ZERO

AFTERTREATMENT NEEDED
for Tier 4 engines over 750 hp

Oil & Gas

SERIES 4000
TIER 4 FINAL
THE ONLY FRAC ENGINE THAT MEETS TIER 4 STANDARDS WITHOUT AFTERTREATMENT.

Fracking is tough work. The demands placed on the diesel engines of a well servicing operation are just as challenging. Uncompromising performance and fuel economy, an excellent power-to-weight ratio and maximum reliability are absolutely essential. Our Series 4000 has proven in the field that it is up to the task.

Since its market introduction in 1996, all 37,000 Series 4000 engines have delivered a combined total of more than 180 million operating hours. It provides full frac performance at elevations up to 13,000 ft. In fact, with up to 3,000 bhp (2,237 kW), the 16V 4000 T95 is the most powerful frac engine in its class. Simply stated: Our Series 4000 is the undisputed no. 1 in frac productivity.

The new Series 4000 features an excellent power-to-weight ratio and ease of maintenance combined with the durability you expect from us. 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 costs2
  - Exceptional durability, availability and reliability for more uptime
  - Longer TBOs (maintenance intervals optimized for individual applications)

- **Maximum performance and durability**
  - Higher power output2: 2,250-3,000 bhp (1,678-2,237 kW)
  - Performance map optimized for frac applications:
    - 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

Emissions control technology

We utilize field-tested and proven technologies to control emissions. The Series 4000 is 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 our overall commitment to the environment and to your success.

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 distributor, visit www.mtu-solutions.com.

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

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