

Although an engine doesn't actually have an MRI scan in the MTU remanufacturing process, it is nevertheless given a thorough checkup and completely reconditioned according to a standardized process. And instead of having to wait for their original engine to complete the process, customers are supplied with a previously remanufactured unit in exchange.

Remanufacturing as a fast, eco-friendly and cost-efficient process.

New Again

An engine of standard MTU quality is supplied within a matter of hours. It is substantially cheaper than a brand new unit and the buyer is saving the environment into the bargain. Smoke and mirrors? No, it's Value_Exchange, the MTU remanufacturing process for Series 2000 and Series 4000 engines, PowerPacks and components. This is a ferry engine's story.

“Many people think my job is boring. More than 40 times a day I travel back and forth between the Norwegian towns of Stavanger and Tau. Nice towns, admittedly. Stavanger is Norway's fourth largest city and it includes a lot of small islands. Tau, on the other hand, is smaller but the surrounding area is great for hiking, fishing or swimming. With the help of my three teammates, the journey takes 25 minutes.

Oh, I'm sorry, I haven't even introduced myself. I am an MTU Series 4000 engine. I have twelve cylinders and can produce 1,320 kilowatts of power. I was born six years ago at MTU in Friedrichshafen. And I have three siblings. We were sold to the Norwegian shipping company Tide Sjö right after we were born. And since then we have worked in the “Stavanger”, an 80-meter, 640-tonne car ferry. We can drive it along at 24 knots when we try our hardest. But it's not an easy job, by any means. We work twenty hours a day, sometimes longer. It's tough, make

no mistake, but my siblings and I make a good team. At night, when there's not so much happening on the ferry and we don't need as much power, two of us are allowed to sleep while the others do the work. In that way, we have mastered the job very successfully, and are proud to say we have never been the cause of a ferry failure. Our boss Odd Asheim, technical director of the firm we work for, Tide Sjö, says we are the best engines in the fleet. And he should know.

Frugal and fast.

But as time goes on, we are losing some of our youthful strength. Our knees hurt, backs ache and our legs are tired. Not surprising when you think every one of us has run for 28,000 hours in our life time. Odd says that my brother and I are going to be sent to a health farm for a while. He's been worrying for a long time about how to replace us. Because, without us, the “Stavanger” will be lying idle, and Odd always says, “time is money”. He can't afford to wait a long time for



For six years, an MTU Series 4000 diesel was “the best engine in the fleet” of the shipping company Tide Sjö. Now it is being reconditioned for new assignments at the MTU remanufacturing center.

Engine overhaul as alternative to remanufacturing

Not all owners want to swap their long-serving engines for remanufactured replacements. So the MTU Engine Overhaul Program offers the alternative option of having your own engine overhauled. And at a fixed price. As with remanufacturing, the engine is dismantled down to the very last nut and bolt, cleaned and checked over. All components that can be restored to the original blueprint and quality specifications are reconditioned. Worn-out, damaged or out-of-date components are replaced with genuine MTU parts. And before the engine leaves the factory, it is checked to make sure it meets the original MTU performance specifications.

MTU remanufacturing cycle

The engine is sold on as a remanufactured unit.



The engine is reconditioned at the manufacturing center according to a standardized process.

A customer buys a new, exchange or remanufactured engine from MTU.

The buyer's previous engine is given back to MTU for remanufacturing. The Core Collection Center in Region 1, 2 or 3 checks the engine against the acceptance criteria and reimburses any deposit (core deposit). The customer receives an exchange or remanufactured engine.

Remanufacturing in brief

When an engine or component reaches the end of its service life, the owner gives it back to MTU in return for an immediate replacement. The replacement is either a brand new exchange engine/component or a reconditioned (remanufactured) engine/component. The old engines/components are completely overhauled and technically upgraded at the MTU remanufacturing center and then resold.

The advantages:

- ◇ **Unbeatable pricing:** when returning an old engine or component, the customer is given a substantial discount on the exchange or remanufactured replacement.
- ◇ **Quality:** the remanufactured parts and engines still offer proven MTU quality – they come with the same MTU warranty as their new equivalents.
- ◇ **Ecology:** efficient use of resources. Rather than being scrapped at the end of their lives, the engines and components are reconditioned and re-used. That saves the environment.

MEMO

us to come back. So he's come up with an amazing conjuring trick. And the magic word is remanufacturing. We will get our well-deserved health cure and Odd will get two new replacement engines right away. Well, not exactly brand new, but engines which have just finished their spell at the spa and now have a clean bill of health for the next 24,000 hours. They are called remanufactured engines. And they cost much less than buying brand new ones. But what is more, they even come with the same warranty as new engines.

Fountain of youth.

