Agriculture and Forestry

ALWAYS READY FOR MAXIMUM PERFORMANCE.

A Rolls-Royce solution

CONTENTS

Ropa Beet harvester 5
MTU 6R 1000/OM 936, 260 kW

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oder scannen Sie einfach den nebenstehenden QR-Code.

View PDF

Mercedes-Benz, Engine production in Mannheim.

PIONEERING THE POWER THAT MATTERS.

01

Rolls-Royce provides world-class power solutions and complete life-cycle support under our product and solution brand MTU. Through digitalization and electrification, we strive to develop drive and power generation solutions that are even cleaner and smarter and thus provide answers to the challenges posed by the rapidly growing societal demands for energy and mobility. We deliver and service comprehensive, powerful and reliable systems, based on both gas and diesel engines, as well as electrified hybrid systems. These clean and technologically advanced solutions serve our customers in the marine and infrastructure sectors worldwide.

A solution provider

Our systems power the largest yachts, the strongest tugboats and the biggest land vehicles and provide energy for the world's most important mission-critical applications. Through advanced solutions such as microgrids, we integrate renewable energies and manage the power needs of our customers.

Our customized service offerings help you maximize uptime and performance and are supported by our digital solutions, which enable remote monitoring, predictive maintenance and a range of other benefits that keep your systems running at their best.

For over 110 years, we have provided innovative power solutions for our customers – meeting even the most demanding drive requirements. Our products and services span a wide range of applications and power needs, with both standard and customized options.

An expert in technology

As part of Rolls-Royce, we have long been known for cutting-edge innovation and technological leadership in product development. That same spirit of innovation inspires our sustainability efforts. Our focus is on developing and implementing system solutions that both maximize efficiency and reduce emissions – which in turn work to reduce our impact on the environment.

A passionate and reliable partner

We at Rolls-Royce spend every day working together with our customers to deliver engines, systems and complete life-cycle solutions that best fit your needs. We understand that each

application is different and has its own specific demands. Our engineers embrace the challenge of finding the perfect solution for your unique power requirements. Every step of the way – from project planning, through design, delivery and commissioning to the lifetime care of your equipment – we are dedicated to helping you get the most from your MTU investment.

Partnership with Mercedes-Benz

MTU Series 1000, 1100, 1300 and 1500 engines are based on Mercedes-Benz models customized for off-highway use. These engines range from 115–480 kW and have been specially designed for agriculture and forestry applications and further developed to meet EU Stage V regulations.

System solutions

POWER ALONE IS NOT ENOUGH.

02

As experienced specialists in agricultural engines, we provide solutions that answer the most complex needs all the way from machine design to maintenance. Our engines ensure reliable, cost-effective and clean performance in fields and forests even under the most difficult conditions.

Claas Xerion 5000
MTU 6R 1300/OM 471, 390 kW

System solutions

RELIABLE PERFORMANCE.

We offer a broad range of reliable, high-performance, economical diesel engines for agricultural machines like tractors, forage harvesters and combine harvesters as well as timber and forest harvesters. Even at high performance, our engines are also fuel efficient.

Your benefits:

- Low life-cycle costs due to low fuel and DEF consumption and long maintenance intervals
- Highest quality standards for maximum availability and minimal downtime
- Top performance, even under full load and with frequent load changes
- Global service network – customer support anywhere and anytime

Planning
We deliver a complete engine concept. Our engineers provide extensive analysis, documentation and risk mitigation services, as well as customer-focused support for integrated mechanical, electrical and electronic interfaces.

Integration
We provide comprehensive engineering and technical support for the design and implementation of the engines. Our application engineering team helps reduce design costs.

Power take-off options
Various power takeoff options for highly specialized applications offer even greater flexibility, making it easier to connect additional power trains and shaft drives, for example for hydraulic pumps, air compressors and other auxiliary devices.

MTU ValueCare
MTU ValueCare ensures maximum performance and lasting value, with a complete portfolio of service and support solutions including analysis, spare parts, training, technical documentation and full logistical support.

Combustion and aftertreatment
Our optimized combustion and cooled exhaust gas recirculation system (EGR), supported by an efficient and well-balanced exhaust aftertreatment system consisting of SCR and DPF technology, allows our diesel engines to meet the widest range of exhaust emission requirements up to EU Stage V. It also enables compliance with worldwide emission standards including EPA, China, Japan and Korea.

