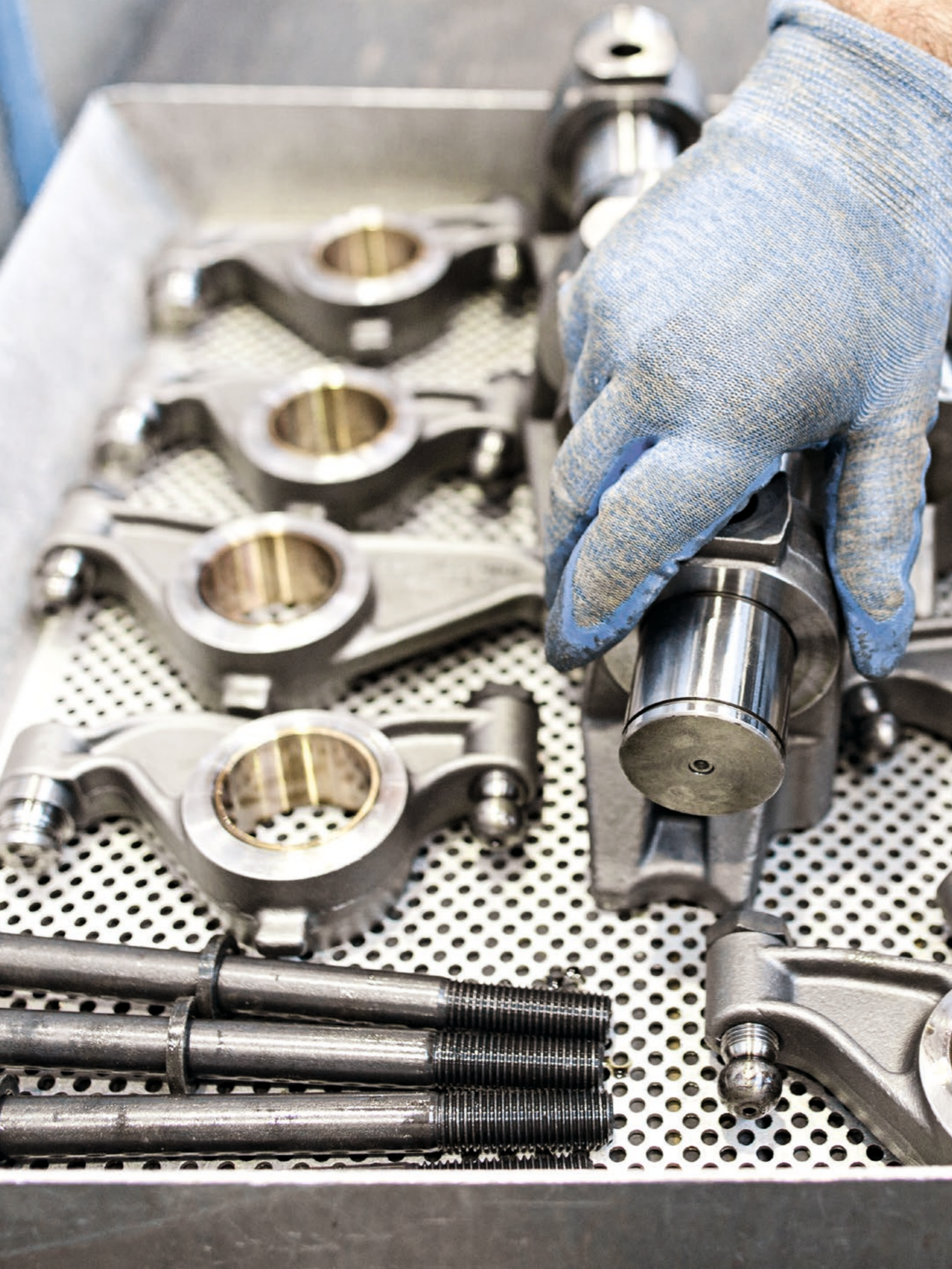


Factory Reman and  
Overhaul Solutions

GOOD AS NEW.