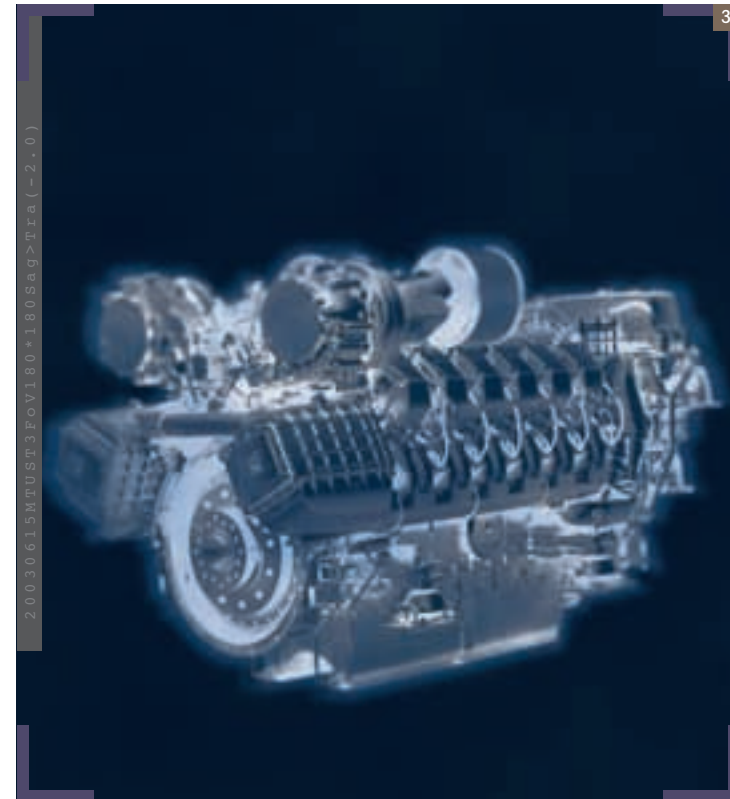
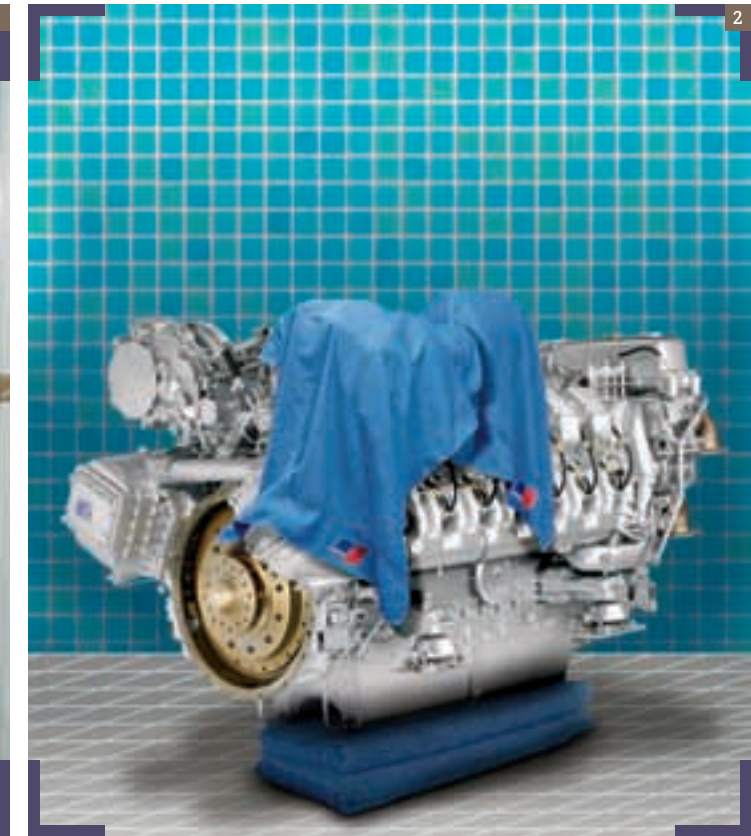
Odd thought it was a great idea and things started to happen very quickly. One evening, some men in blue overalls started to take us out of the ferry. When we were lifted out, there was already a truck standing alongside with our replacements. I only got a quick look at them, but they appeared very respectable. They looked smart and keen – just the right kind for our job. I only had time to wish them luck before me and my brother were loaded onto the truck. We really enjoyed the journey because finally we got to relax while someone else did the driving. After a while, we got to Magdeburg, a town in eastern Germany. That is where the MTU remanufacturing center is – our fountain of youth, you might say. Everything looks new and clean. Doctors in blue uniforms first of all gave us a thorough checkup and then put us on a standardized regime to restore us to full health. We had to undergo some lengthy

operations in which we were opened up, purged of all toxins, had all our organs tested and were given transplants for any that were worn out. The doctors even gave us some completely new parts we had never had before, because model-specific upgrades are part of the remanufacturing package. So we now have new fuel injectors, a reinforced turbo housing and improved intercoolers. I can tell you, I feel like I have been reborn and strong enough to tear down trees.