Digitalization
For over 100 years, we've been known for technological innovation and leadership – driving efficiency and reliability to new heights. Today, we're applying that same spirit of innovation to digitalization. Our aim is to magnify the power of your investment.

POWER SOLUTIONS FOR AGRICULTURE AND FORESTRY APPLICATIONS.

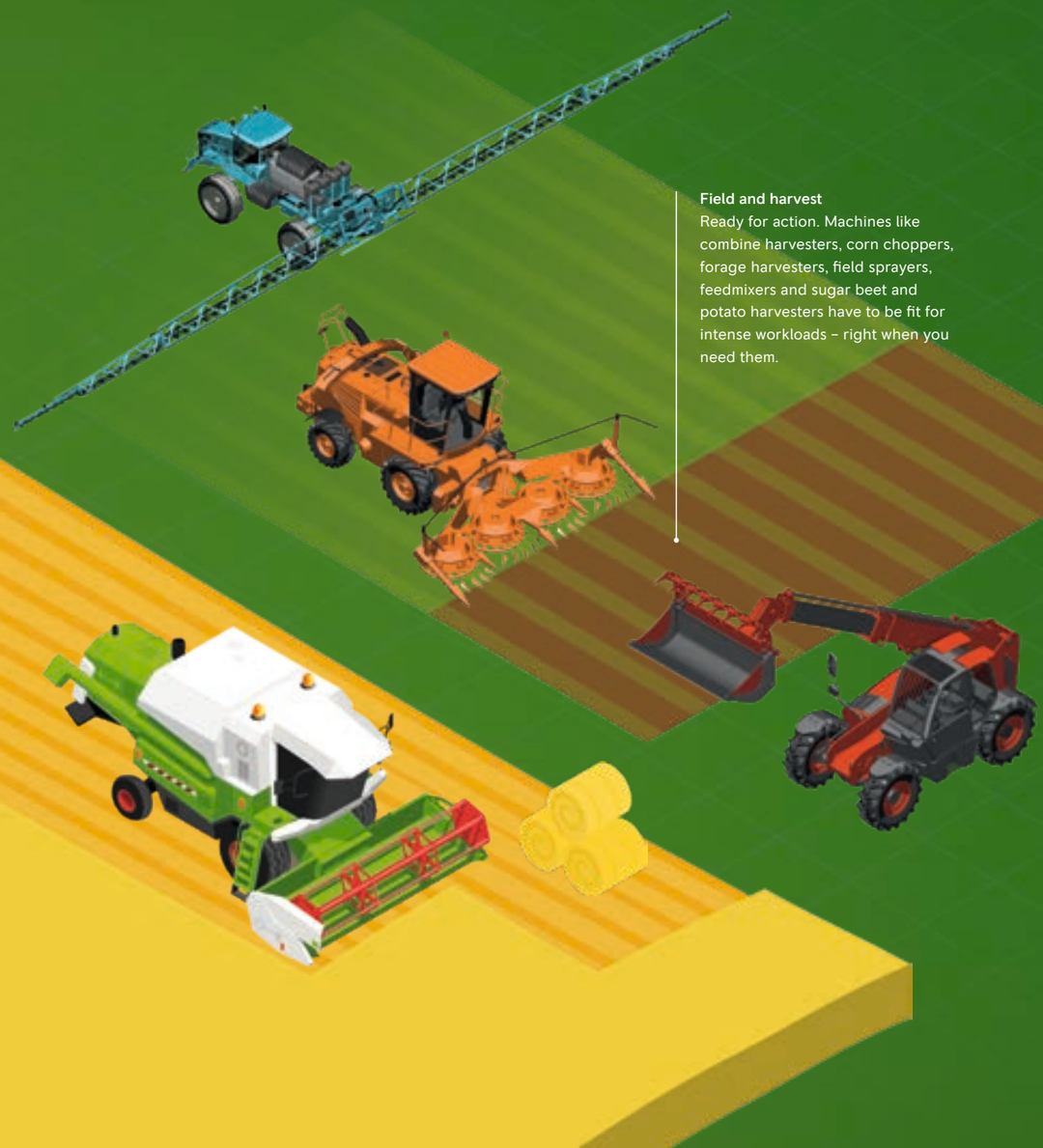
03

Field and harvest
Ready for action. Machines like combine harvesters, corn choppers, forage harvesters, field sprayers, feedmixers and sugar beet and potato harvesters have to be fit for intense workloads – right when you need them.

