

## Komatsu Develops New Engine Technologies in Response to Next Emission Regulations in Japan, North America and Europe

*Bauma, April 2010* - . Komatsu Ltd. (President & CEO: Kunio Noji) has developed a new diesel engine technology that is compliant with the new emission regulations for Japan, North America and Europe. While the current regulations for these countries are very stringent on emissions of nitrogen oxides (NOx) and particulate matter (PM), upcoming standards will require further reductions of NOx and PM down to about 10% of today's levels.

This calls for a very advanced level of technology on the part of manufacturers.

To reduce NOx, the combustion temperature must be lowered, which in most cases will increase the amount of PM and worsen fuel economy. Therefore, the development of diesel engines necessitates the simultaneous reduction of both NOx and PM, while also improving fuel consumption. In addition, construction equipment engines are required to generate high performance, and to often work at maximum power output and torque due to very demanding applications.

Right from the R&D stage, Komatsu has engaged in the integrated production of diesel engines for construction equipment. Ranging from 3.3- to 46-liter emission engines\*, they are mounted on PC120 hydraulic excavators and other medium-sized equipment to large haul trucks. Furthermore, by taking advantage of in-house developments and the production of engines, hydraulic units, control systems and major components, Komatsu has designed engines and equipment structures as an integrated whole and introduced engines that generate the best possible performance under all kinds of conditions. By integrating leading-edge technologies into proprietary engine technologies accumulated over the years, Komatsu has developed new engine technologies capable of reducing environmental impact while improving fuel economy.

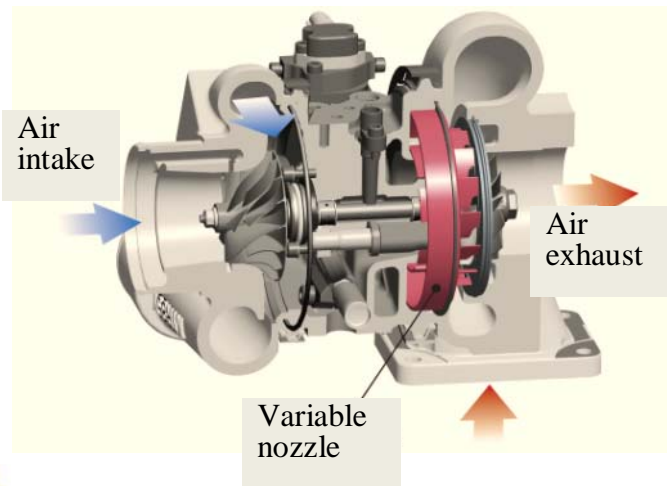
\*including some engine models jointly developed with and manufactured by Cummins Inc.

[New engine designed to meet new emission regulations in Japan, North America and Europe]



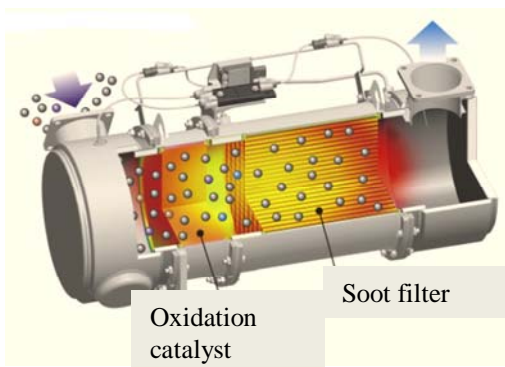
Note: This photo was created by computer graphics.

[Technologies Applied to New Engine]  
**1. Variable Geometry Turbo System**



Komatsu developed a new turbo charger that features our proprietary technology for variable controls of air-flow and volume and supplies air optimally according to load conditions. This system achieves both purification of exhaust gas and fuel economy by means of high-efficiency combustion.

**2. Diesel Particulate Filter**



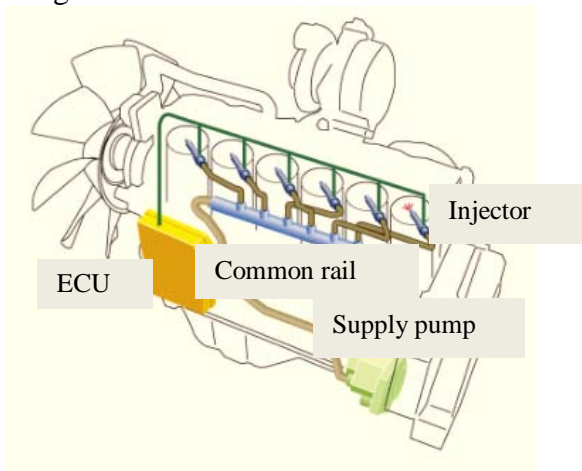
We have achieved in-house development and production of a new diesel particulate filter that captures a maximum amount of PM. The filter burns and removes PM accumulated inside by combining a special catalyst and fuel injection, thus purifying exhaust gas.

Call the experts<sup>®</sup>

**KOMATSU**

### **3. Heavy Duty HPCR\* System**

\*High-Pressure Common Rail

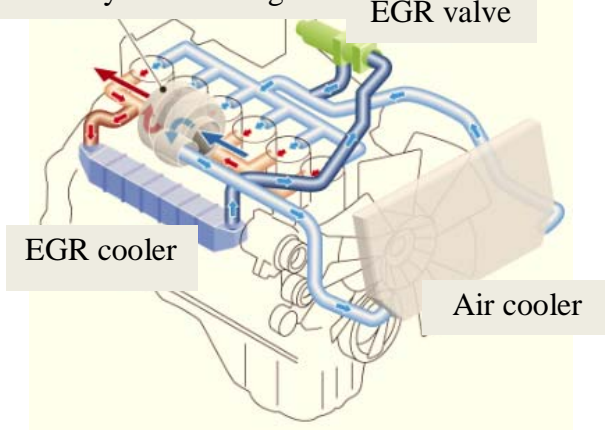


This computer controlled system optimally injects pressurized fuel and promotes complete combustion to reduce the emission of PM. While this technology is already applied to existing engines, the new system pressurizes fuel at a higher point for injection so that it can reduce both PM in the entire zone of engine revolution and fuel consumption.

### **4. Heavy Duty Cooled EGR\* System**

\*Exhaust Gas Recirculation

Variable Geometry Turbo charger



Already well proven in existing engines, this is our proprietary system to reuse a portion of exhaust gas for combustion in order to reduce NOx. The new system incorporates a larger volume of the EGR cooler in order to ensure a more stable performance for construction equipment under demanding conditions.

### **5. New Combustion System**

We improved the design of the combustion chamber located above the piston in order to further reduce not only NOx and PM but also fuel consumption and noise.

### **6. Electronic Control System**

The electronic control system performs high-speed processing of all signals from sensors installed in the equipment body and engine to ensure total control of the equipment in any conditions. It reduces fuel consumption and noise in addition to NOx and PM.

*Information in the news releases is current on the date of the announcement and is subject to change without notice.*

**Contact:**

Kevin Broman  
 Komatsu Europe International N.V.  
 +32 2 255 24 58  
 kevin.broman@komatsu.eu