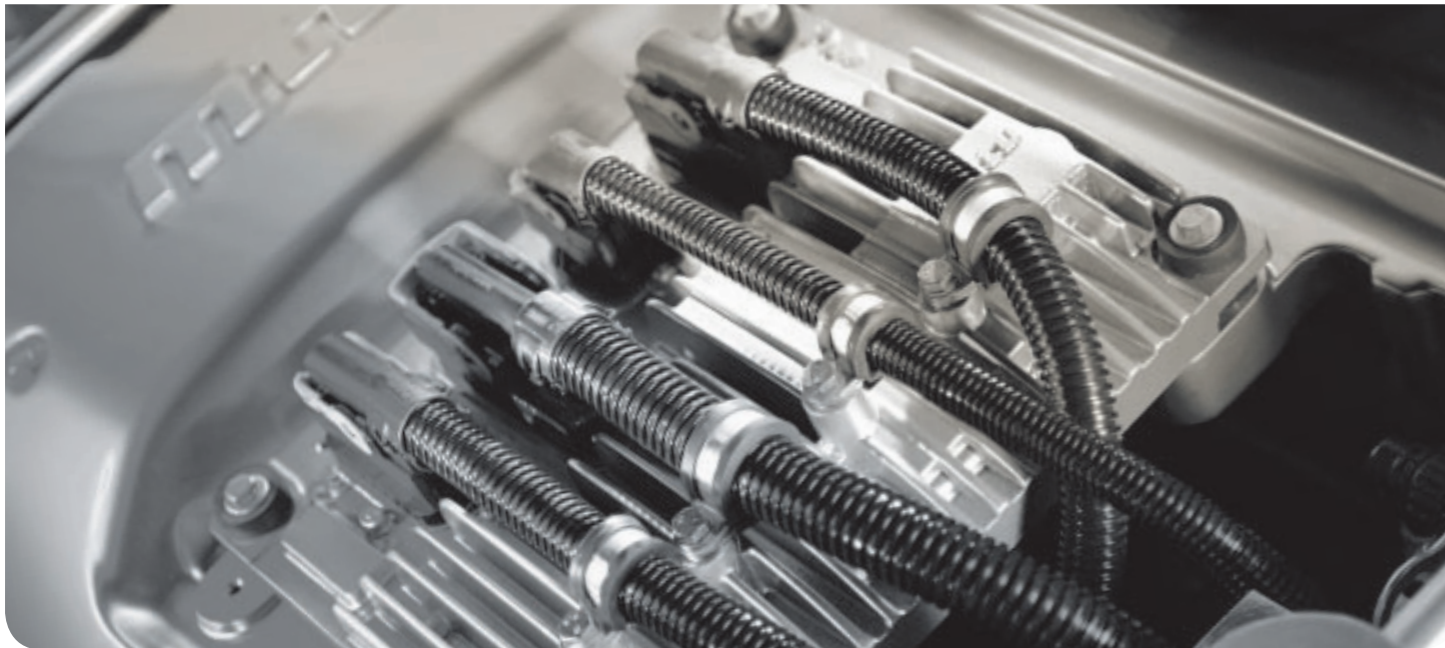
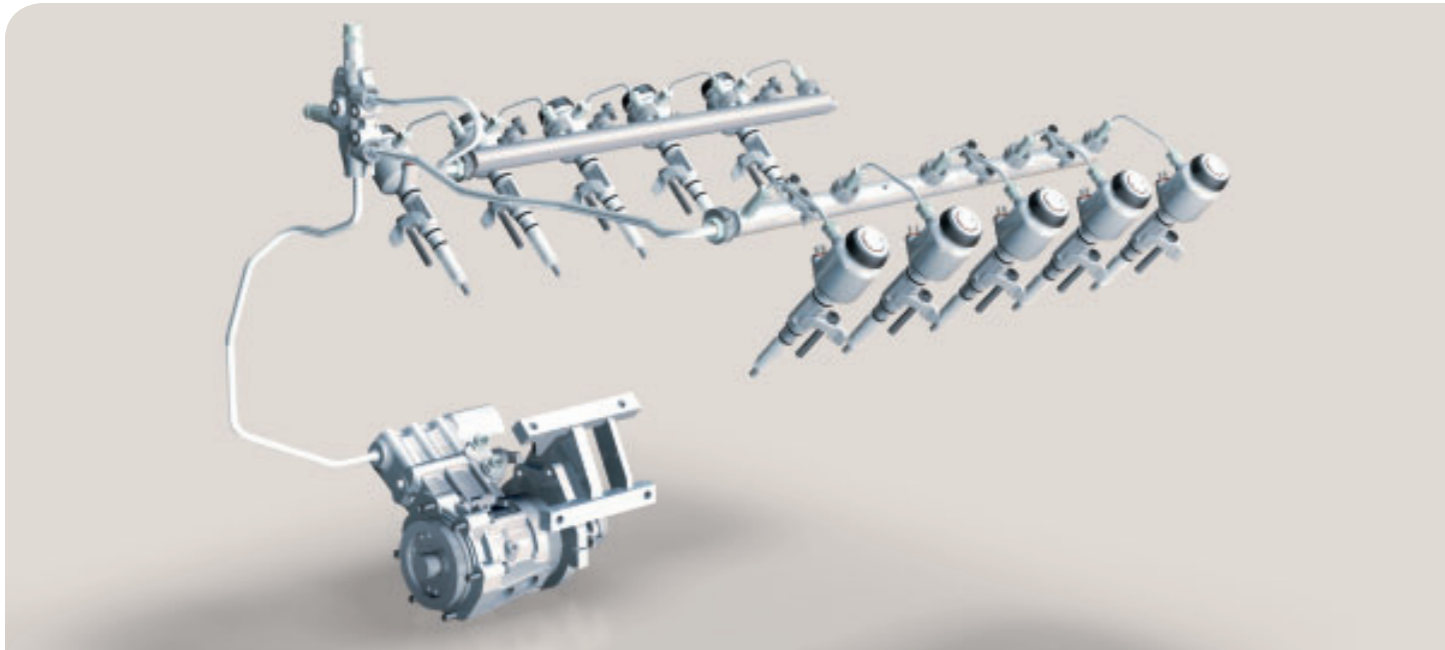