Forestry
Forestry work often starts with making paths through rocky, steep, muddy terrain in wet, cold or hot conditions. Difficult working conditions make great demands on log harvesters, forwarders and carriers.

Power generation
Energy farming makes economic and environmental sense. Our modular CHP plants include gas generator sets that run on biogas from anaerobic digesters, and energy storage solutions like the MTU EnergyPack.

Farm machinery
Whether it's an all-rounder like the tractor or specialized equipment like tree shakers and self-propelled slurry spreaders, reliability is always key.



Core competence

IT'S ALWAYS A GOOD DAY WHEN YOU ARE FULLY PREPARED. 04

Success in agriculture and forestry has always been highly dependent on the weather. The impact of climate change is making this situation more extreme. That means that the availability of your machinery is essential.

Maximum availability – every day and everywhere
Our engines represent the best availability and reliability, low life-cycle costs and maximum economy for thousand-fold proven durability and an excellent power-to-weight ratio. With our integration of know-how and numerous years of experience we ensure that our extensive product range can consistently provide the right drive solution.

Cost-effectiveness and low emissions
Our engines are among the lowest-consumption engines on the market. Optimized, efficient combustion and exhaust aftertreatment mean that our diesel drives meet the widest range of emissions specifications up to EU Stage V. In addition to their well-known longevity, low-maintenance construction and long service intervals also ensure their cost-effectiveness.

1 **Claas Xerion 5500**
MTU 6R 1300/OM 471, 390 kW

2 **Holmer Terra Variant 435**
MTU 6R 1100/OM 470, 320 kW

3 **Ponsse Harvester Scorpion**
MTU 6R 1000/OM 936, 210 kW


1


2


3

Core technology

POWER YOU CAN DEPEND ON.

05

Different applications place special requirements on engines. Whether you need lightweight equipment, compact build or the ability to communicate with electronic controls, our engines can meet these demands without restrictions.

Grimme Rexor
MTU 6R 1500/OM 473, 460 kW

Core technology

ALL ENGINES AT A GLANCE.

The higher the requirements and the more specific the application, the greater the need for our engines. That's because we develop the optimum drive solutions for all individual tasks. The large range of engines contains the right answer for every application – a solution including the highest performance and greatest reliability, safety, environmental friendliness and operating efficiency.

Series 460
The proven, evolved engine.
For heavy and medium duty operation.
220–375 kW (295–503 bhp)

Series 900
Maximum efficiency and availability.
For heavy and medium duty operation.
75–240 kW (101–322 bhp)

Series 4R 1000/OM 934
Increased rated power. One of the most successful engines ever.
For heavy and medium duty operation.
115–170 kW (154–228 bhp)

Series 6R 1000/OM 936
Uncompromising availability.
For heavy and medium duty operation.
180–280 kW (24–375 bhp)

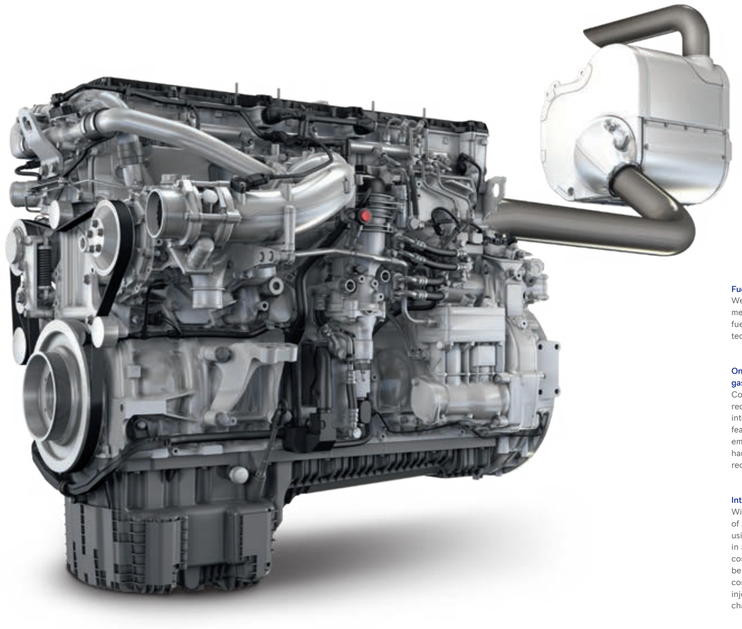
Planning security
Our engines can be operated all over the world in compliance with local regulations. This is achieved without making changes to the engine footprint, which means equipment manufacturers have planning security for their own designs. Optional parts make every engine adaptable to specific demands.

