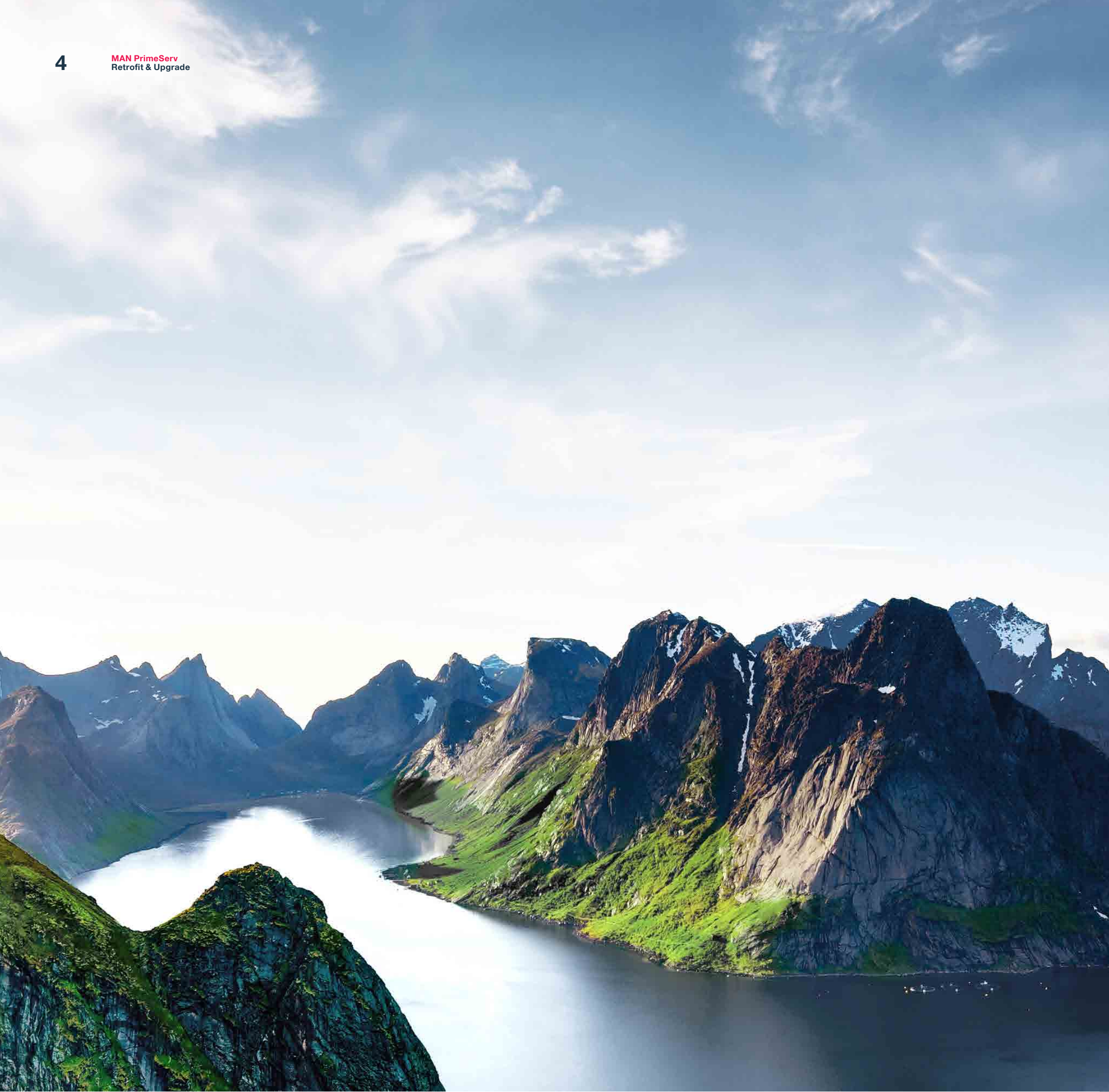
Your existing engines, machinery, auxiliary systems, instrumentation and control systems might be aging, but that does not mean they cannot keep delivering value. Our comprehensive, tailored retrofit solutions can bring your assets up to date and keep them there, through continuous development and modernization.

Available for a wide range of engines, remote control systems and CP propeller configurations, our retrofits and upgrades will help you improve efficiency, boost performance, save on fuel and lube oil, while lowering maintenance costs and enabling more flexible operation.

MAN PrimeServ retrofits will also help you comply with increasingly stringent environmental regulations and put your operations on the road to energy transition and decarbonization. And they will benefit your employees by improving crew safety, making equipment easier to operate and lowering emissions.

For reducing emissions from diesel engines, consider our Tier II retrofit or SCR (Catalytic Selective Reduction) for Tier III compliance. In addition to improving your environmental performance, these retrofits can help you save fuel and reduce operating costs.

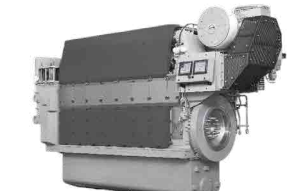




CPP optimization
Fuel oil savings



MAN EcoOptimizer
Fuel oil savings



Cable package retrofit
Safety & reliability



AT3000 remote control system retrofit
Safety & reliability



CPP upgrade + propeller nozzle
Fuel oil savings



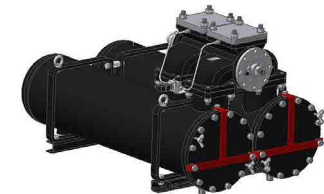
Lube oil centrifugal filter
Lube oil optimization



Safety and monitoring module replacement
Safety & reliability



Deuta werke tachometer converter replacement
Safety & reliability



External exchangeable lube oil filter
Lube oil optimization



AT2000 REM401 I/O card replacement
Safety & reliability



Black smoke limitation package
Emission management



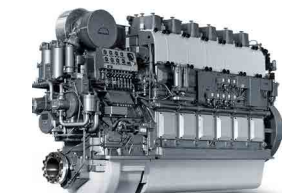
MAN OPL alphasonic
Emission management



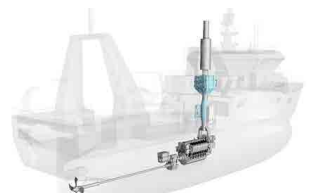
Crankcase monitoring system
Safety & reliability



L27/38 fuel system upgrade
Safety & reliability



Tier II upgrade
Emission management



Tier III upgrade
Emission management

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Controllable pitch propeller optimization

Upgrade your CP propeller with the latest technology and hydrodynamic know-how. A CP propeller optimization provides a great fuel-saving, allowing your vessel to meet stricter emission levels, CII requirements and potentially improve your energy class, while optimizing your operational economy, providing a short return on investment.