Systems Solutions / Advanced Technologies

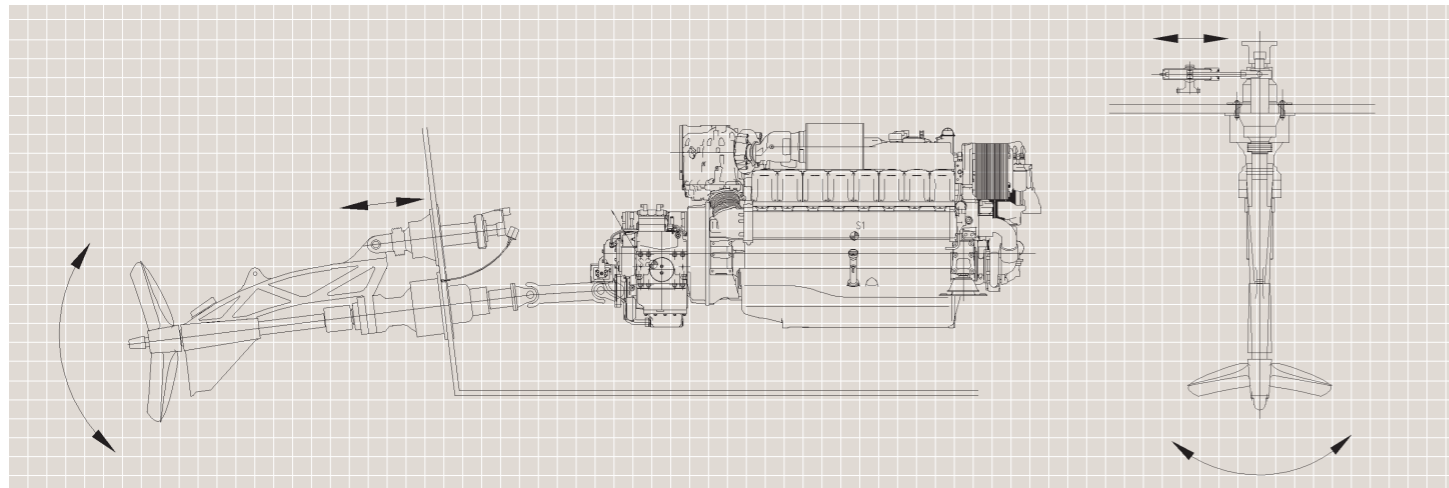
A competitive edge. From MTU.

As a leader in high-quality propulsion systems innovation, we are constantly researching and working on new trendsetting technologies. We bundled all the relevant core competencies within our company right from the beginning, and over the years we have continually made advancements to them. By systematically making advancements, we can provide you with a decisive competitive edge - with regard to performance, luxury and exclusivity.



Safety and optimum handling. Fully automatic.

Surface propellers are a good fit if you want to really get moving. High levels of effectiveness, which means excellent acceleration and top speed, can only be reached with the optimal trim in the respective conditions. That's why there is MTU **maritune** with auto trim.



maritune is a complete package for your yacht, one that only MTU can offer as a system supplier. It includes the surface drives, from control lever down to the propeller, including the automatic trim of the surface drive.

The **maritune** scope of supply:

- MTU Series 2000 or Series 4000 diesel engines
- Gearbox including trolling and double steering pump
- **blue**line or **blue**vision automation system (standard)
- Callosum Integrated Ship Automation System (on request)
- Fully suspended drive (cardan shaft)
- Hydraulic pack
- Surface drive
- Propeller

Everyone benefits: The shipyards

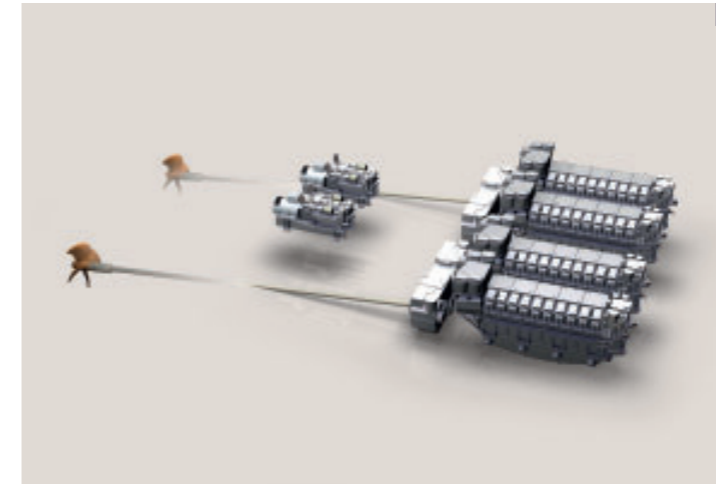
- Supply of the complete propulsion plant package from one source
- Optimum interface design
- Plug and play installation
- Reduced space requirements, pipes from engine room to the bridge are no longer required
- Databus technology
- Only one hydraulic pack needed for twin shaft propulsion in engine room

Everyone benefits: The captains and/or owners

- One partner for responsibility and service – world wide
- Fully automatic trim control, captain can concentrate on navigation
- Optimized ship behavior for acceleration, crash stop, driving circles, rough seas, reversing
- Control of engine speed, clutch position, trim by one control lever only
- By moving the steering wheel only by +/- 140° the full turn can be achieved

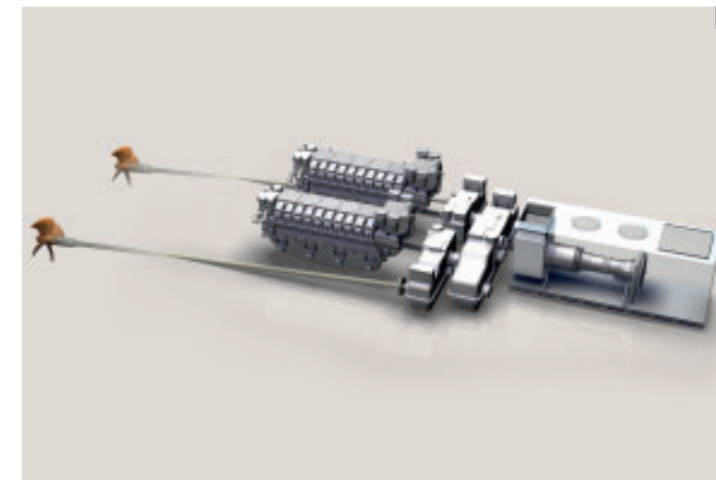
Power – customized.

Nowadays, combined systems with diesel engines and/or gas turbines are the preferred propulsion systems for fast mega yachts. As a general supplier, we configure the propulsion systems that best fits your needs, be it CODOG, CODAG or CODAD. All the components – engines, gas turbines, gearboxes including auxiliary power units – come from one source and are combined into an integrated complete system.