Analytics
We use the most diverse analysis and simulation tools to develop state-of-the-art engines. These include vibration analyses, component strength verification and dynamic response simulations.

Electronics
The MCM engine control unit and the ACM aftertreatment control unit, control key systems such as fuel injection and turbocharging as well as the emission management system – ensuring high torque, full power and lowest fuel consumption. The CPC4 vehicle control unit provides an extensive set of functions to the vehicle and its operator.

manufactured by

customized by



Optional parts
We provide optional parts for your engine such as oil pans, starters/generators, flywheel housings and much more. Genuine parts maximize performance, prolong engine life and meet today's strict requirements, making them the best possible match for your engine.

Turbocharging
Single-stage turbochargers compress the air so that more oxygen flows into the combustion chamber. In this way, more fuel is burned and the power output of the engine increases accordingly. Two-stage controlled turbocharging ensures low fuel consumption across a wide speed range, exceptionally high torque at low speeds, and clean combustion. On our Series 1500 engines, a turbo compound unit recovers energy from the exhaust gases and increases efficiency even further – with a 5% fuel saving over similar engines.

Fuel injection
We optimize fuel combustion in the cylinder by means of its electronically controlled common rail fuel injection system in combination with other technologies such as turbocharging.

One-box solution for exhaust gas aftertreatment
Combined "all-in-one" box with selective catalytic reduction (SCR), diesel particulate filter (DPF) and integrated dosing unit provides proven product features for profitable use while meeting the emission limits for EU Stage V. The decrease in harmful emissions is achieved along with a reduction in fuel consumption.

Internal emission reduction
With exhaust gas recirculation (EGR), the amount of nitrogen oxide can be significantly reduced using internal emission technology alone, resulting in a positive impact on the overall system consumption (fuel and urea). Combustion can be further optimized to lower emissions and consumption by the use of common rail fuel injection. Single-stage and two-stage turbo-charging also increase engine efficiency.

Series 1100/OM 470
More efficient than ever. Save up to 3% in fuel in comparison to EU Stage IV/EPA Tier 4 final.
For heavy and medium duty operation.
240–340 kW (322–456 bhp)

Series 1300/OM 471
The toughest ever. With improved peak torque.
For heavy and medium duty operation.
320–390 kW (429–523 bhp)

Series 1500/OM 473
Low life-cycle costs. Quick and easy maintenance.
For heavy and medium duty operation.
380–480 kW (509–644 bhp)

Series 2000
A powerful heart for maximum agility.
For heavy and medium duty operation.
567 – 970 kW (760 – 1301 bhp)

Green technology

ENGINEERING TODAY WHAT YOU'LL NEED TOMORROW.

06

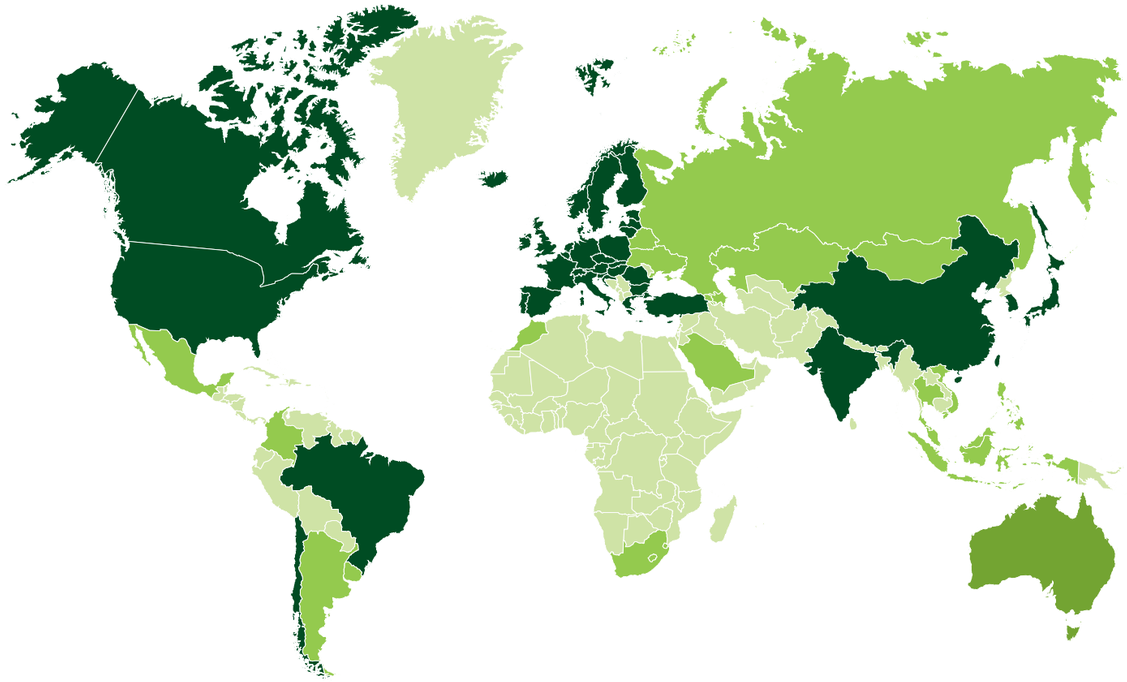
Beet harvester Rexor 620 Platinum
MTU 6R 1300/OM 471, 390 kW