Description

Based on your current operating profile and possible EEXI OPL (Overrideable Power Limitation) MAN Energy Solutions will support you, uncovering the potential of optimizing your current propeller configuration.

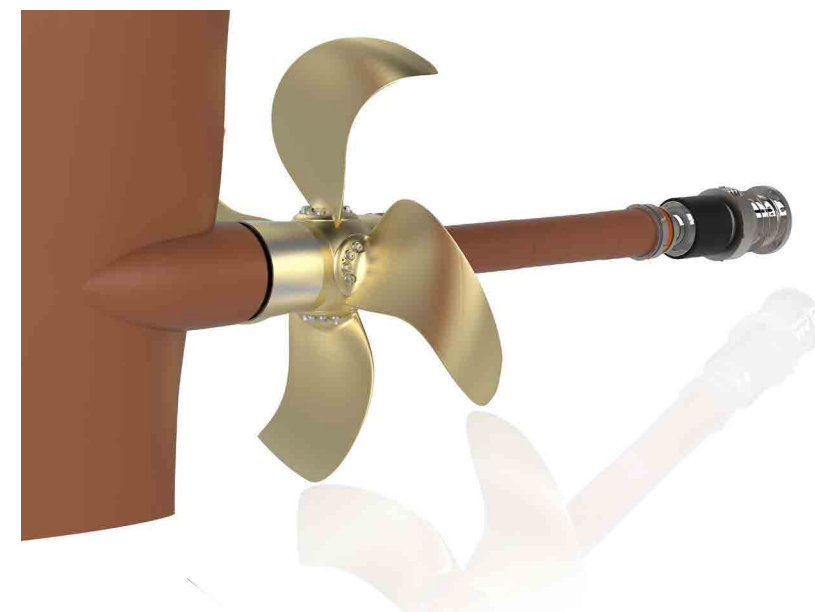
Leveraging state-of-the-art CFD (Computational Fluid Dynamics) analysis, design, and optimization tools, MAN ES can provide an controllable pitch propeller optimization solution for your existing fleet.

A perfect hydrodynamic propeller integration is always optimized with the ship's hull and any flow-guiding and efficiency improving devices, such as high-efficiency rudders and rudder bulbs.

Our solution is tailor-made for your specific vessel and includes an optimized propeller blade design combined with other MAN ES efficiency improving devices such as EcoBulb rudder bulb, fairing cone solutions and new combinator mode software.

Get more information

Learn more about our products and how our upgrade solutions can improve your propulsion performance. Do not hesitate to contact your local MAN PrimeServ office to receive more information on possible upgrades.



Controllable pitch propeller optimization

Exploit our knowledge on engine and propulsion system characteristics and gain more with combinator curve and aft ship optimization.

Key benefits

- Increased propulsion efficiency
- Reduced power requirement, fuel consumption and emissions
- Scrap value of existing propeller blades can be included in the business case
- Short installation time of propeller blades and EcoBulb – normally less than one week
- Installation can be carried out in connection with normal overhaul and propeller maintenance / PMC
- Optimization supporting your Carbon Intensity Indicator (CII) targets
- Short return on investment

Scope of supply

- For propeller hub:
- Optimized controllable pitch propeller blades
 - Slide and sealing rings
 - Corrosion anode, if required

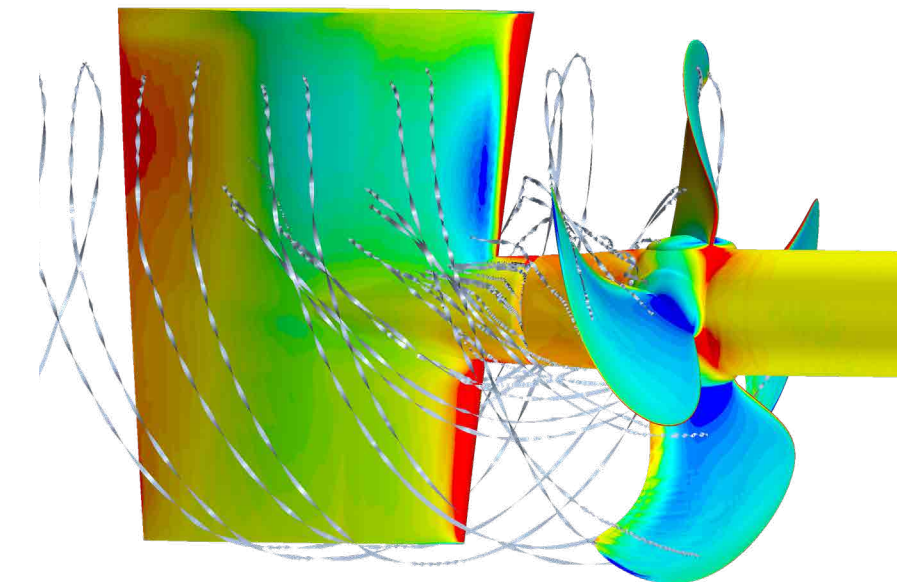
- For propulsion control system:
- Review and optimization of existing combinator mode software

Applicability

- Available for MAN Alpha controllable pitch propeller configurations

Reference list

- More than 100 vessels has optimized their MAN Alpha controllable pitch propeller configurations with new and improved aft ship solutions



MAN EcoOptimizer

As part of our continuous development and constant strive to improve design, operational performance and economy – our optimized combinator-mode-software is now offered for propulsion solutions with MAN Alpha controllible pitch propellers and Alphasonic control systems.

Description

The total fuel oil consumption is determined by the power required for propelling the ship and the corresponding SFOC of the main engine. Comparing the runs of the optimum propeller and engine curves will reveal that they do not coincide. That is, one curve is optimum for the propeller, and another one for the engine.

Thus, if for each ship speed the required propulsion power and SFOC is calculated along each constant ship speed, the optimum setting of propeller shaft speed and propeller pitch setting can be determined. This is considered when generating the third and final optimized combinator mode curve that will result in minimum fuel oil consumption.

Installing the optimized combinator mode software requires a MAN Energy Solutions superintendent with expert knowledge of the propulsion configuration. If you have maintenance planned in the near future, it would be preferable to order the optimized combinator mode software, and have the service engineer install it when on board already.