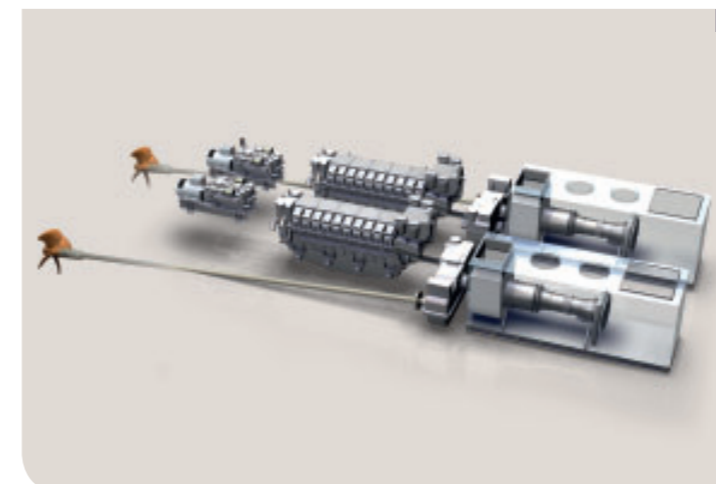
1 CODAD (Combined Diesel And Diesel) with controllable pitch propellers

The basic idea: four diesel engines power two controllable pitch propellers (CPP) through two main gearboxes. In normal operation, one diesel engine powers one axle; for maximum speed the other two diesel engines are also switched on.



2 CODAG (Combined Diesel And Gas Turbine) with controllable pitch propellers

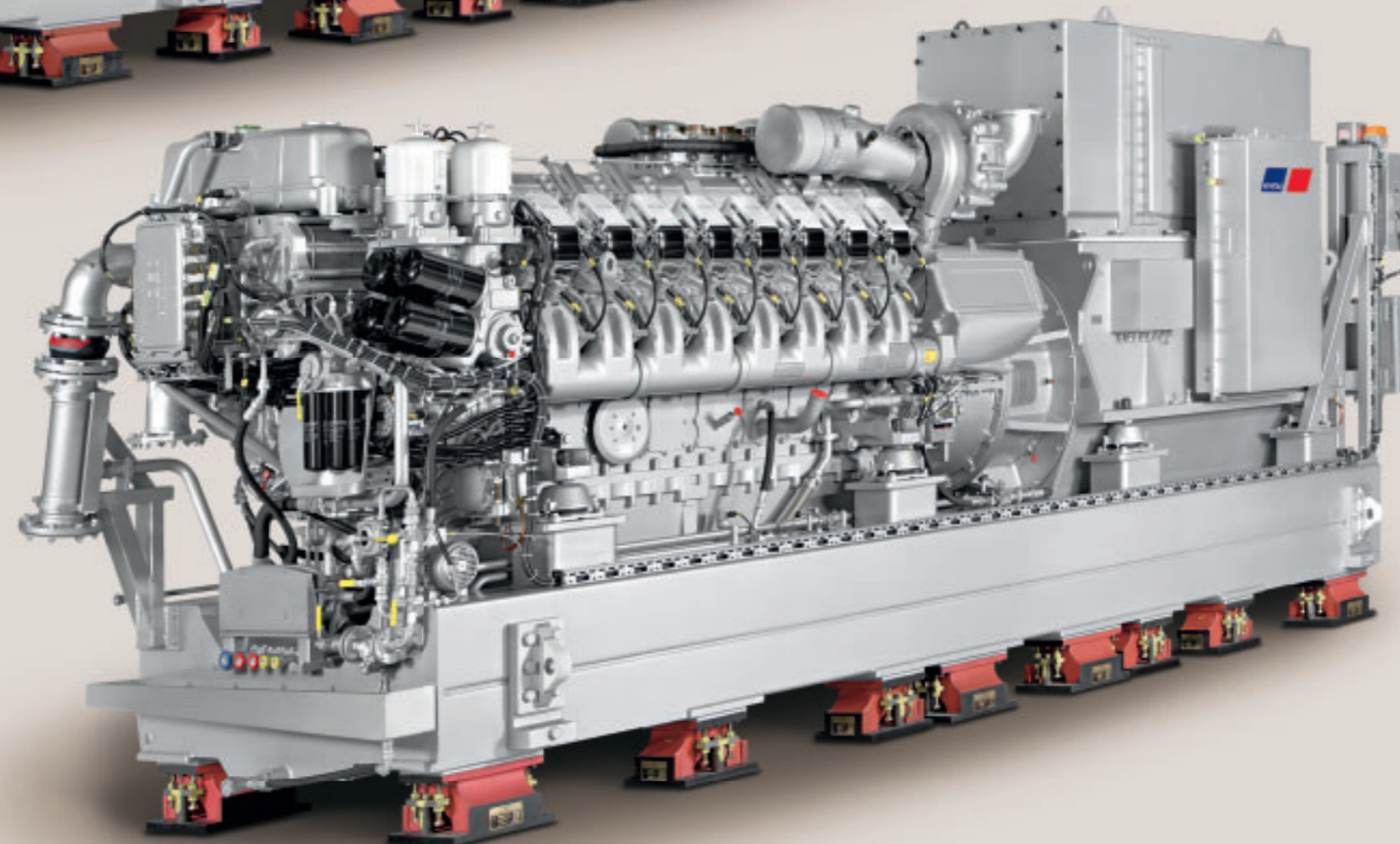
The basic idea: two diesel engines and a gas turbine power both CPP through two main gearboxes and a crossconnect gearbox. If only the diesel engine or the gas turbine is running, both CPP are equally powered through the cross-connect gearbox. If both diesel engines are running, this gearbox can be declutched. Through the use of a two-stage gearbox, one diesel engine can bring the ship to cruising speed.



3 CODOG (Combined Diesel Or Gas Turbine) with controllable pitch propellers

The basic idea: two diesel engines and two gas turbines alternately power two controllable pitch propellers through two main gearboxes. The gas turbines are connected via self-synchronizing clutches. The diesel engines power the ship in cruising mode; both gas turbines bring the ship to top speed.

Diesel-electric propulsion systems



In addition to diesel-mechanical engines, MTU also offers complete diesel-electric propulsion systems for yachts. In this case, the mechanical energy produced by the diesel engine is converted into electricity using a generator, and then transmitted to the ship's propellers – with a range of benefits:

- Reduced vibrations during operation through double-elastic mounted systems
- Reduced noise during operation through the use of high-quality insulating capsules
- Highly fuel-efficient
- Lower emissions
- High operating safety through the use of multiple gensets, in most cases
- The design of the installation, its placement on the ship and its operating modes are all highly flexible
- Low life-cycle-costs



Noise Reduction Technologies

Reducing noises. Raising comfort.

Squaring the circle

Everyone that spends time on the water wants to fully enjoy the power, speed and dynamics of their yacht – but at the same time, also wants relaxation, recreation and repose. That’s why sounds and vibrations that are inevitably caused by engines, pumps, and propellers in operation should be kept to a bare minimum.

With well-engineered concepts for noise reduction on board, MTU has a number of possibilities at its disposal to fulfill both the desire for more power and the need for optimum comfort. Running at over 2000 rpm, MTU engines are perfectly suited for implementing noise-reducing measures. For this purpose, we offer both standard systems as well as complex customized solutions.