A Rolls-Royce  
solution



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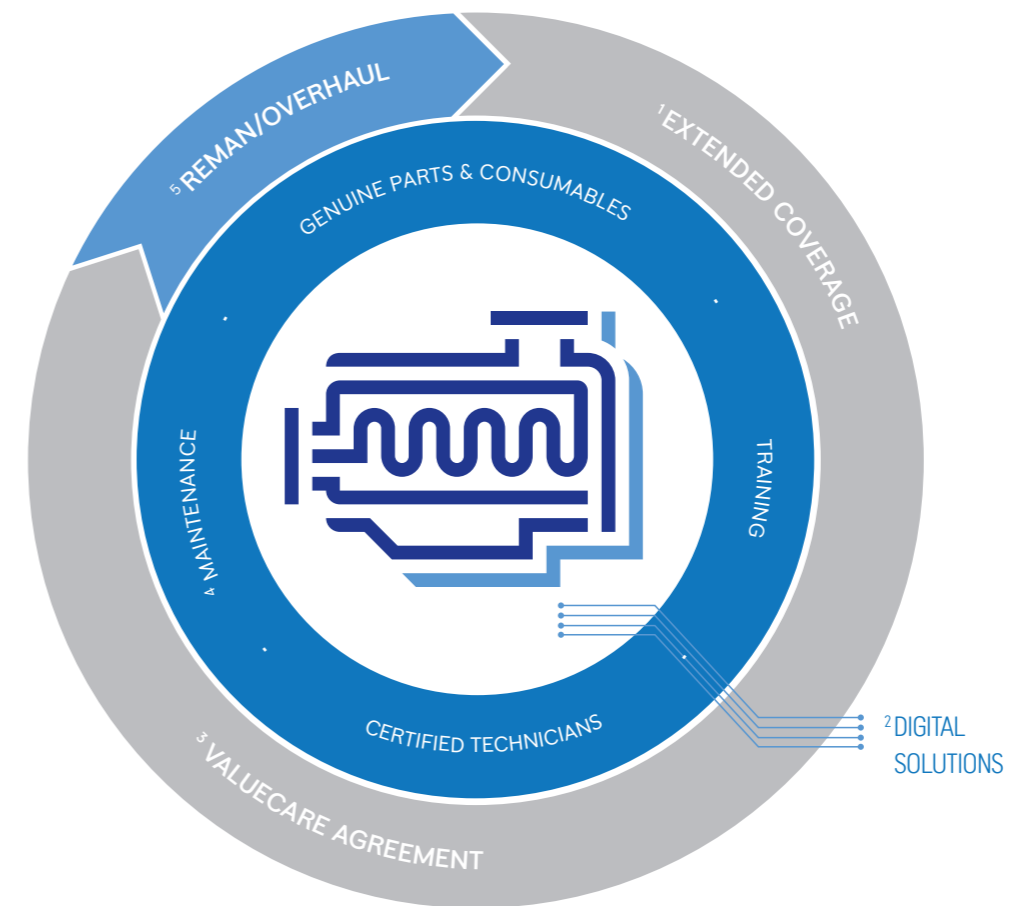


How complete lifecycle solutions help

# ENSURE A LONG, RELIABLE LIFE.

01

As your equipment ages, its needs—and yours—change. Our full portfolio of service solutions wrap around your investment, providing 360 degrees of customized support, for optimal value at every stage of life.



- 1 Avoid the unexpected with added protection beyond the standard warranty.
- 2 Make better decisions faster with digitally-enhanced tools.
- 3 Maximize availability and optimize lifecycle costs with a ValueCare Agreement.
- 4 Improve system performance and extend equipment life with on-demand support.
- 5 Keep a good thing going with factory reman/overhaul solutions.



## Factory Reman and Overhaul Solutions

# KEEP A GOOD THING GOING.

# 02

Your equipment was built to last, thanks to our legendary high engineering standards and unwavering commitment to service and support. And after a long and productive life, we provide solutions to help you go even further.

Provided by the same experts who built your original engine or system, **mtu** Factory Reman and Overhaul Solutions return your equipment to like-new condition—delivering the same high standards of performance, service life and quality as comparable new **mtu** products. And for added confidence, we provide fixed pricing and turnaround times up front and back your restored **mtu** equipment with a full factory warranty.