Key benefits

- Order now, install when convenient
- Fuel saving potential
- Overall economy-optimization and operational mode setting considering ship speeds, propeller pitch settings and individual main engine SFOC mapping
- Short payback time
- Performance and consumption display via Alphasonic 3000 and Alphasonic 2000

Scope of supply

- Optimized combinator mode software
- MAN PrimeServ superintendent for installation and testing.

Applicability

Applicable for remote control systems types AT2000 and AT3000 from MAN Energy Solutions



CP propeller upgrade + propeller nozzle

For optimizing the propeller thrust and pulling performance of specialized vessels, customized Alpha High Thrust (AHT) nozzle designs are offered.

Description

The AHT nozzle designs offer superior performance compared to the '19A' propeller nozzles, which have been common standard in the marine industry. The increased bollard pull achieved when using the AHT nozzle is not only a result of the CFD-optimized nozzle profile, which is double-curved on both the inner and outer surface. Other contributing factors are e.g., nozzle length/diameter optimization, nozzle built-in support, and aft ship lines adaption.

High-thrust and speed customized AHT nozzle installations are popular for vessels requiring increased pulling power and still limited free-sailing resistance. Our range of ducted propellers and AHT nozzles are the thrust boosters for high performance vessels enabling bollard pull and towing force at very high levels. The propeller blades are specifically designed and tailor-made for optimized operation with the AHT nozzles – customized into the aft ship vessel designs.



Key benefits

- More pulling power thanks to the increased propeller thrust - especially at lower ship speeds
- Reduced fuel consumption - A specific bollard pull or towing force can be delivered at a reduced power output and engine rating
- Individual customization, balanced to application and aft ship design
- Retrofit potential gain exceeding 20% increased bollard pull when upgrading older nozzles to the AHT design, combined with state-of-the-art MAN Alpha propeller blades

Scope of supply

- AHT nozzle
- State-of-the-art MAN Alpha propeller blades optimized for the actual vessel operational profile
- All relevant propeller sealing and slide rings

Applicability

Applicable for MAN Alpha controllible pitch propellers operating in nozzle



Lube oil centrifugal filter

Extra cleaning through a centrifugal filter is an option that ensures proper performance and a long lifetime of the lubricating oil. Centrifugal oil cleaners provide superior bypass filtration that removes contaminants from the lubricating oil of marine engines.

Description

This filter removes contaminants by means of centrifugal force. The centrifugal lubricating oil filter is easily fitted on the engine side cover, near the front-end box.

The filter is designed with a paper insert, making it easier to clean the system periodically. Please note that centrifugal filter installations do not replace the external separator units.

If the centrifugal by-pass filter is building up deposits, it indicates that the external separator unit is working poorly.

Key benefits

- Order now, install when convenient
- Cleaner lubricating oil
- Extension of oil lifetime
- Reduced engine wear
- Enhances long-time preventative maintenance
- Reduces total cost of ownership

Scope of supply

- Cyclone filter retrofit.
- Side cover adapted to the Cyclone filter retrofit
- Piping for connection to existing lubricating oil system

Applicability

Applicable for the MAN engine types L21/31 and L27/38



External exchangeable lube oil filter

Several vessel owners have requested a solution for exchangeable filtration for their lubrication system. The paper filter elements will last longer if the separator is in operation, but the system will allow the existing lube oil separator to be out of service.

Description

MAN ES has designed and released an insert, replacing the existing built-in backflushing filter with a "filter dummy". This device will lead the oil flow through an external filter cartridge with exchangeable paper filter

Scope of supply

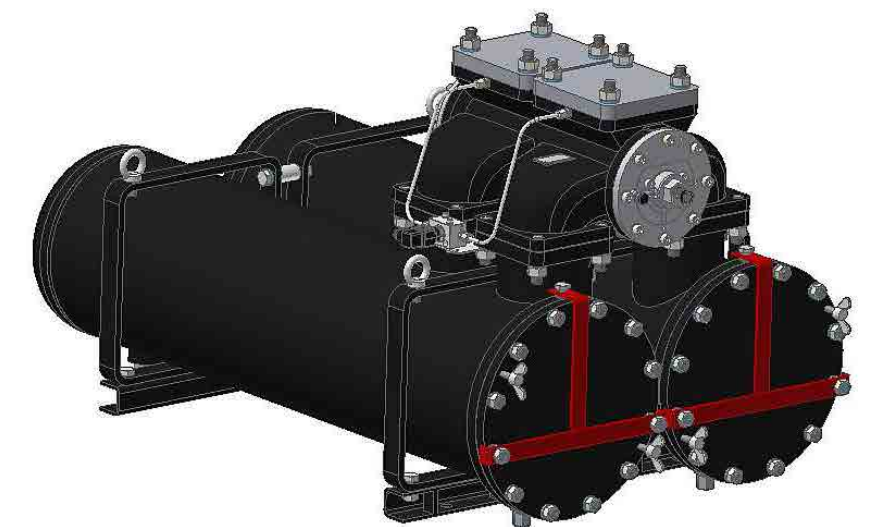
- Installation of the new "filter dummy"
- Fitting of external filter
- Piping from the engine to wherever the external filter is installed
- Piping and fitting of the external filter can be done during normal operation. This means that the vessel will only be out of service for a few hours, while replacing the existing filter with the "filter dummy" and connecting the piping.
- Piping is not included and is a shipyard/piping workshop task.

Key benefits

- Order now, install when convenient
- Easy installation
- Easily exchangeable filter inserts
- Installation can be done while in service, only a few hours out of service is necessary

Applicability

Applicable for engine type L27/38



AT2000 REM401 I/O card replacement

The production of the REM401 I/O card has been discontinued, so a retrofit replacement is needed.

Description

We recommend that you implement this retrofit in due time, as a defective REM401 module will leave your vessel out of service until the retrofit has been performed. Being proactive and retrofitting before any breakdown, will save you time and money.

Retrofitting the PCS REM401 I/O modules with the new I/O modules is unfortunately not a plug-and-play solution. You need an upgrade of the CPU as well, and therefore we have made a complete retrofit package.

Installing the new REM401 upgrade package requires a MAN Energy Solutions superintendent with expert knowledge of the system. If you have any maintenance planned in the near future, it would be preferable to order the REM401 upgrade package and have the superintendent install this when on board already.

Key benefits

- Order now, install when convenient
- Fast (1 day) installation
- Avoid loss of system features
- Upgraded control software
- Calibration of propulsion control system included
- Health check of the propulsion system included

Scope of supply

- I/O module and CPU chip
- Programming of software
- Installation and loading of software.