Standard Yacht Propulsion Concepts

Significant noise reduction can be achieved with out standard mounting systems. Generally speaking, all yacht engines are elastically mounted. Here are some typical configurations:

- Flange mounted gearbox, resilient mounts
- Freestanding gearbox; resilient mounts
- Standard acoustic optimized coupling systems

Customized Yacht Propulsion Concepts

For higher acoustic demands, MTU offers complex systems that are customized for the respective yacht in order to fit the needs of the owner. Our complex systems make use of state-of-the-art technologies, utilize special concepts, and incorporate acoustic improvements:

- **The innovative active mounting system** combines and complements proven high-quality conventional mounting technologies with special active elements derived from the automobile and aerospace industries. The active element contains the actuators and sensors required for noise reduction. The adjustment and control electronics which are optimized accordingly works on a stand-alone basis that is set up separately.
- With the **double elastic mounts**, the soundproof engine sits on a frame that is also elastic-mounted. This leads to significantly less structure-borne noise being passed into the ship’s structure as is the case with single elastic mounts.
- Integrating the entire engine into a **sound-reducing capsule** also reduces airborne noise.

Emissions Reduction Technologies

To make your pleasure pure.

MTU – a leader in assuming responsibility

Yachting is a pleasure in a sensitive environment – and it is especially engaging as a result of directly experiencing the elements. Assuming responsibility for protecting the water and air and keeping them clean is second nature to us. MTU has always played a leading role in developing environmentally friendly engines and, in particular, solutions for reducing emissions. Since we have all the relevant key technologies bundled within our company in addition to our core business of building engines, we have been and will always be leaders in this space. Whether with regard to turbocharging, injection, or combustion, MTU engines are an embodiment of the most state-of-the-art technology available. Running at above 2000 rpm, they are, in comparison to engines with lower rpm ranges, generally more environmentally friendly and emit less nitrogen oxides. The greenest engines are high-speed engines.

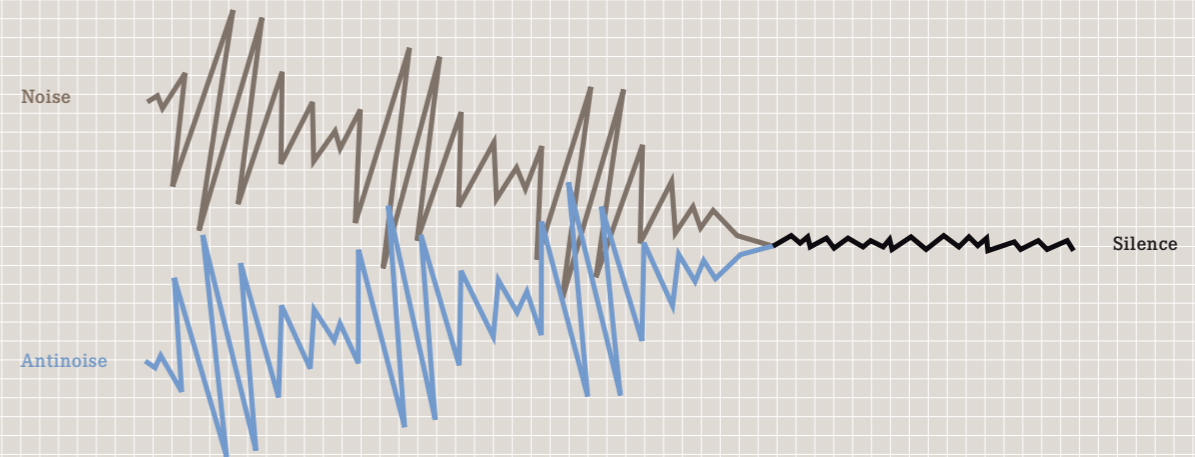
Optimizing the combined package

In order to reduce emissions, we utilize both internal and external technologies:

- MTU offers state-of-the-art charging and fuel injection technologies
- MTU yacht engines are available with diesel particulate filters and selective catalytic reduction (SCR).

Optimal results and important goals are reached through the combination of various technologies – such as the reduction of dangerous exhaust emissions and diesel particulate matter. For your pleasure – and for the environment’s benefit.

How the active mounting systems works



MTU Ship Automation Systems

Visionary simple. Simply visionary.

As a system supplier, MTU not only provides you with the perfect yacht engine, but also with an automation system exactly adjusted to it. You get a complete package where everything is just right: not only powerful engine performance, but also maximum efficiency, uncompromising reliability and environmental compatibility. For many years, sophisticated MTU standard automation systems controlled, regulated and monitored the engine functions – always doing a perfect job!



Entry at high level.

BlueVision_Basic | NewGeneration is an MTU “non-classifiable” monitoring and propulsion remote control system for MTU Series 2000 and 4000 engines. It incorporates a deliberately simple design and provides a complete basic functionality. The system is available at particularly favorable conditions and quick to install.

An elementary feature of BlueVision_Basic | NewGeneration is its hardware compactness. As the central system component, the Local Operational Panel (LOP) integrates all basic functions available in this version, simplifying installation, operation and maintenance significantly.

