



# ZERO

**AFTERTREATMENT NEEDED  
for Tier 4 engines over 750 hp**

Oil & Gas

SERIES 4000  
TIER 4 FINAL



A Rolls-Royce  
solution

# 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<sup>3</sup>**. 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.

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

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 economy<sup>1</sup>
- Lower lifecycle costs<sup>1</sup>
- Exceptional durability, availability and reliability for more uptime
- Longer TBOs (maintenance intervals optimized for individual applications)

#### Maximum performance and durability

- Higher power output<sup>2</sup>: 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)<sup>3</sup>
- 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

<sup>1</sup> Compared to Tier 2 engine.

<sup>2</sup> Compared to Tier 4i engine.

<sup>3</sup> Dependent on air intake temperature. Subject to be confirmed.

FULL FRAC  
PERFORMANCE  
up to  
**13,000**  
FEET

**NO.1 IN FRAC PRODUCTIVITY**

**18000000<sup>0</sup>**

**OPERATING HOURS  
FOR SERIES 4000**

### 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.

### 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 and remanufactured engines, we offer the 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 distributor, visit [www.mtu-solutions.com](http://www.mtu-solutions.com).

#### Local support. Worldwide.

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