Applicability

Applicable for AT2000 Propulsion Control Systems



Crankcase monitoring system

The crankcase monitoring system will monitor the most vital parts of your engine and warn you in due time if temperature levels are reaching critical limits. Immediate detection of any increase in temperature is an important contribution to damage prevention and crew safety.

Description

The crankcase monitoring system is part of the engine safety concept. The general task of the system is to protect the engine against serious consequential damage, for example if a bearing failure occurs.

Each cylinder unit is fitted with splash oil monitoring. The splash oil is caught in an oil trap with a temperature sensor on the inside of the crankcase covers.

In addition, main bearing temperature sensors are mounted on each main bearing. The temperature values are displayed on the crankcase monitoring panel and are interfaced to the engine safety system.

The crankcase monitoring panel can be installed in the engine room or in the engine control room (up to 80 meters from the multifunction control box).

Installing the crankcase monitoring system requires a MAN Energy Solutions superintendent with expert knowledge of the system.

If you have any maintenance planned in the near future, we recommend to order the crankcase monitoring system and have the superintendent install it while already being on board.

Key benefits

- Order now, install when convenient
- The splash oil monitoring system measures the oil temperature for each cylinder unit.
- The main bearing temperature sensors measure the main bearing temperatures.
- Alarm and engine shutdown in the event that the oil temperature reaches a critical limit.
- The crankcase monitoring system minimizes the risk of serious consequential damage (e.g. on the crank shaft)

Scope of supply

- Crankcase monitoring panel
- Fitting of engine covers with a splash oil kit
- Temperature sensors for splash oil monitoring
- Temperature sensors for main bearing monitoring
- Cables and mounting parts
- Special tools

Applicability

- Applicable for engine types L23/30A, L28/32A, L21/31 & L27/38.



L27/38 fuel system upgrade

By installing the fuel system upgrade and the included improved fuel filters in strategically safe areas, MAN PrimeServ Frederikshavn makes sure that your L27/38 will be updated to today's modern standards.

Description

After the retrofit, your L27/38 engine will fulfill the latest SOLAS regulations, with improved general safety and reliability of your vessel.

The graphic below illustrates how the fuel pipes have been removed from the hot areas of the exhaust piping and turbocharger, and reinstalled in safer areas.

Key benefits

- Order now, install when convenient
- Improved filtration
- Increased fuel equipment lifetime
- Reduced risk of fire
- Safe operation

Scope of supply

- Improved fuel filtration units
- Drip tray and related parts
- Complete set of pipings, valves and connectors

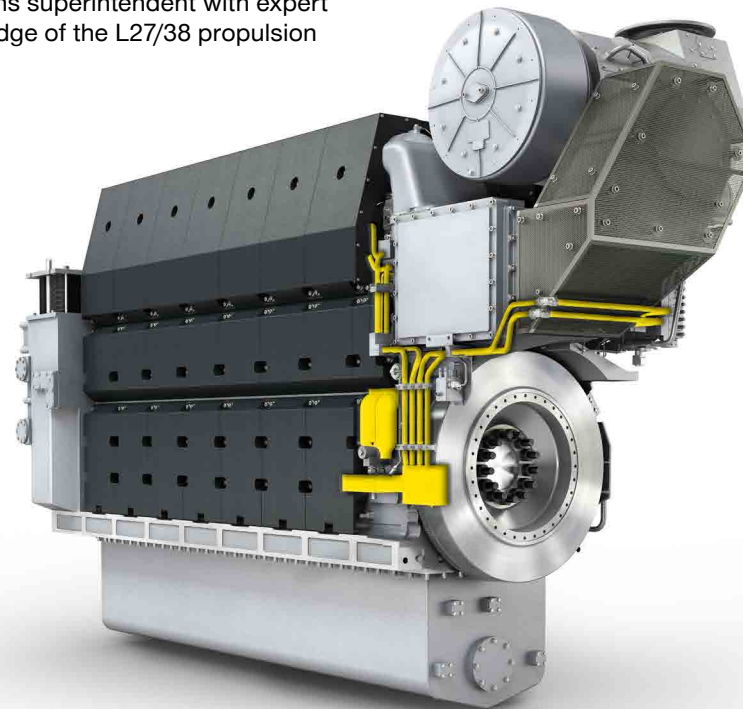
Applicability

Applicable for MAN L27/38 marine propulsion engines

The external fuel piping needs to be changed accordingly, and universal pipes and connectors are included in the upgrade package. Improved fuel filtration units are also included in the package.

Installation of the Fuel system upgrade package requires a MAN Energy Solutions superintendent with expert knowledge of the L27/38 propulsion engine.

If you have maintenance planned in the near future, it would be preferable to order the fuel system upgrade package, and have the MAN PrimeServ service engineer install it when on board already.



Cable package retrofit

Engine cabling and connections are worn over time, causing bad connections and periodic errors in the safety and monitoring system. This often triggers false alarms and causes risk of unintentional operational delays.

Description

We recommend to have this retrofit done in due time, as worn cabling potentially will leave your vessel out of service, until the retrofit is performed. Being pro-active will save you time and money.

Retrofitting existing cables and connections fitted on the engine, and installing the cable package retrofit requires a MAN Energy Solutions superintendent with expert knowledge of the engine and cable installation.

If you have any maintenance planned in the near future, we recommend ordering the cable package retrofit now, and have it installed by the superintendent while on board already.

Key benefits

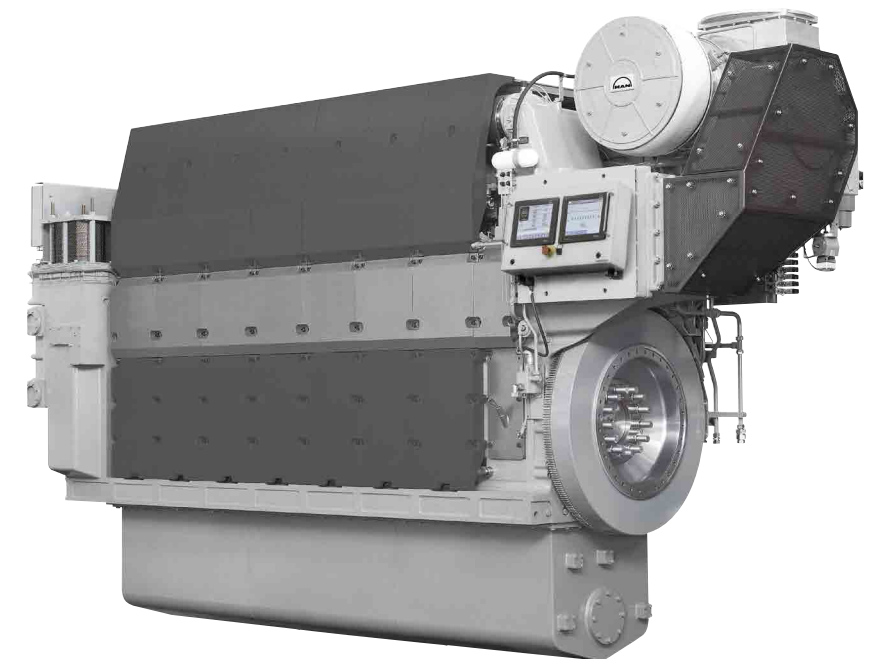
- Avoid system failure and vessel down time
- Order now, install when convenient
- 3 days installation (Estimated)