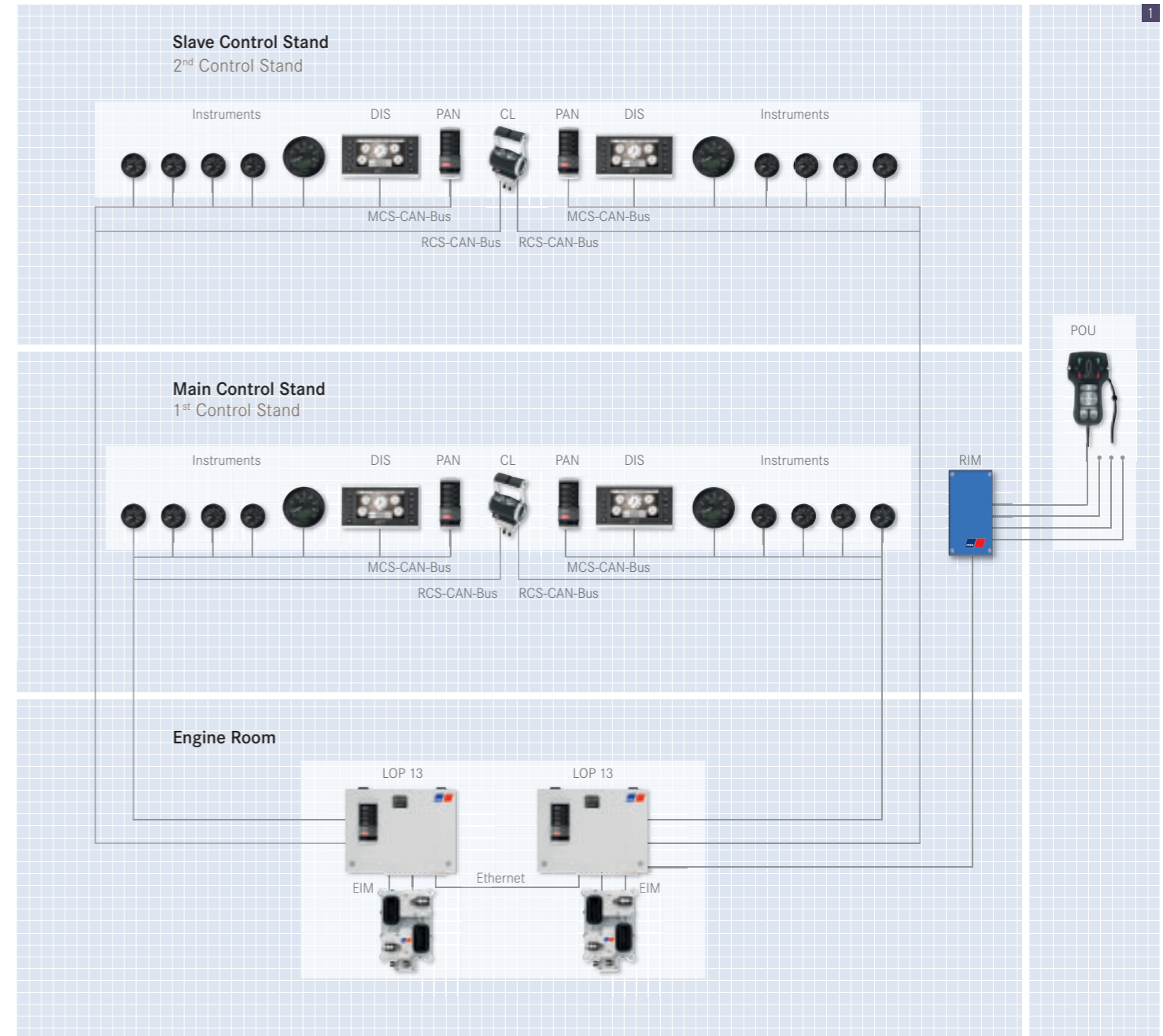
This version is delivered with the Color Graphic Display Basic DIS as standard. Besides a dashboard page, the Basic DIS also offers an overview of all relevant measured values as well as an alarm page.

The scope of supply also includes a Portable Operator Unit, enabling the captain to control the ship from up to 4 selected connection points (e.g. for berthing from the stern if the view from the bridge is limited).

BlueVision_Basic | NewGeneration is primarily used in smaller yachts.

Key features:

- Compact hardware for easy installation and commissioning
- Local Operating Panels (LOP) with basic functionality like start, stop, combined alarm/horn off, for installation in the engine room
- All control stand components installed throughout the ship are connected to the associated LOP via CAN bus



1 Typical scope of supply for BlueVision_Basic | NewGeneration

2 Operating Panel (PAN) Control Lever (CL)

3 Display Basic (DIS)



Demanding more. Getting more.

BlueVision_Advanced | NewGeneration is an MTU “classifiable” monitoring and remote control system for yachts, offering a comprehensive standard automation system solution. It is available for MTU Series 2000 and 4000 engines.

An elementary feature of BlueVision_Advanced | NewGeneration is the system bus. The data transmission between the LOP and the commanding control stands is carried out via a redundant Ethernet based field bus. This ensures an absolutely secure communication on the one hand and highest flexibility of the overall system – also with regard to future upgrading – on the other.

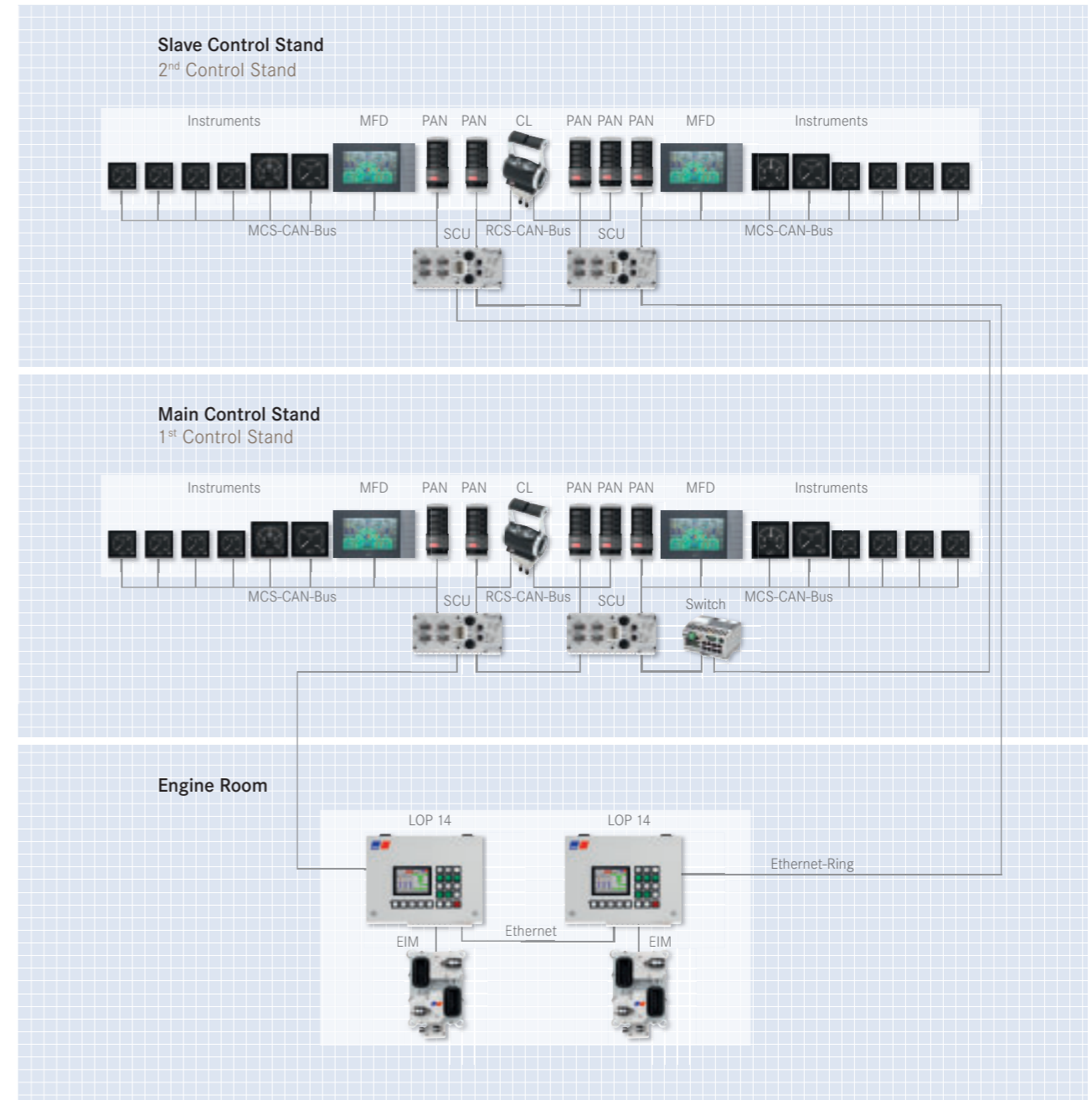
This version is delivered with the Color Graphic Display MFD as standard, which has been optimized for the operation in classifiable ships. Besides various dashboard pages, the MFD also offers the possibility to show all of the propulsion system’s relevant measured values. All active alarms are comprehensively displayed on a separate page.