#### **A comprehensive process.**

Our comprehensive factory process is designed to ensure optimal performance, reliability and durability when your equipment goes back to work. Used engines and assemblies are fully disassembled, cleaned, inspected, then reworked and reassembled using all new genuine **mtu** parts. Replacement parts are issued for components that are worn, damaged or outdated. When applicable, design and model-related updates are incorporated, making reman and overhaul engines comparable to new engines. And before passing final inspection, all reman and rebuild engines and systems undergo the same rigorous testing procedures as new equipment, including dynamometer testing on **mtu's** state-of-the-art test benches.

#### **A complete solution.**

Putting your equipment back to work is a top priority. You have our full support—from decommissioning and removal to re-installation and re-commissioning. Our global service network of highly qualified service technicians is ready to provide on-site support throughout the project. And with our “all-inclusive” restoration package, you’ll have peace of mind knowing that your complete system—including gearboxes, alternators, electronics and other loose parts—receives the same care and attention as your **mtu** engine.

#### **A lasting investment.**

With the potential to be remanufactured or rebuilt several times, **mtu** engines and systems are a wise lifecycle investment. To get the most out of your **mtu** investment, trust the only partner who can keep it performing optimally in this life and the next—Rolls-Royce Solutions—with additional support tailored to your needs, such as Extended Coverage or a ValueCare Agreement.



## Restoration Benefits

# REUSE AND SAVE.

As you evaluate your long-term power needs, you must consider a variety of factors, including acquisition costs, operation costs, maintenance costs and warranty exposure. Factory Reman and Overhaul Solutions are a smart option. They offer same-as-new performance and help you optimize the total lifecycle cost of your equipment, while also providing a sustainable solution that protects the environment.

### Lower acquisition costs.

Restoring and reusing equipment and components means saving energy, resources and other costs associated with producing new products. This sustainable process delivers savings that are passed on to you.

### Lower operation costs.

Used *mtu* equipment is fully restored during the reman and overhaul process according to strict factory quality standards, resulting in optimal equipment performance and fuel/oil consumption.

### Lower maintenance costs.

Whenever applicable, model-related updates are made during the reman and overhaul process, which lengthens equipment and component life compared to used equipment.

### Environmental benefits.

By restoring end-of-life products rather than discarding them, the need for raw materials and energy to produce new parts is minimized, significantly reducing waste and CO<sub>2</sub> emissions. This efficient and sustainable use of resources and energy benefits the environment. Often, the process can be repeated multiple times, greatly extending the lifespan of these non-renewable products.



Factory Reman and Overhaul Solutions help you:

-  Extend equipment life
-  Achieve like-new performance
-  Avoid unplanned costs
-  Restore warranty coverage
-  Improve environmental sustainability

## Restoration Process

# BUILT TO FACTORY STANDARDS.

Performed at select factory locations, our rigorous restoration process does more than repair and recondition your equipment. It fully returns your engines and systems to original factory specifications thanks to our complete technical expertise and proprietary procedures, developed based on decades of experience. As a result, your equipment delivers same-as-new quality and performance that only we can offer.

### 1. Disassembly and cleaning

- Complete engine disassembly
- Paint and rust removed from all parts and components

### 2. Investigation

- On-site lab analysis of fluids and materials
- Measurement, inspection and evaluation of all parts against factory-specified tolerance and wear limits
- Performance of crack testing (on relevant parts)
- Identification and execution of modernization requirements
- Documentation of results and findings (optional, upon request)

### 3. Reworking

- Performance of reworking and machining using series production processes to achieve like-new tolerance requirements
- Reman and overhaul supplier components—such as crankshafts, coolers, heat exchanger inserts and couplings—conducted in partnership with original manufacturers and/or certified, audited sub-suppliers to ensure maximum quality