Scope of supply

- Complete cable package
- All relevant connections and plugs
- Fittings and cable glands

Applicability

- Applicable for MAN propulsion engines L27/38 and L21/31



AT3000 remote control system retrofit

Get a tailored propulsion control system to your vessel. MAN Energy Solutions has designed a new control system consisting of standard control elements that can be tailored individually. The new system design is the result of our continuous efforts to develop and improve our products to ensure that they perform to the highest current and future standards.

Description

The Alphatronic 3000 remote control system is the optimal retrofit solution for MAN Alpha controllable pitch propellers that need to upgrade an existing remote control system, for example due to obsolete components.

We recommend having such a retrofit done in due time, as a defective remote control system will leave your vessel out of service. Be pro-active and retrofit before risking a breakdown. This will save you time and money.

Key benefits

- Avoid system failure and vessel downtime
- Safe control of the propulsion plant, and reliable manoeuvring of the ship.
- Touch screen (7 inch) with easy and logical user interface (HMI)
- Minimal service and maintenance requirements
- Potential fuel savings due to optimized combinator curves and control modes.
- User-friendly functions due to logic and ergonomic design of control panels, handles, and displays.
- Optional speed pilot, pitch fine adjust, and VFD mode

The control system fulfills requirements for propulsion plants with two- or four stroke engines connected to controllable pitch propellers. The AT3000 system is a remote control system designed to control the ship's propulsion machinery, and it can be retrofitted to all vessels that have MAN controllable pitch propeller configuration.

Commissioning the AT3000 retrofit requires a MAN Energy Solutions superintendent with expert knowledge of the AT3000 system.

Scope of supply

- AT3000 Remote Control System hardware and vessel-specific software
- Complete documentation package and installation guide
- Class approval

NOTE: Cabling and hardware installation not included. This is considered the scope of a third party.

Applicability

Applicable for MAN Alpha CPP configurations



Safety and monitoring module replacement

The existing safety and monitoring base modules have been discontinued, so a retrofit replacement is needed.

Description

We recommend to do this retrofit in due time, as a defective base module will leave your vessel out of service until the retrofit is performed. Being pro-active and retrofitting before any breakdown, will save you time and money.

Key benefits

- Avoid system failure and vessel downtime
- Order now, install when convenient
- Fast (1 day) installation

Scope of supply

- Installation of the new I/O modules
- BM2 hardware including adaption and upload of vessel specific software configuration

Applicability

Applicable for AT2000-controlled MAN L27/38, L21/31 propulsion engines and MAN Alpha CP propeller configurations

Retrofitting the engine and gear-mounted base modules with the new version 2 (BM2) modules is unfortunately not a plug-and-play solution. Adaption and upload of the BM2 software configuration is required, and we have therefore made a complete retrofit package.

Installing the new BM2 upgrade package requires a MAN Energy Solutions superintendent with expert knowledge of the AT2000 system. If you have any maintenance planned in the near future, we recommend to order the BM2 upgrade package now, and have the superintendent install it when already on board.



Deuta werke tacho converter replacement

The Deuta Werke tacho converter modules are outdated and are no longer serviceable. Therefore, we have developed a successor, built on our SaCoS platform.

Description

The Deuta Werke retrofit is a complete exchange of the existing tacho converters with new SaCoS modules. Unlike the Deuta Werke, the SaCoS modules are software-based and have a long life expectancy.

Replacing the Deuta Werke tacho converter with new SaCoS requires a MAN Energy Solutions superintendent with expert knowledge of the system. If you have any maintenance planned in the near future, we recommend to order the SaCoS modules and have the superintendent install them when on board already.

Key benefits

- Order now, install when convenient
- Long life expectancy
- Software-based platform
- Requires only a few modifications to the propulsion system

Scope of supply

- Installation of new cabinet with SaCoS module
- Alteration and modification of the existing cabinet and interfacing to SaCoS
- Commissioning of SaCoS module
- HAT with classification surveyor.
- Project-specific software package
- Class approval

Applicability

MAN ES types with Deuta Werke tacho converter replacement modules. T23, L23/30, L23/30A, V23/30A, U28, L28/32, L28/32A, V28/32A. (In general, engines built before year 2000).



Black smoke limitation package

For engines with a mechanical governor configuration, MAN Energy Solutions has developed a solution for fuel index limitation to reduce black smoke. The solution will limit the fuel index during start-up and sudden load changes, thereby ensuring a balanced combustion and limiting the creation of black smoke.

Description

The Black smoke limitation package consists of a fuel index limiter, a Lambda controller, and pipes and valves for the Jet-Assist. The charge air controls the Lambda controller, and as long as the charge air pressure is relatively low, the Lambda controller will decrease the fuel rack index and activate the Jet-Assist system.

Key benefits

- Order now, install when convenient
- Reduction of visible smoke during starting procedure
- Reduction of visible smoke in case of sudden load changes
- Less fouling of engine and exhaust gas system