BlueVision_Advanced | NewGeneration is a classifiable system in line with major classification societies.

BlueVision_Advanced | NewGeneration is primarily used in performance and displacement yachts.

Key features:

- Type-approved components, such as LOP, control lever, display and instruments
- Designed according to all major classification societies
- Local Operating Panels (LOP) with color display and advanced functionalities like clutch and speed control
- Data communication via redundant Ethernet ring bus

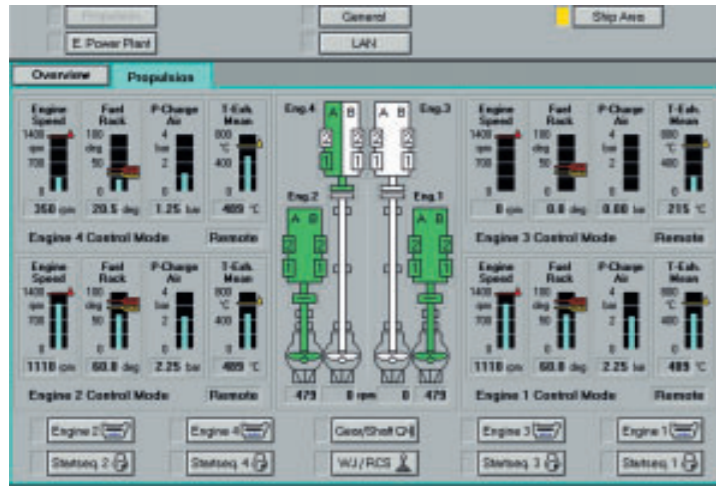
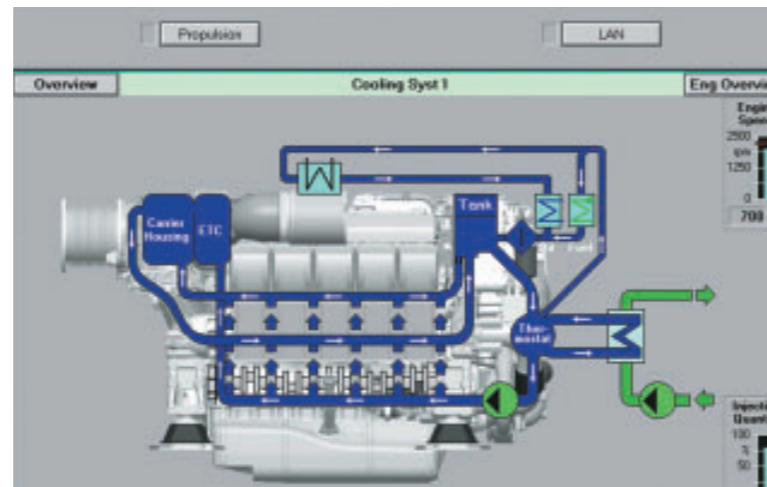
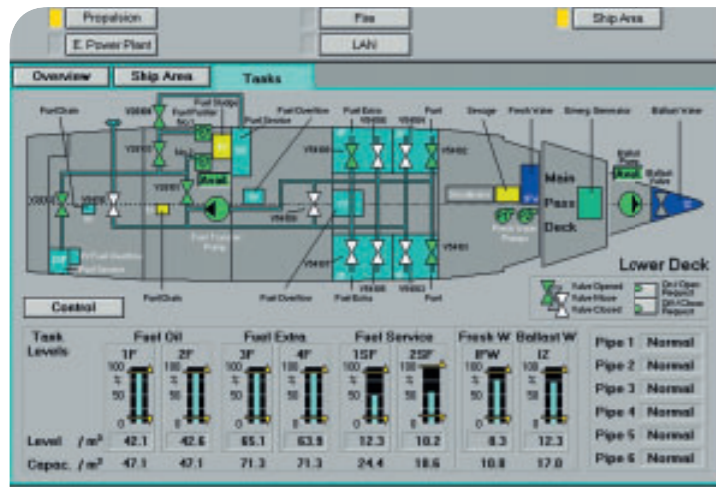


1 Typical scope of supply for BlueVision_Advanced | NewGeneration

2 Operating Panel (PAN) Control Lever (CL)

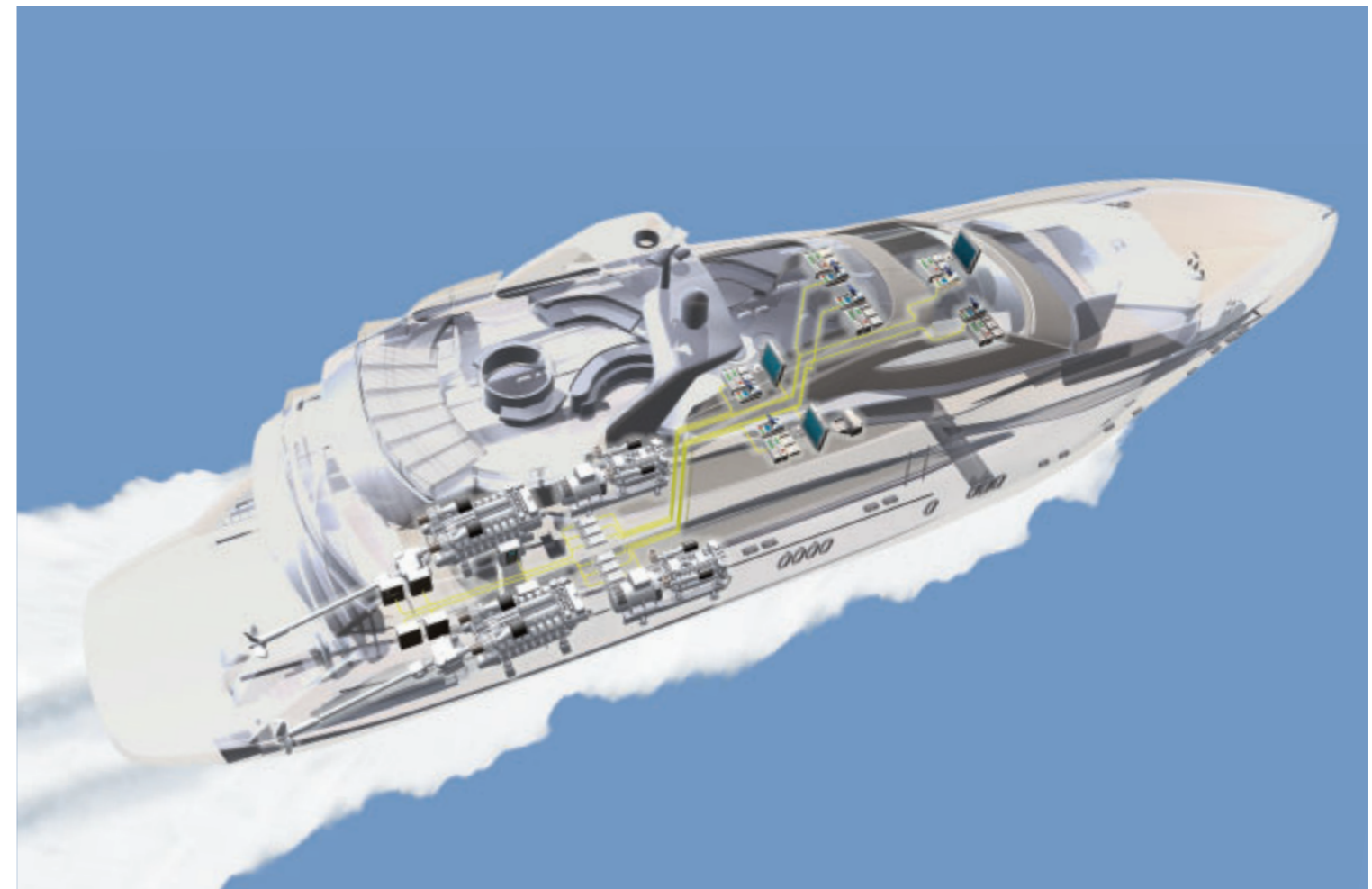
3 Multi Function Display (MFD)