Spares remanufactured too.

I have learned a lot while I've been here at the remanufacturing center. I've met lots of other engines and all of them said they came here feeling old and tired, and left as fit as a fiddle after a complete overhaul. Some told me that their previous owners swapped them for a brand new engine rather than a remanufactured one. That's called buying an exchange engine.

There are even individual engine components such as fuel injectors, crankshafts and cylinder heads on the shelves here. They are from MTU Series 2000 and Series 4000 engines. The remanufactured and exchange parts are a lot less expensive than new components and the customer doesn't just throw the old part away. That wouldn't be good for the environment as the parts aren't ready for the scrap heap, they're just tired out. Here in Magdeburg and at other remanufacturing centers they are given a complete physical examination and put through a



After arriving at the remanufacturing center, the engine is first thoroughly cleaned (1 and 2). Using the very latest technology, the engines are then checked for wear and faults (3) and then reassembled (4). That includes replacing worn and defective parts and technical upgrades.



1

SKL Magdeburg Remanufacturing Center

Two years ago, MTU bought up the long-established German diesel engine manufacturer SKL in Magdeburg and converted the plant into a remanufacturing center. The site was predestined for overhauling engines in record time. "Engines have been built here for over 170 years, so the existing experience and machinery is accordingly extensive. For instance, the plant includes a Cubimat machine for grinding crankcases," explains Karl-Thomas Klingebiel, works manager. In recent months, new machines specifically for remanufacturing business have gone into service. Such as machines designed to grind, balance and crack-test crankshafts, and an ultrasound cleaner for perfect air and oil-filter cleaning.

The highly sophisticated equipment at the Reman Competence Center in Magdeburg includes a special crankshaft grinding machine (1) and detecting cracks (2).



2

MEMO

The production infrastructure at the MTU remanufacturing center offers the ideal conditions for reconditioning engines and components.



regime that prepares them for many more years of useful life, the same as for us engines. Often MTU supplies the owners with the new part first and they then send back the old part for remanufacturing later on. I have certainly found out some interesting stuff here.

I'm not sure how long I'll be staying here. Others are now doing my job at the ferry company Tide Sjö, so I won't be going back there. But I'm looking forward to my next assignment, whatever it might be. Maybe I'll work on a ferry in the English Channel or perhaps get sent to Asia. I can't wait to find out.

LUCIE DAMMANN

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Looking back Right from the earliest days of MTU, after-sales services played a big part in the business. In the first few years, spare parts sales were backed up by customer service including the repair of large-scale engines and the "Flying Doctor" service. Today, the MTU Value_Care portfolio offers a range of services comprising maintenance contracts, engine overhauls, training, remanufacturing and a 24-hour spares service that provides customers worldwide with the right after-sales solution to meet their needs.



Fallen heroes remembered: The New York Fire Department named its new vessel "Three Forty Three" - in honor of the 343 fire fighters who lost their lives while helping others.

During the terrible events of September 11, 2001 when terrorists attacked the World Trade Center in New York City, 343 NY firefighters and paramedics lost their lives while trying to save the lives of others. Eight years later, the New York City Fire Department (FDNY) remembered those fallen comrades with the launch of its newest firefighting vessel - the "Three Forty Three" - named in their honor. As a fitting memorial, the steel numbers 3-4-3 on the ship were cut by the FDNY crew using actual steel from the World Trade Center.

"On September 11th, we all saw how important fireboats are to New York City. The FDNY Marine Division rescued and transported hundreds of citizens and provided the only supply of water to battle the fires at the World Trade Center for many days," said Fire Commissioner Nicholas

Scoppetta. "The Three Forty Three will significantly improve our ability to respond to emergencies in and around New York Harbor, while also reminding us all of the incredible sacrifices so many of our members made eight years ago."

The Three Forty Three is the first of two new state-of-the-art vessels, and it has been specially designed to allow firefighters to operate even in extreme circumstances such as another terrorist attack. Each vessel has four MTU 12V4000 M70 engines provided through Atlantic Detroit Diesel-Allison. Management of the engines, gears, and shipboard monitoring is also part of the scope of supply.

The new 140-foot, 500-ton, \$27 million dollar boat will be the country's largest fireboat with a maximum speed of 18 knots. The 3-4-3 will provide the FDNY with the latest technology available, including the capability of pumping 50,000 gallons of water per minute; nearly 30,000 gallons more than its predecessor.

JENNIFER RILEY

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