Green technology

97.8% REDUCTION IN SOOT EMISSIONS OVER 19 YEARS.

The increasingly stringent emissions limits are fast approaching the ideal “zero emissions“ target for diesel engines. The statistics speak for themselves:
over the course of 19 years, EU emissions stages have been tightened four times and EPA Tier regulations have been created to govern industrial engines. EU Stage V will be the fifth time since Stage I (1996) that emissions limits have been tightened, representing a cut of more than 94% in nitrogen oxides. At 97.8%, reductions in soot particulate emissions have been even greater.

EMISSION FORECAST 2028.



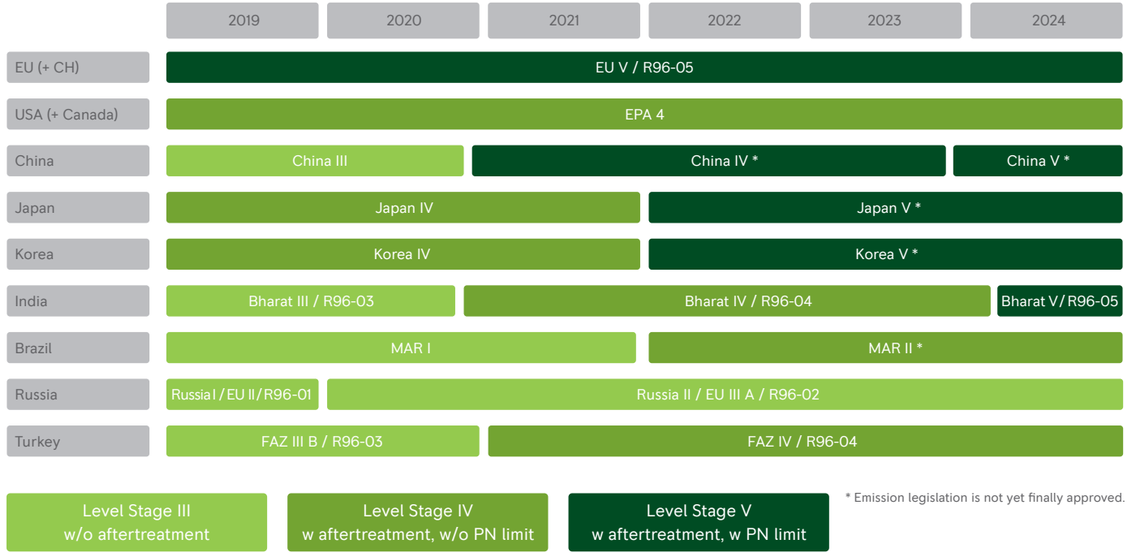
Emission legislation with a high-technology approach.

Emission legislation with a medium nationwide and high-technology approach in emission hotspots.

Emission legislation with a medium technology approach.

No emission legislation, standard technology approach.

NRMM EMISSION LEGISLATION 130–560 KW.



* Emission legislation is not yet finally approved.

EMISSION FLEX PACKAGE.