### 4. Reassembly

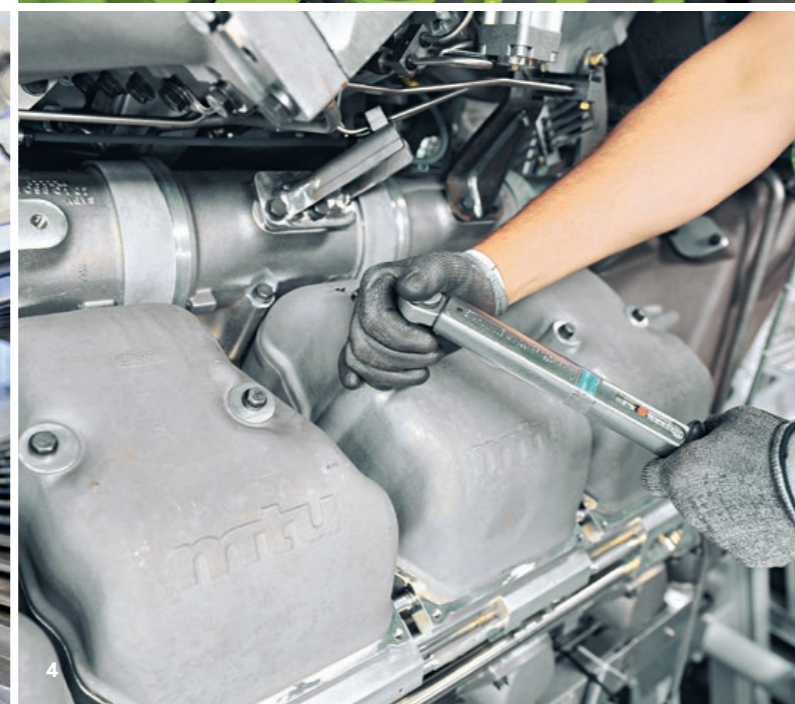
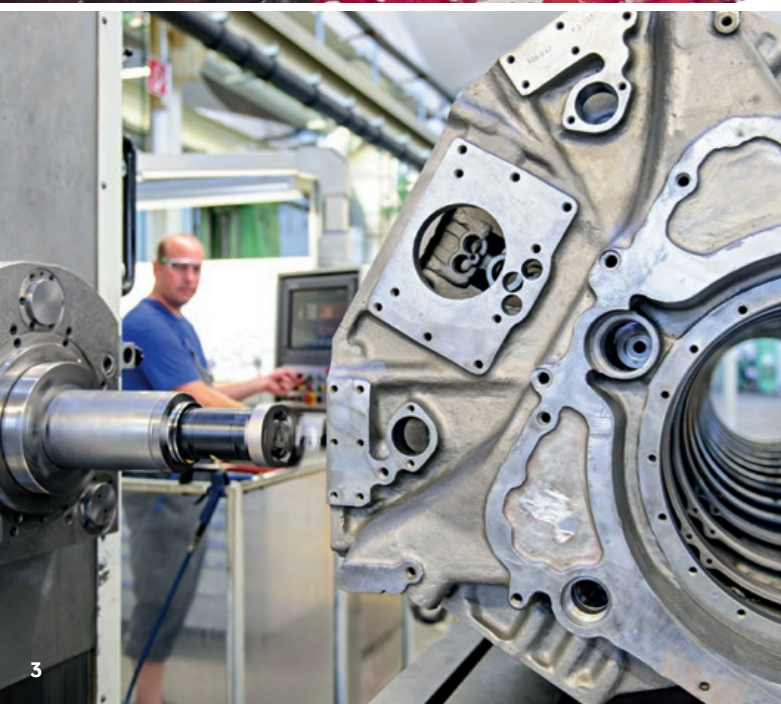
- Initiation of assembly processes using remanufactured/rebuilt parts and components and new wear parts (gaskets, seals, bolts, screws, etc.)
- Utilization of most up-to-date tools, specification documents and layout drawings for series production
- Adherence to inspection plans developed in agreement with quality management, including documentation of key dimensions (dimensions sheets, templates, push-on dimensions) throughout the assembly process
- Completion and documentation of order-specific requirements
- Implementation of design and model related updates and upgrades (if applicable)