Scope of supply

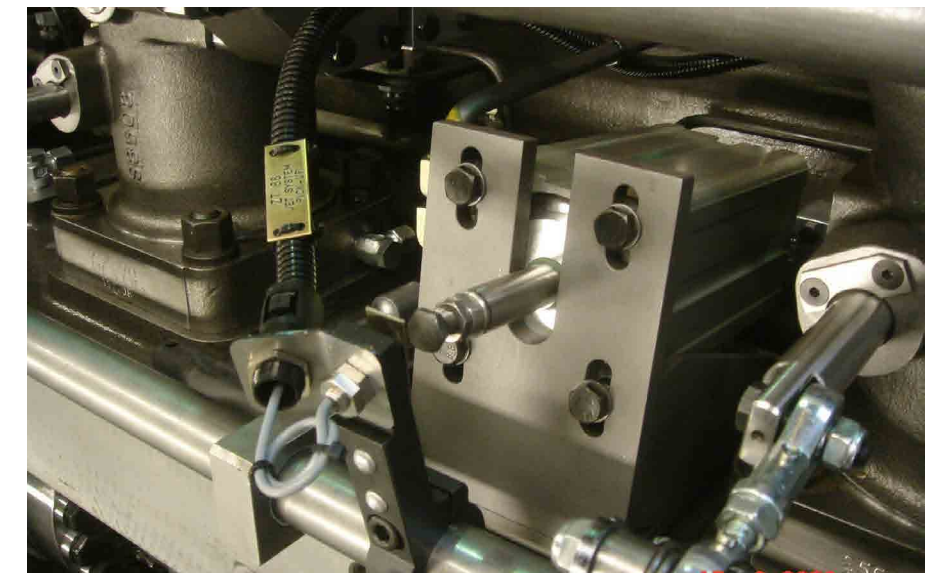
- Fitting of Lambda controller
- Fitting of start fuel limiter
- Fitting of parts required for Jet-Assist system
- Installation of electrical connection
- Adjustment of Lambda controller

Applicability

- Applicable for the MAN L21/31 and L27/38 engine types equipped with mechanical governors

The Jet-Assist system will apply compressed air to the compressor side of the turbocharger, and hereby accelerate the rotor and charge air pressure within a very short period.

A MAN Energy Solutions superintendent with expert knowledge is needed to install the Black smoke limitation package. If you have any maintenance planned in the near future, it would be beneficial to order the Black smoke limitation package and have the superintendent install it while already on board.



MAN OPL Alphatronic

MAN Overridable Power Limitation (OPL) is a retrofit solution designed to lower the energy efficiency index for existing ships (EEXI) by limiting the engine power of the existing fleet to comply with the IMO resolution MEPC 335 (76) adopted on 17 June 2021.

Description

Based on global measures to reduce greenhouse gas (GHG) emissions from shipping, new amendments were introduced at the International Maritime Organization's (IMO's) MARPOL convention in June 2021. The amendments include new energy efficiency provisions – the Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII).

Vessels affected by EEXI have to attain EEXI approval by the first periodical survey in 2023 - at the latest. Among others, the ship type, ship capacity, and the principle of propulsion determine the EEXI value required, that is, the maximum acceptable attained EEXI value. The EEXI value must be calculated individually for each vessel affected by the regulation, and the outcome provides the the necessary power limitation to fulfill the EEXI requirements.

The requested overridable power limitation (OPL) is implemented in the existing MAN Energy Solutions controllable pitch propeller (CPP) remote control system. The limits are then set and controlled by the remote control system (OPL activated/overridden). A remote operating push-button, normally installed on the main bridge, determines if the OPL is activated or overridden. As the engine load equals the propeller thrust (pitch angle and rpm), and all relevant and required signals are available in the remote control system (index, charge air pressure, rpm, pitch, etc.) the overall main engine load is managed by the CPP remote control system.

Key benefits

- Easy installation on AT2000 / AT3000 remote control systems
- Activated/overridden OPL directly from main bridge
- Override logging
- Optimized for better performance (combinator curves reviewed, optimized and implemented)
- Stable and efficient propulsion control thanks to system level OPL, with minimum wear on the propulsion configuration, and lowest possible fuel oil consumption

Applicability

Applicable for MAN Energy Solutions CPP remote control systems type AT2000 and AT3000

Scope of supply

- EEXI compliant software including review and optimization of existing combinator curves
- Push button for OPL activated/overridden
- Onboard management manual (OMM)
- MAN PrimeServ superintendent for installation and test



Tier II upgrade

With the introduction of IMO Tier regulations in MARPOL Annex VI, vessels with medium speed engines must comply with Tier II regulations globally and Tier III regulations locally in ECA areas.

Description

The pre-2011 four-stroke L23/30, L27/38 and L28/32 medium speed engine types were not designed for Tier II compliance. However, MAN Energy Solutions has launched a Tier II upgrade kit to recertify the engines to Tier II compliance.

The upgrade and Tier II compliance is obtained by internal engine modifications, i.e. simple exchange of components. The exact scope of modification depends on the specific engine type.

The ship's crew normally carries out the Tier II upgrade with the support of a MAN Energy Solutions superintendent who has expert knowledge of the propulsion configuration. The Tier II upgrade can be performed while overhauling the engine in connection with planned maintenance.

Key benefits

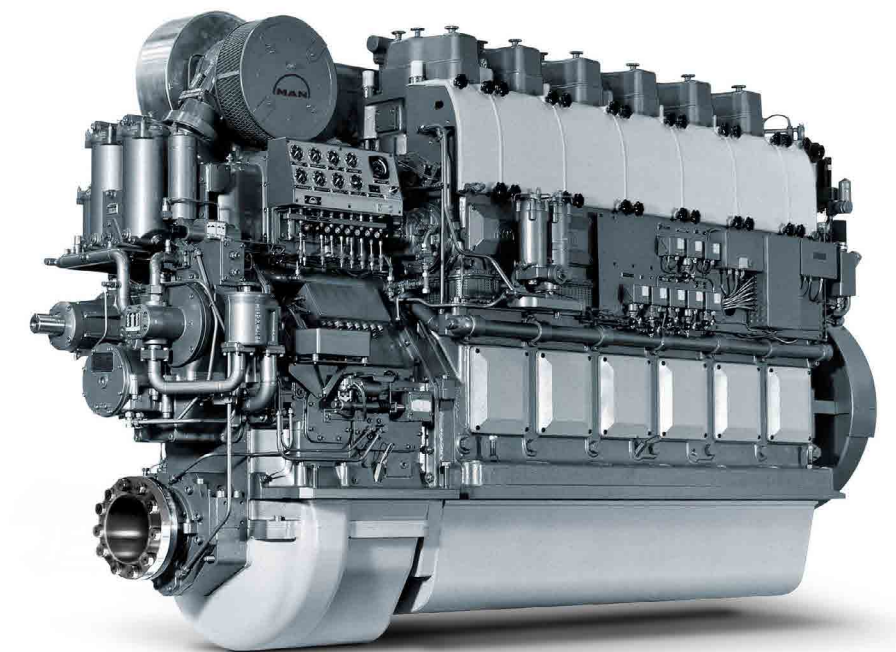
- Lower emission levels
- Compliance with regional and local legislation on emission levels
- Tax reduction as local authorities have introduced, or may introduce, emission fees
- New certification for EIAPP
- No on-board emission measurements required

Scope of supply

- All relevant IMO components, according to the MAN Energy Solutions parent engine certificates
- New technical file to achieve the EIAPP certificate from the relevant classification society

Applicability

Applicable for the MAN engine types L23/30, L23/30A, V23/30A, L27/38, L28/32, L28/32A, V28/32A



Tier III upgrade

Retrofitting your vessel with a selective catalytic reduction (SCR) system from MAN Energy Solutions will reduce nitrogen oxides (NOx) emissions by up to 90%.