Wherever in the world you want to market your agricultural and forestry machines, you need a drive package that performs. With our Emission Flex Package, you increase your flexibility in highly regulated markets as well as in countries with no or lower emissions standards.

Our software allows the engine’s exhaust gas aftertreatment system and SCR system to be deactivated without hardware changes, eliminating the need for time-consuming modifications. With two engine generations from 115–480 kW, we are well prepared to offer the solution that meets your individual requirements best.

Complete power system solutions for biogas

ENERGY FARMING.

07

Energy is often overlooked as a product of farming, but new technologies are making it easier than ever for farmers to turn organic residues into energy and profits. Biogas from organic materials can be turned into heat and electricity, which can then be used on the farm or sold on to a power grid.

Complete power system solutions for biogas

MICROGRIDS FOR FARMERS.

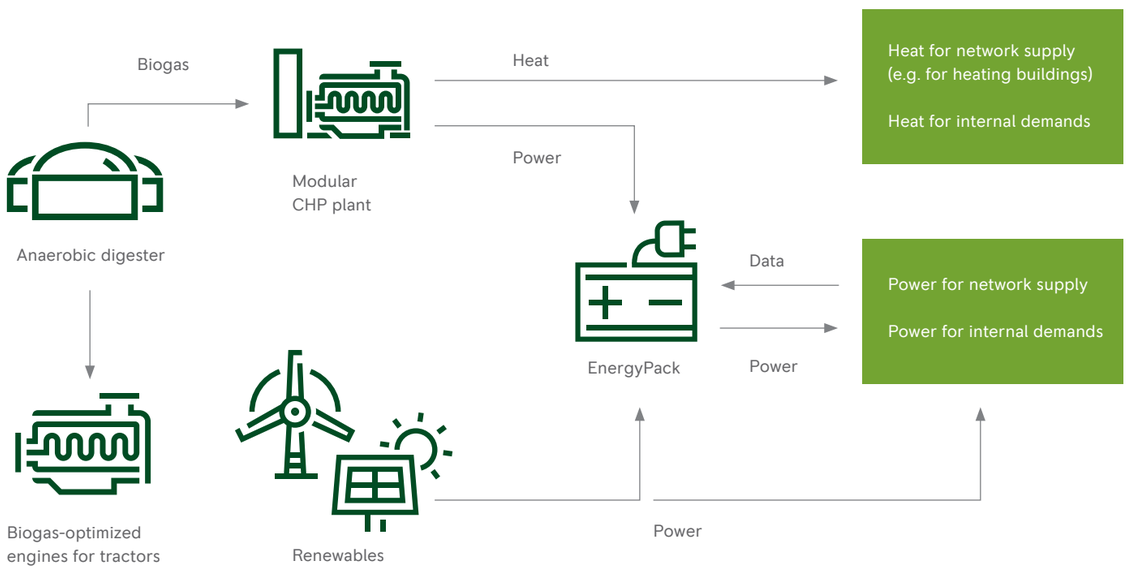
Reduce energy costs, improve your ecological balance sheet, and secure your power supply.

A microgrid on a farm can comprise several different elements depending on the type, size and location of the farm. For example, you can use an anaerobic digester to generate methane biogas from manure if you have livestock, or from other waste materials such as sewage and other organic waste matter.

The biogas can be used to drive a tractor with a gas engine or to generate electricity and heat with a Series 400 or 4000 biogas combined heat and power system (CHP). The principle of a CHP system based on biogas is simple and ingenious: the biogas is used to generate power in a manner that is both economical and saves resources. The power produced can either be used to supply your own requirements, or it can be fed into the public power grid.

The heat generated by engine operation (as part of exhaust gas, coolant and oil) is used by heat exchangers to maintain the fermenter's temperature at a constant level, optimal for the fermentation process. Additional heat consumers, such as houses or groups of buildings within the farm or in neighboring residential areas, can also be supplied with heat.

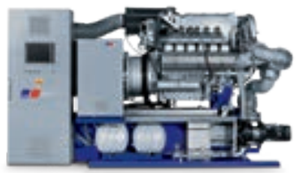
The electricity from the CHP can also be stored in the batteries of our MTU EnergyPack. The MTU EnergyPack lets you integrate and store energy from other renewable sources on the farm, such as windmills or solar panels. Adding our controls, your microgrid becomes smart, with the ability to be connected to the public power grid and/or in island mode.