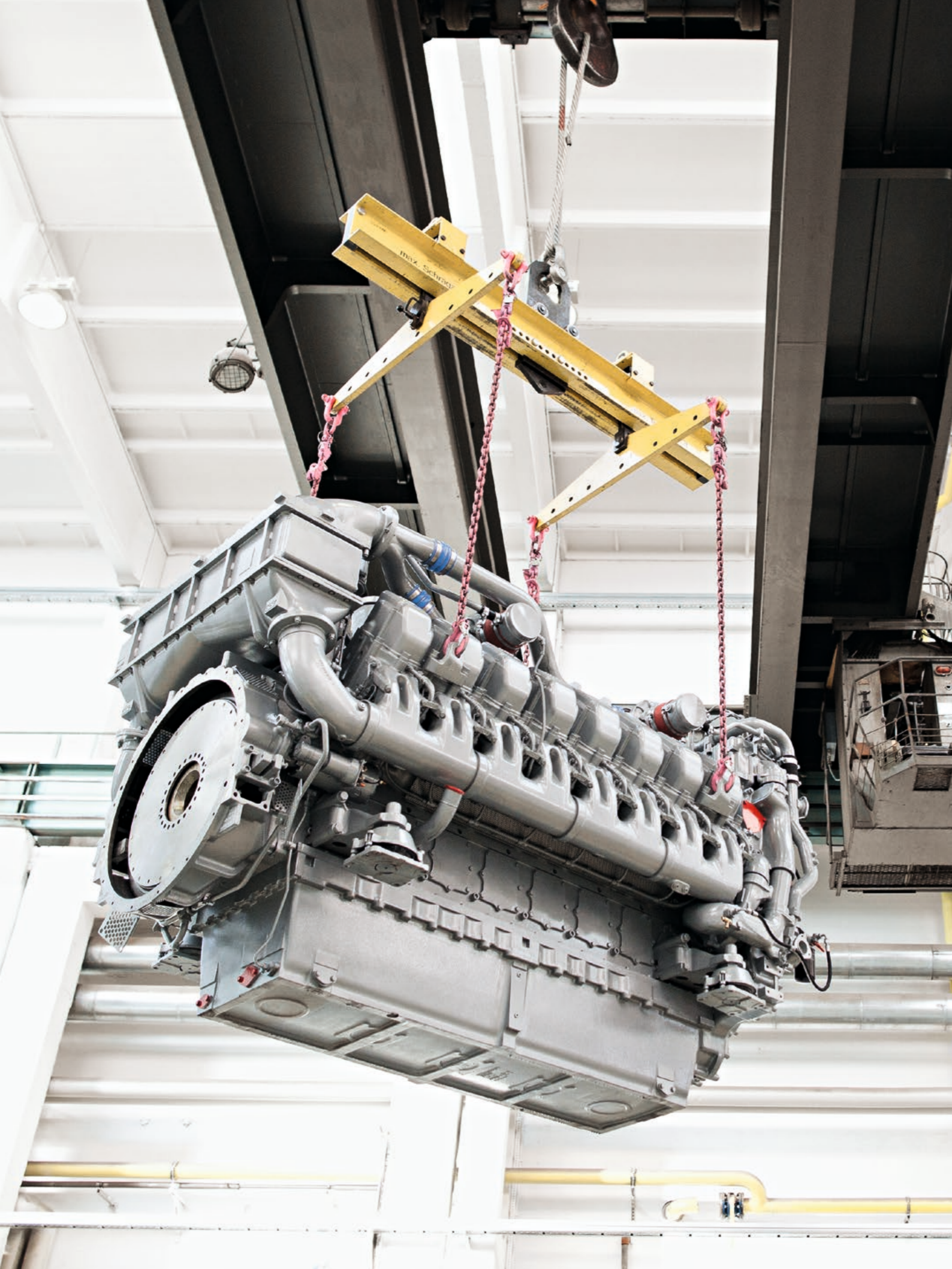
### 5. Acceptance testing

- Test run using specified, order-specific peripheral settings to replicate difficult field conditions (e.g., extreme temperatures)
- Documentation of engine values, evaluation and provision of plausibility assessment according to dispatch documentation
- Customer/classification society participation (optional)

### 6. Final preparations

- Priming and painting
- Packing/preservation (commercial/seaworthy/long-term packaging are available)





## Restoration Solutions

# WHATEVER YOUR CIRCUMSTANCE—WE'VE GOT YOU COVERED.

# 03

Factory Reman and Overhaul Solutions deliver the same high standards of performance and support, thanks to our rigorous restoration process. While the decision to undergo a reman or overhaul solution will be determined by your engine series, engine type and supporting service expert, each option delivers unique benefits based on your engine series and original production date.

### **Exchange and save.**

*Factory Remanufactured Solutions* involve replacing your existing engine and system with a remanufactured unit provided by your **mtu** service partner, and returning your original core for a credit. Utilizing the core exchange program minimizes downtime.

### **Turn back the clock.**

*Factory Overhaul Solutions* involve the complete restoration of your original equipment. This solution is best for classic and specialized engines that lack the necessary population for a meaningful core exchange program or require a greater level of customization during the restoration and validation process, such as Series 396, 493, 538, 595, 652, 956, 1163 and other engine Series (e.g. 2000 and 4000) on request.