Description

Tier III compliance is ensured by the ability to operate the MAN SCR even at the lowest loads. The flexibility of the system even enables compliance with the special requirements specified by the NOx Fund, ESI, CSI, Green Award, and access to world heritage fjords, etc.

The MAN SCR is based on a component delivery concept that is directly connected to the engine control system, and which ensures a high operational safety with the minimum urea consumption.

The proven modular MAN SCR system design fits perfectly with all MAN four-stroke engines in service.

Key benefits

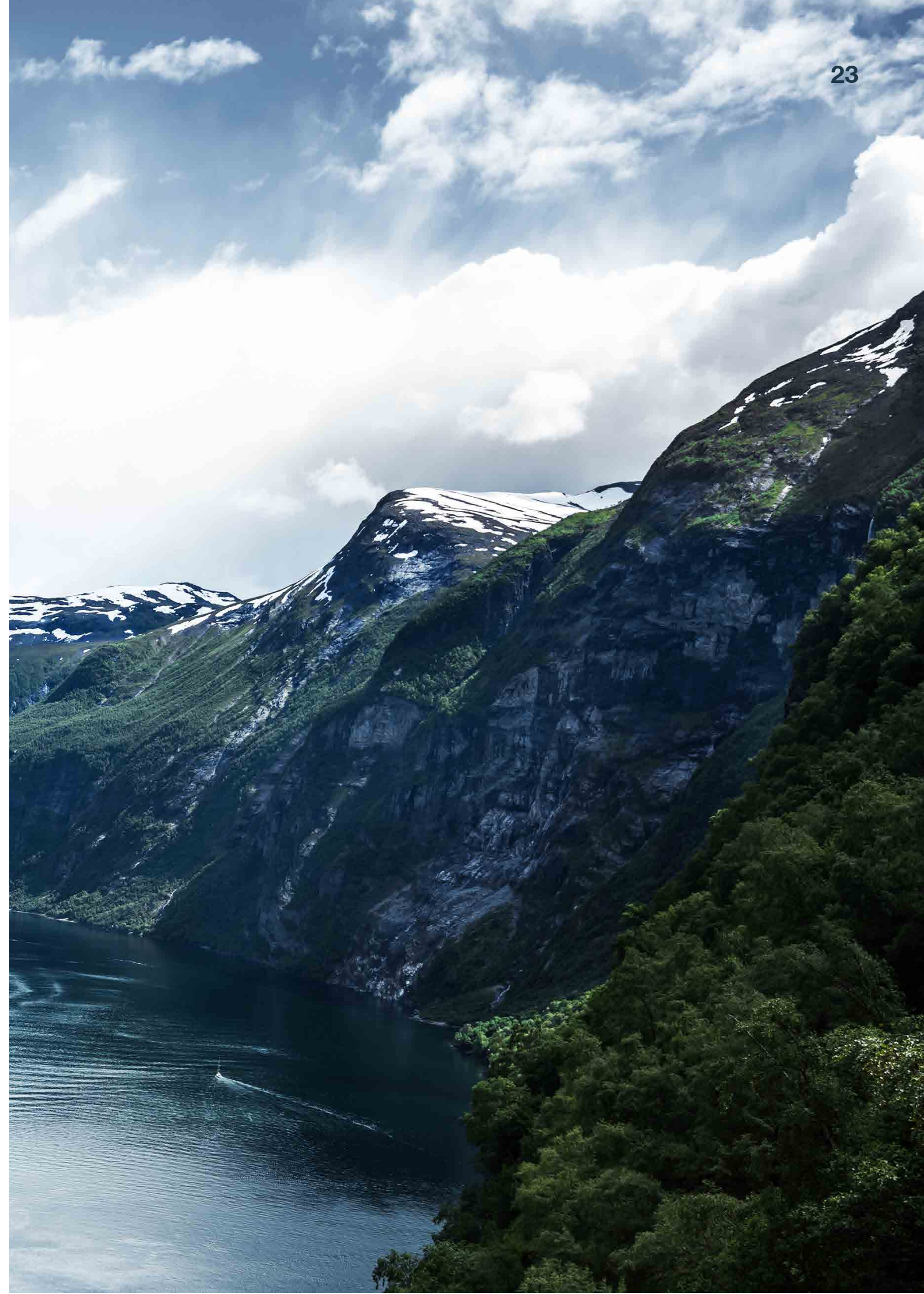
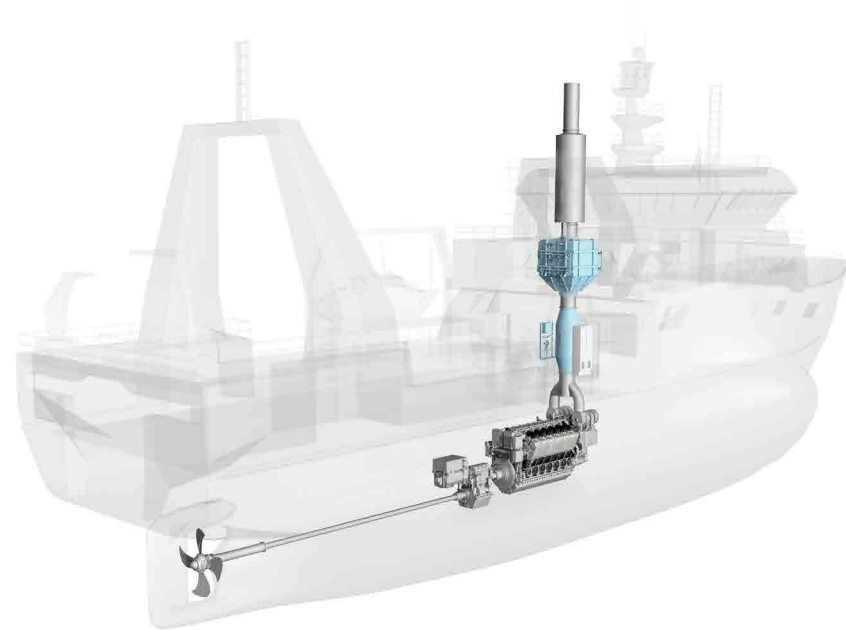
- Tier III compliance
- Tailor-made design and installation
- Efficient low-load operation with integration of waste gate system
- Automatic honeycomb regeneration process
- Reducing soot and smoke
- Urea efficient
- Optimized according to actual exhaust system back-pressure