ECONOMICAL. SUSTAINABLE. CLEAN.

Our biogas-powered systems generate clean, economical and sustainable power, heat and cooling energy for agricultural farms.

This smart series 400 system is optimized for biogas use. Its combustion chambers ensure the highest performance level in this category. The system comes with MTU Module Control, a generator, ignition system, mixture cooler, crank-case ventilation and knock detection.



MTU 400 GS
50 Hz: 136-420 kWe
60 Hz: 132–358 kWe

For natural, biogas and other gases.

The optimized series 4000 engine for biogas use ensures highest levels of efficiency in this performance category thanks to the crank-case ventilated combustion chambers, the optimally tailored generator and the ignition system allowing the most efficient level of operation for all cylinders. Further, the knock detection and regulations protect the engine from abnormal operating conditions.

MTU 4000 GS
50 Hz: 776–2,530 kWe
60 Hz: 760–2,130 kWe

For natural, biogas and other gases.

MTU ENERGYPACK – THE FLEXIBLE STORAGE SOLUTION.

Improves the reliability and profitability of your microgrid
The new MTU EnergyPack is a valuable addition for any microgrid. It stores electricity from any distributed power system – such as biogas gensets, wind turbines or solar panels – and delivers it when you need it. The MTU EnergyPack is an all-in-one solution that can be easily scaled to your needs.
You can use the stored power to cover your farm's requirements, for example to compensate for supply fluctuations without recurring to the public grid. You can also feed surplus energy into a public power grid when the prices suit you best (our equipment has the necessary certifications to participate in the power balancing market).

Service

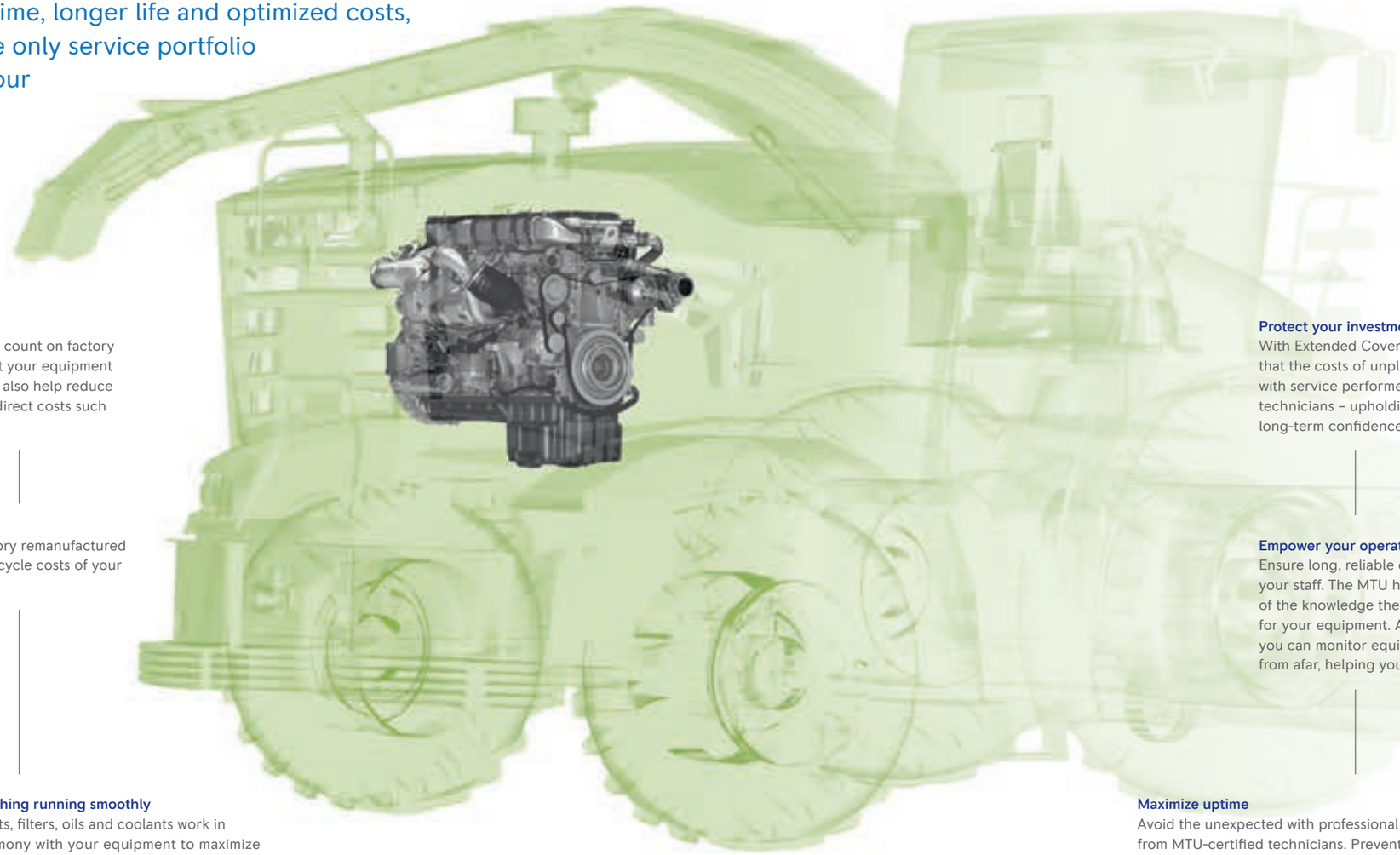
SMARTER SERVICE. BUILT FOR YOU.