Monitoring and control of:

- Propulsion plant
- Electrical power generation
- Shipboard systems
- Damage control



MTU Callosum – Integrated Ship Automation System

Your yacht's nervous system.

Integrated. Intelligent. Intuitive.

MTU Callosum bundles many decades of MTU automation experience. The intelligent system optimizes process sequences onboard by professionally collecting and processing data as well as displaying them visually in perfect form.

Four modules. Three clicks.

The integrated ship automation system Callosum has four system modules. A network of sensors, which is set up individually based on the respective yacht, monitors and controls all areas and functions of the ship's electronics. Every action can be carried out with only three mouse clicks from any networked monitor.

Callosum offers an ideal complete solution for yachts, which guarantees that the ship operates reliably and ideally. You have the choice of four modules to build a highly integrated automation system. The system modules can be used individually or combined with one another, based on your individual needs.

Callosum_MC – Integrated Monitoring and Control System

- Is the basis for ideal expansion with additional system modules
- Contains the newest generation of the remote control system and the monitoring and control system
- Monitors the propulsion plant, the onboard power generation and other ship sub-systems
- Modular design and open structure enables to easily integrate additional ship operating systems

Callosum_DC – Damage Control System

- System module for limiting possible damages (e.g. leaks or fires) quickly and automatically, and for ship safety

Callosum_MT – Maintenance Support System

- Based on information and reports of Callosum_MC
- Provides support for the maintenance and upkeep onboard
- Callosum_MT guides the user reliably and intuitively while using support tools, e.g. electronic documentation and 3D videos.

Callosum_TS – Onboard and Land-Based Training System

- System for realistic, intensive training of the crew
- Training can be carried out onboard or on land

MTU ValueCare

Leave your worries onshore.

It's more than a yacht. It's a symbol of your sense of adventure and your freedom from an ordinary life. A personal dream fulfilled. Our job is to make sure you can live that dream anytime, anywhere, confident that we're ready when and where you need us. That's why MTU ValueCare premium products and services are the perfect complement to your MTU engines and systems.



VI





MTU **ValueCare**

We are with you all the way.

MTU **ValueCare** is a diverse portfolio of value-enhancing products and services developed specifically for MTU engines and systems.

MTU **ValueCare** products and services are available anywhere in the world through our extensive network of authorized distributors and service dealers. For more information, please contact your local MTU service center or visit www.mtu-online.com.

MTU **ValueCare** includes three product lines:

- **ValueService**: Extensive global service and support to ensure maximum performance and lasting value
- **ValueSpares**: Genuine spare parts and top-quality consumables designed specifically for MTU engines and systems
- **ValueExchange**: Remanufactured products engineered with the same high-quality standards as new products



ValueService

Cruise confidently.

Your yacht is a substantial investment. You should be able to cruise confidently, enjoying every moment along the way. That confidence starts with reliable MTU engines and systems and continues with **ValueService**.

Designed to help you get full value and enjoyment from your yacht, **ValueService** provides training, technical documentation and professional maintenance, warranty and repair solutions around the world, around the clock.

For added confidence, **ValueService** includes Annual Check and Extended Propulsion Coverage.

Expert assistance. For longer engine life.

Annual Check is a yearly professional inspection of your MTU engines and systems by MTU experts, allowing you to identify and address problems early. It ensures effective preventive maintenance, helping you save on repairs or unexpected downtime, optimizing your engine's performance and longevity. The MTU service technicians inspect the maintenance condition and determine whether any additional maintenance or repairs are required. The process includes visual engine inspection; test run and leak check; on-site engine oil and coolant analysis; and diagnostic evaluation and reporting.

Our technicians will evaluate the effectiveness of your maintenance program and offer expert advice, highlighting any additional preventive maintenance or repair work that may be required. They will also provide information on product developments and options for performing updates. Available for all MTU engine series, Annual Check contract periods are flexible. And convenient service is available worldwide from our MTU service network.

Cover the unexpected at sea.

For additional peace of mind, Extended Propulsion Coverage (EPC) provides coverage for your propulsion system beyond the standard warranty. You'll feel confident knowing that unexpected repairs are covered, with service performed by personnel from an MTU-authorized service center. And if contractually required, MTU provides a free sea trial. The EPC package, an exclusive service for pleasure craft, is also transferable, which enhances resale value.

During the EPC period, the cost of materials, labor and essential travel are covered if repairs to the propulsion system (MTU supplied standard engines, gearboxes, electronics and other components) become necessary. Repairs with troubleshooting and fault clearance, provision of required components and replacement of failed components are included.

Wherever your boat takes you, expert assistance is always nearby. Covering corrective services, support is available worldwide from our MTU service network. For more information about Extended Propulsion Coverage, please contact your local MTU service center.





1

ValueSpares

Genuine parts and consumables. For maximum performance.

