

Oil & Gas

Series 4000 Tier 4 final



No aftertreatment.
No compromises.



Power. Passion. Partnership.

The only frac engine that meets Tier 4 standards without aftertreatment.

Fracking is tough work. And the demands put on a well servicing operation’s diesel engines are just as challenging. Uncompromising performance and fuel economy, excellent power-to-weight ratios and maximum reliability are essential. As the driving force behind frac pumps, the MTU Series 4000 is proven in the field.

The next generation Series 4000 breaks new ground, as the only frac engine that meets Tier 4 standards without aftertreatment. Its key emissions control technology, MTU Exhaust Gas Recirculation (EGR), has successfully proven its reliability in even the toughest conditions. Combined with MTU’s refined fourth-generation common rail injection system and 2-stage turbocharging, the Series 4000 reduces emissions without compromising performance.

The new Series 4000 features excellent power-to-weight ratio and ease of maintenance, with the durability you expect from MTU. Despite much lower emissions, the engine offers better fuel efficiency than the Tier 2 predecessor, contributing to lower overall lifecycle costs. In addition, the performance map has been optimized to improve low-end torque, which is ideal for frac operations.



Series 4000 Tier 4 final advantages

Cost effective

- No additives needed for emissions control
- Up to 5 percent better fuel economy¹
- Lower lifecycle costs¹
- Exceptional durability, availability and reliability results in more uptime
- Longer TBOs (maintenance intervals optimized for individual application)

Maximum performance and durability

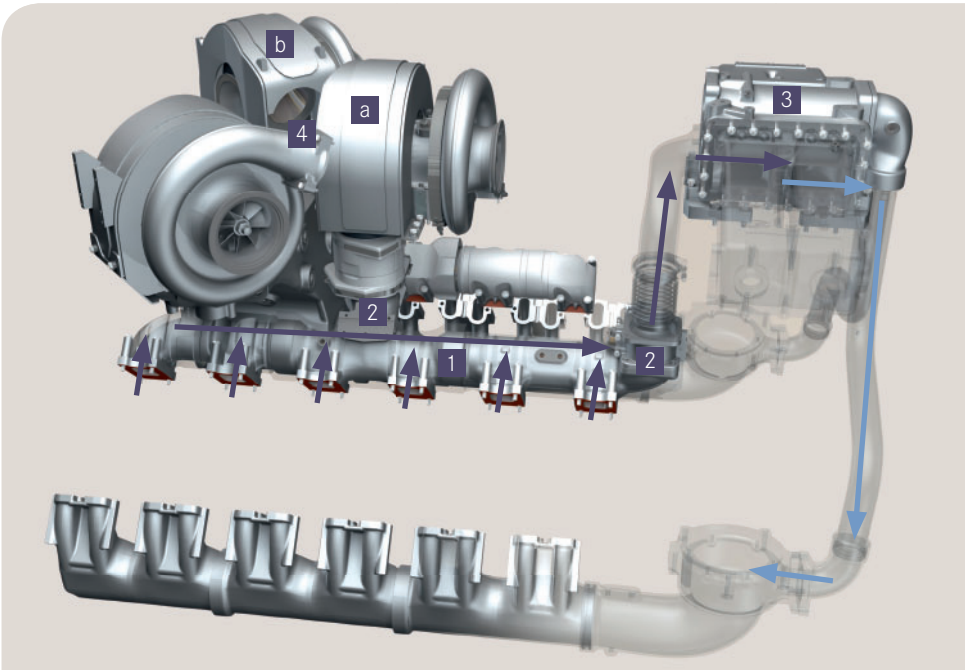
- Higher power output²: 2,250-3,000 bhp (1,678-2,237 kW)
- Performance map optimized for frac application: more low-end torque
- Full performance available up to 13,000 ft (4,000 m)³
- Optimized power-to-weight ratio
- Rugged, reliable design
- Intelligent fit of the performance map with downstream components enhances rig performance by maximizing frac pump capabilities

Proven technology

- Fourth-generation common rail injection system
- Next generation of the successful Tier 4i frac engine

¹ Compared to Tier 2 engine.
² Compared to Tier 4i engine.
³ Dependent on air intake temperature. Subject to be confirmed.

MTU’s emissions control strategy combines proven EGR technology with two-stage turbocharging.



EGR Technology

- 1 Donor Cylinder**
Feeds exhaust gas to the EGR cooler
- 2 Control Flaps**
Automatic control of the exhaust gas recirculation rate up to max. 30%
- 3 EGR Cooler**
Cools recirculated exhaust gas, which is then mixed with the charge air, lowering the combustion temperature
- 4 Two-Stage Turbocharging**
Produce high power density and low soot emissions
4a High-Pressure Exhaust Turbocharger
4b Low-Pressure Exhaust Turbocharger

Emissions control technology

MTU utilizes field-tested and proven technologies to control emissions. The Series 4000 has been designed to meet EPA Tier 4 final emissions with integrated cooled Exhaust Gas Recirculation (EGR) and two-stage turbocharging. Together, these technologies reduce NOx and particulate emissions, improve fuel economy and optimize performance capabilities.

During the controlled-cooled EGR process, exhaust gas from a donor cylinder is fed into the EGR cooler, then returned to the cylinders. This lowers the combustion temperature, significantly reducing the production of harmful exhaust gases.

Control flaps allow the EGR rate to be ideally set for the engine’s operating point, while maintaining the required emissions limits. The two-stage compression of the charge air ensures low soot emissions, high power density and reliable mapping of engine characteristics.

Benefits

- EGR, in conjunction with two-stage turbo-charging, offers:
- High design flexibility of exhaust piping system
 - Optimized maintenance costs and operating costs
 - Excellent transient behavior—quick load pickup
 - Wide engine performance map—full torque curve
 - Full power output available even at high altitudes
 - Full power output available even at high ambient temperatures
 - Accurate adjustment of EGR rate according to load conditions

The next generation Series 4000 is another example of MTU’s overall commitment to the environment and to your success.



Everything you need to keep going

We have a strong commitment to our oil and gas customers. With MTU **ValueCare**, this focus extends beyond the sale of our engines. From maintenance to genuine parts to remanufactured engines, MTU offers a full range of support to help keep your operation productive.

MTU **ValueCare** includes three product lines:

- **ValueService**—Complete maintenance and service support all over the globe
- **ValueSpares**—Genuine spare parts and top-quality consumables
- **ValueExchange**—Remanufactured parts, engines and systems

MTU **ValueCare** products and services are available anywhere in the world through our extensive network of authorized distributors and service dealers. To find your local MTU distributor, visit www.mtu-online.com.

Local support. Worldwide.

Receive individualized support from our global network of more than 1,200 service centers—anywhere, anytime.