08

Service

TAKE CARE OF YOUR INVESTMENT.

Our engines and systems are built to deliver robust, reliable performance. But our commitment to your success doesn't end there. For maximum uptime, longer life and optimized costs, rely on MTU ValueCare – the only service portfolio designed specifically with your equipment in mind.



Save time
When it's time for an overhaul, count on factory remanufactured engines to put your equipment back to work even faster. They also help reduce downtime, service time and indirect costs such as storage.

Reduce life-cycle costs
Count on a wide range of factory remanufactured parts to help optimize the life-cycle costs of your equipment.

Keep everything running smoothly
Original parts, filters, oils and coolants work in perfect harmony with your equipment to maximize its performance, prolong its life and protect it – making them an essential part of your preventive maintenance program.

Protect your investment
With Extended Coverage, you can be assured that the costs of unplanned repairs are covered, with service performed by MTU-certified technicians – upholding resale value and ensuring long-term confidence in your investment.

Empower your operators
Ensure long, reliable equipment life by empowering your staff. The MTU hands-on training provides all of the knowledge they'll need to operate and care for your equipment. And with our digital solutions, you can monitor equipment health and activity from afar, helping you be more proactive.

Maximize uptime
Avoid the unexpected with professional service from MTU-certified technicians. Preventive maintenance services can be planned around your schedule, so your equipment is available when you need it most.

Service

OUR GLOBAL 24/7 PROMISE.

Whenever and wherever you need expert support, our specialists are available. Our global service network of more than 1,200 locations – backed by our cutting-edge Parts Logistics and Customer Care Center – provides you this assurance.

To find your local MTU-distributor, visit 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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info@ps.rolls-royce.com

Always on call
24/7

Remanufactured products

REMAN-ENGINE – EXCHANGE AND SAVE.

09

The factory rebuild process

1 Disassembly
The engine is taken apart completely and recyclable materials are separated.

2 Cleaning
Paint and rust are removed from all parts and components.

3 Inspection
All parts are examined against factory-specified tolerance and wear limits.

4 Reworking
All reusable parts are reworked and machined using series production processes to meet tolerance requirements.

5 Reassembly
Engines are assembled using reworked/rebuilt parts and components and new wear parts.

6 Quality control
Test run using series production criteria to replicate difficult field conditions (e.g. extreme temperatures).

MTU 6R 1000/OM 936

Complete remanufactured engines – for rapid availability
- Plug-and-play solution reduces downtimes
- A worthwhile investment if the vehicle is to deliver maximum availability for a long time to come
- For maximum and longest vehicle availability

A complete remanufactured engine includes:
- Air compressor
- Control unit with updated software
- Engine wiring harness
- Exhaust manifold
- Flywheel
- Power steering pump
- Starter (for Series 500)
- Turbocharger
- Vibration damper
- Water pump

Factory engine overhaul – the economical alternative
A factory overhaul is the economical alternative to a remanufactured engine, and is especially worthwhile for older vehicles. Your engine will come back from the factory fully overhauled and renewed.

Subject to change. | 16!20001 | Edition 01/19 | ESM 2019-10 | Printed in Germany on chlorine-free bleached paper.

Rolls-Royce Group
www.mtu-solutions.com