To ensure peak performance throughout the life of your MTU engines and systems, choose from a full line of **ValueSpares** genuine parts and top-quality consumables, including filters, oil and coolant. They're designed, tested and approved specifically for MTU engines and systems. Only MTU can guarantee genuine quality, with parts and consumables that are designed to work seamlessly with your product. Superior design and top-quality materials result in maximum power, torque, longevity and low total-cost of operation.

Spare Parts

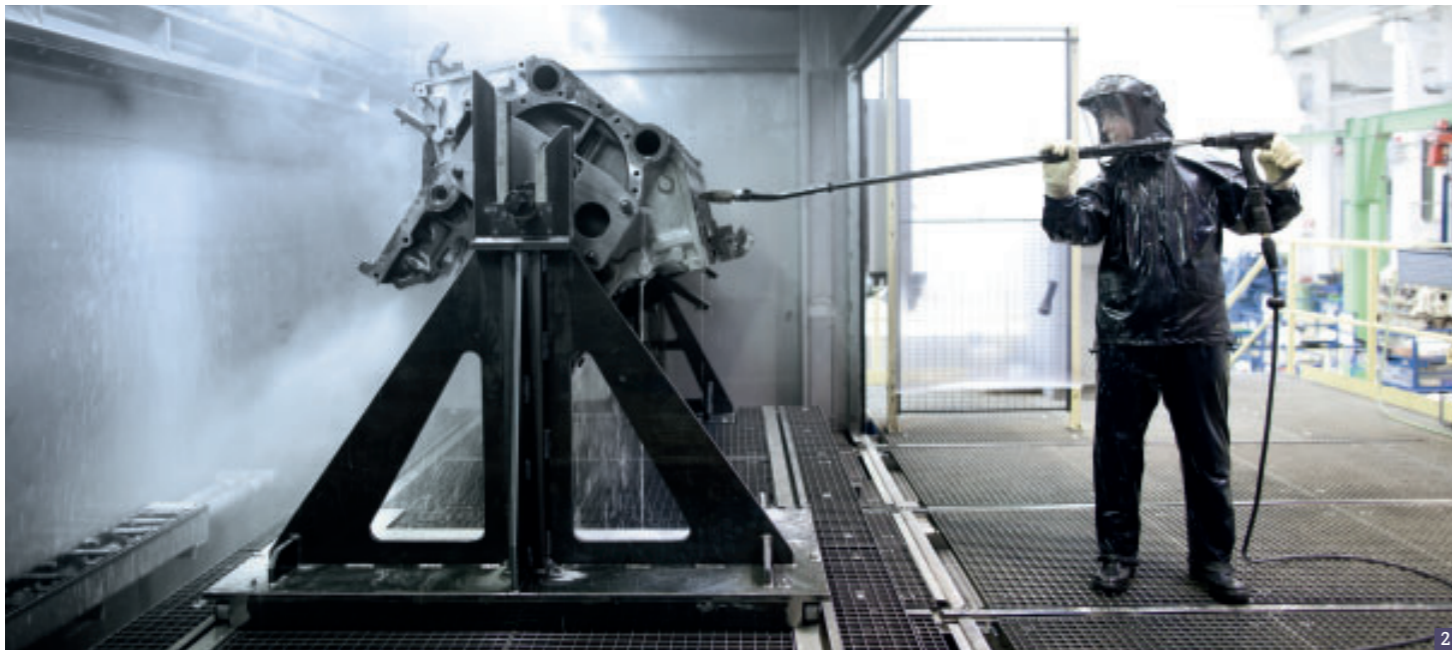
No matter what MTU engines or systems power your yacht, MTU offers genuine, top quality spare parts to fit your needs. **ValueSpares** parts maximize performance, prolong the life of your engine and meet today's strict requirements. We offer everything needed for a turnkey installation.

In addition to engine parts, **ValueSpares** genuine parts can also maximize the performance of your gears, shafts, propellers, electronic monitoring and controls.

You've got our full support, with a large number of convenient locations. **ValueSpares** genuine parts are available worldwide through our MTU service network.

Consumables

MTU engines are engineered with the highest standards in the industry. Genuine **ValueSpares** consumables are built with the same commitment to quality. A full range of filters, oil and coolant is available – from a single source – for your MTU engines and systems. An essential part of your preventive maintenance program, **ValueSpares** consumables work in perfect harmony with your engine, maximizing engine performance, prolonging engine life and protecting your investment.



2

ValueExchange

Good as new.

ValueExchange provides a full range of genuine remanufactured MTU products, engineered to ensure robust, reliable performance at a fraction of the cost of new products. Choose from remanufactured parts, or engines and systems that utilize genuine new and remanufactured MTU parts. A rigorous reconditioning process ensures the same high standards of performance, service life and quality as new products—including design and model-related updates.

The **ValueExchange** process is designed to save you time and money, while benefiting the environment through the reuse of existing materials. To help you work more efficiently, **ValueExchange** products are readily available. And for your convenience, they're offered worldwide from our MTU service network.



3

- 1 Only MTU can guarantee genuine quality, with **ValueSpares** parts and consumables that are designed to work seamlessly with your product.
- 2 **ValueExchange** remanufactured products offer same-as-new performance at a fraction of the price.
- 3 Modern warehouses and professional parts logistics centers ensure prompt and reliable availability, all over the world.

Ask your local MTU Service Center for more details about MTU **ValueCare** products.

Local support. Worldwide.

The reliability and performance of your engines and systems are crucial for your success and competitiveness. We are committed to your support. Our convenient global service network provides you this assurance.

Whenever and wherever you need expert support, MTU specialists are available. This continuous and long-term care ensures high availability, dependability and efficiency throughout the lifecycle of your engines and systems.

To find your local MTU distributor, visit www.mtu-online.com.



Local support. Worldwide.

We ensure that you receive individualized support from our global network of more than 1,200 service centers – anywhere, anytime.

- ▣ Global Headquarters
- ▣ Regional Headquarters
- ▣ Sales and Customer Service Center

MTU quality is something you can measure – and feel.

We are uncompromising when it comes to quality. True to our corporate philosophy of total quality management, we assure the quality of our products throughout the entire process of development and production. Every one of our staff is responsible in this respect – and thinks and acts accordingly.



Certified quality
Tognum with its core company MTU Friedrichshafen GmbH satisfies the international requirements of ISO 9001:2008 and 14001:2009. We conduct acceptance testing, including type tests, according to the rules and regulations of all the relevant classification bodies (e.g. ABS, BV, CCS, DNV, GL, JG, KRS, LR, NKK, RINA). All MTU electronics products bear the CE mark.

Quality you can feel
To us, quality is measured by more than just a certificate. We measure it by the degree of our customers' satisfaction, and by the number of years they continue to place their trust in us. Quality of that kind cannot be achieved with average objectives. You rightly expect everything of us – and we offer you even more. More reliability, more innovation, more specialization, more safety. If you share these aspirations, then together we will achieve a lot: a quality partnership.