Scope of supply

- SCR components
- Planning & installation documentation
- Commissioning
- Customer documentation

Applicability

Applicable for the MAN four-stroke engine portfolio



Product overview

Retrofit & Upgrade

Benefits	CP Optimization	MAN EcoOptimizer	CP Propeller Upgrade & EcoNozzle	Lube Oil Centrifugal Filter	External Exchangeable Lube Oil Filter	AT2000 REM401 I/O Card Replacement	Crankcase Monitoring System	L27/38 Fuel System Upgrade	Cable Package Retrofit	AT3000 Remote Control System Retrofit	Safety Monitoring Module Replacement	Deuta Werke Tacho Converter Replacement	Black Smoke Limitation Package	MAN OPL Alphatronic	Tier II Upgrade	Tier III Upgrade
Save fuel oil	✓	✓	✓							✓				✓		
Slow steaming	✓	✓	✓							✓				✓		
Flexible operation	✓	✓	✓		✓					✓			✓	✓		✓
Reduce emissions	✓	✓	✓							✓			✓		✓	✓
Reduce maintenance				✓	✓	✓		✓	✓	✓	✓	✓		✓		✓
Improve safety				✓	✓	✓	✓	✓	✓	✓	✓	✓				
Reduce downtime				✓	✓	✓	✓	✓	✓	✓	✓	✓				✓

Applicability

Applicability please see details under the individual solutions

Worldwide service

100

Service centers
worldwide

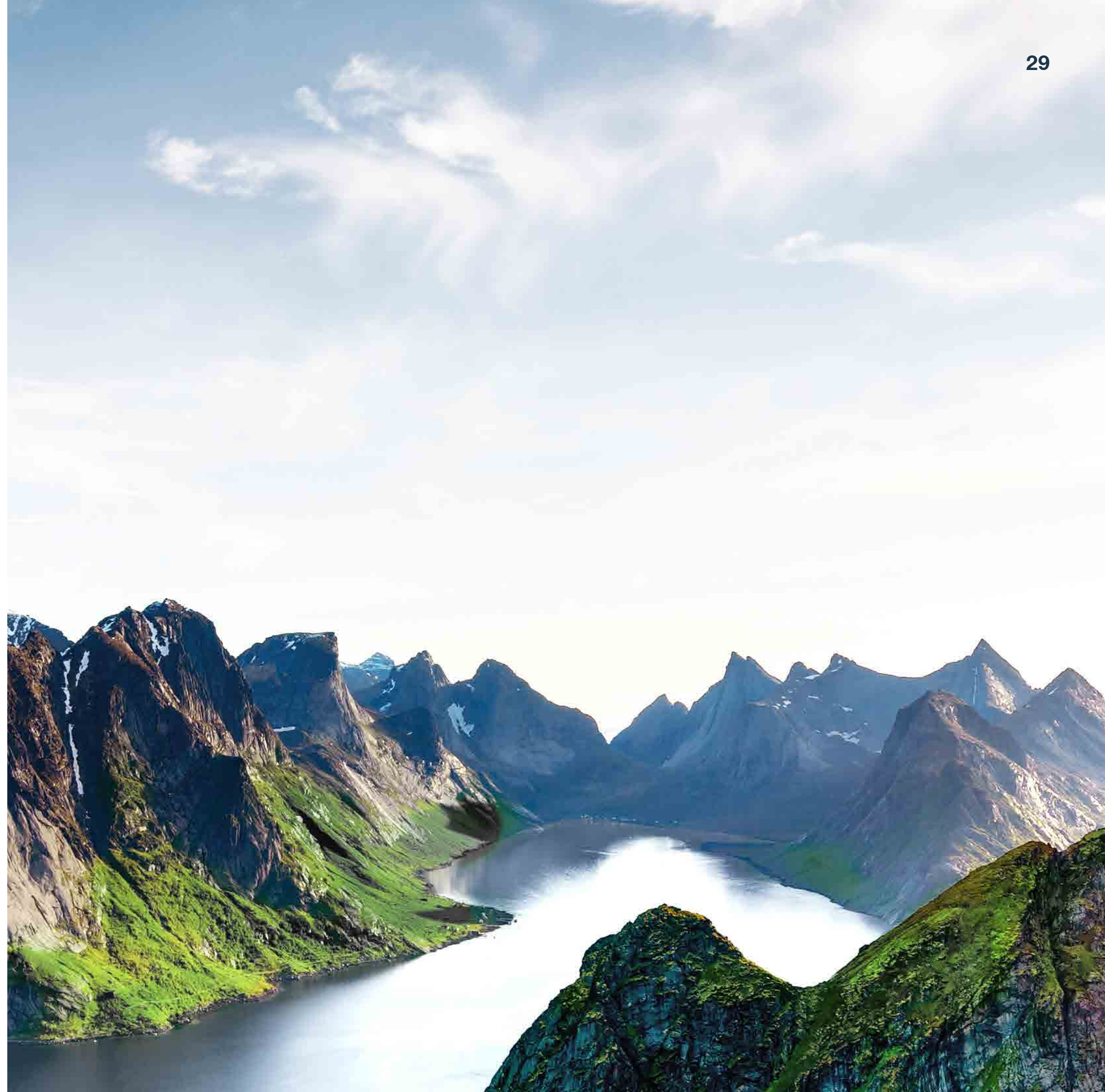
We offer retrofitting and upgrade services to bring complete propulsion configurations already in service up to the very latest standards of performance and efficiency.

Represented in all key markets and major ports, with a network of more than 100 service centers, and with skilled field service managers at the ready to provide first-class technical support, MAN PrimeServ is fully primed to provide 24/7 service, wherever you are. In power plants, marine engines & systems and turbomachinery, offering reliable technical support when you need it most, our service solutions include OEM spare parts, engine and machinery maintenance and repairs, customized service agreements, and individual consulting.

For existing equipment, our holistic retrofit and modernization solutions keep your engines or turbochargers up-to-date and at optimal levels of reliability, availability, and economic

efficiency. Through cutting-edge digital technology we are able to hike performance and minimize downtimes, while our remote connections enable live data analysis, ensuring quick, and effective solutions. MAN PrimeServ Academies provide expert training courses around the world, developing the operational and maintenance skills required.

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



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