### **Set an age limit.**

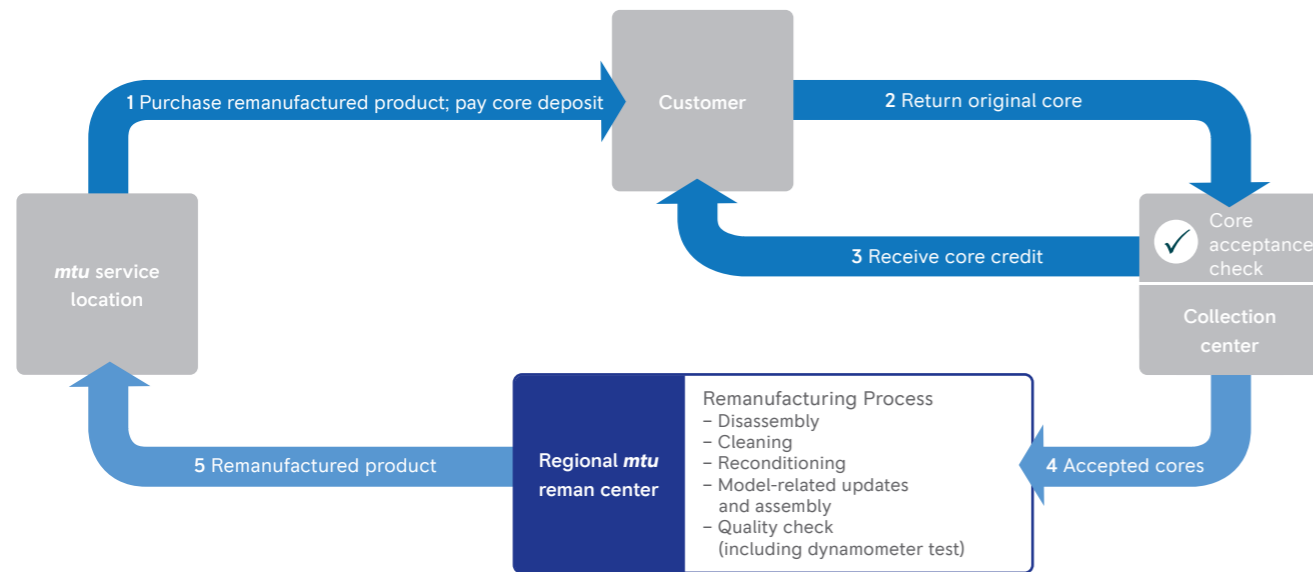
*Lifetime-Based Overhauls* are ideal for engines that reach a lifetime limit (years) with low operating hours, such as emergency generator sets. This scheduled solution provides the same peace of mind as a traditional overhaul at a fraction of the cost because only timeworn components are replaced, and the removal and reinstallation of the engine is not required.

## Benefits of Reman: Core Exchange Program

## BUILT FOR UPTIME AND EFFICIENCY.

For many engines there's no need to wait for an overhaul. Instead, you can reduce downtime by simply replacing your existing equipment with a factory remanufactured unit and returning your original core for a credit based on its technical condition. With our no-hassle core acceptance policy, we provide the total costs and time to replace your product up front—preventing unplanned costs and delays. Swing engines are also available to keep you working if extended service requires your engine to be removed.

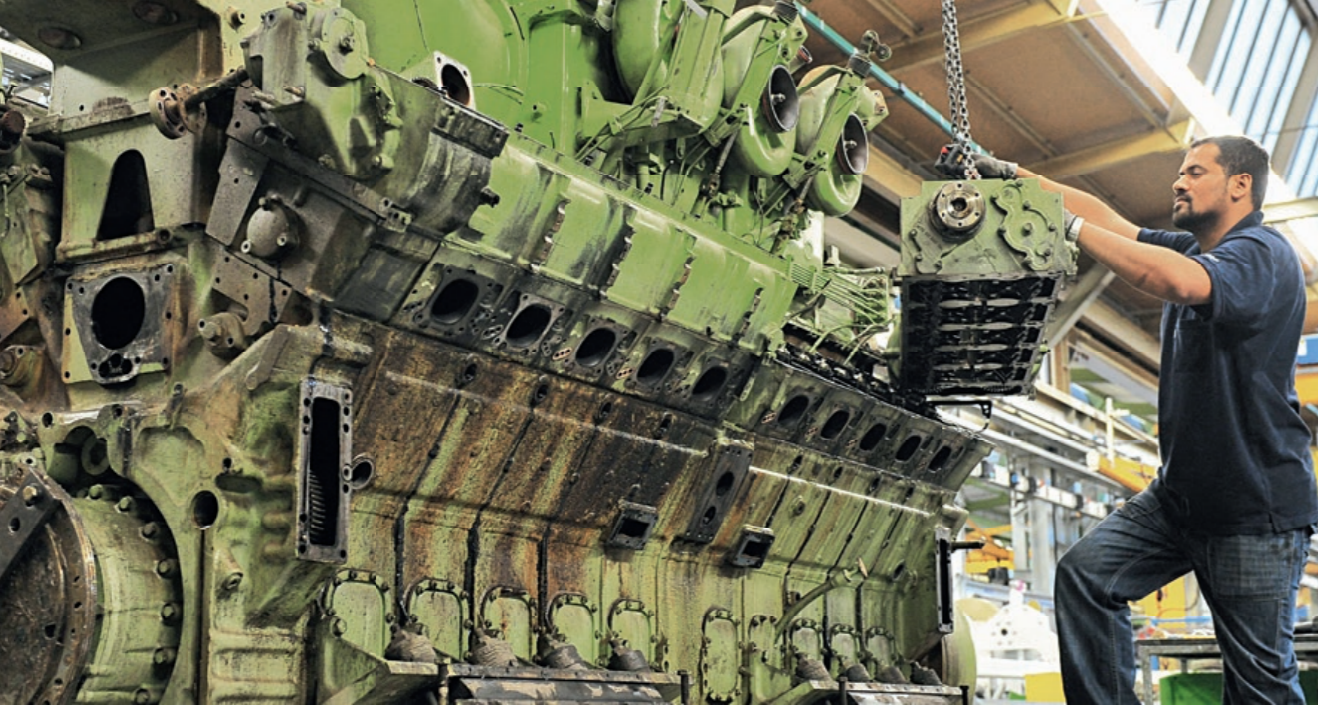
The core exchange program is simple:



1. Purchase a remanufactured unit from your local **mtu** service partner and pay the core deposit.
2. Your original core is returned to the collection center by your local **mtu** service partner for a core acceptance check.
3. You receive core credit based on your core's technical condition.
4. Accepted cores are sent to regional **mtu** reman centers, where the remanufacturing process takes place.
5. Factory remanufactured engines are delivered to **mtu** service partners and made available for purchase.







## Benefits of Overhaul: Customization

# OVERHAULED TO YOUR EXACT SPECIFICATIONS.

Your engine has a history that includes everything from its unique operating conditions to how it's integrated into your existing equipment. When maintaining your engine's identity is essential, and a customized restoration process is beneficial, a Factory Overhaul is the ideal solution.

A Factory Overhaul includes a wide range of customization opportunities and options, including:

- Documentation and reporting of investigation following disassembly, including verification measurements and damage analysis
- Invitation to evaluate scrapped parts and components
- Provision of supporting evidence when additional corrective work is recommended
- Completion and documentation of order-specific requirements
- Participation in acceptance testing
- Dynamometer testing under simulated operating conditions such as extreme temperatures
- Documentation of engine values, evaluation and provision of plausibility assessment according to dispatch documentation
- Priming and paint-finishing according to your specifications
- Commercial/seaworthy/long-term packaging/preservation

Whatever your needs, we'll work closely with you to align our processes with your individual requirements.



## Service Network

# LOCAL SUPPORT. WORLDWIDE.

# 05

The most important part of your power system isn't a part at all—it's your local service team. With more than 1,200 service locations worldwide—backed by regional Parts Logistics Centers in Europe, Asia and America—you can count on responsive support by expert technicians, wherever work takes you. To find your local service partner, visit [www.mtu-solutions.com](http://www.mtu-solutions.com).

### Always on call, 24/7

Whether it's connecting you with a local service partner or assigning an urgent problem to a dedicated team of **mtu** experts, we're ready to assist you—wherever you are, whatever you need.

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