



From ice shelves breaking up in Antarctica to desertification advancing in Africa, global climate change is taking different forms around the world. Global warming is the most urgent environmental problem that we face today. It is partly caused by CO<sub>2</sub> which construction equipment also emits. We estimate that CO<sub>2</sub> emissions from all construction equipment working around the world account for about 0.35%\* of the global fossil-fuel CO<sub>2</sub> emissions. By improving fuel economy of our equipment, we hope to make our part of contributions, *albeit* small, to halting global warming.

We believe that any environmental problem becomes more serious when people fall into thinking that it is too big a task for one person or company. Representing our 10-year research efforts, the PC200-8 hybrid hydraulic excavator demonstrates our commitment, as a manufacturer, to doing what we can to reduce CO<sub>2</sub> emissions.

We are also reducing the emissions of nitrogen oxide (NO<sub>x</sub>) and particulate matters (PM) from our equipment in compliance with international regulations. New, more stringent regulations will become effective in 2011. We don't just follow regulations but hope to set the pace for the industry.

\*Based on our own estimation by using 2004 data for global fossil-fuel CO<sub>2</sub> emissions and those of four main construction equipment types, hydraulic excavators, bulldozers, wheel loaders and dump trucks.

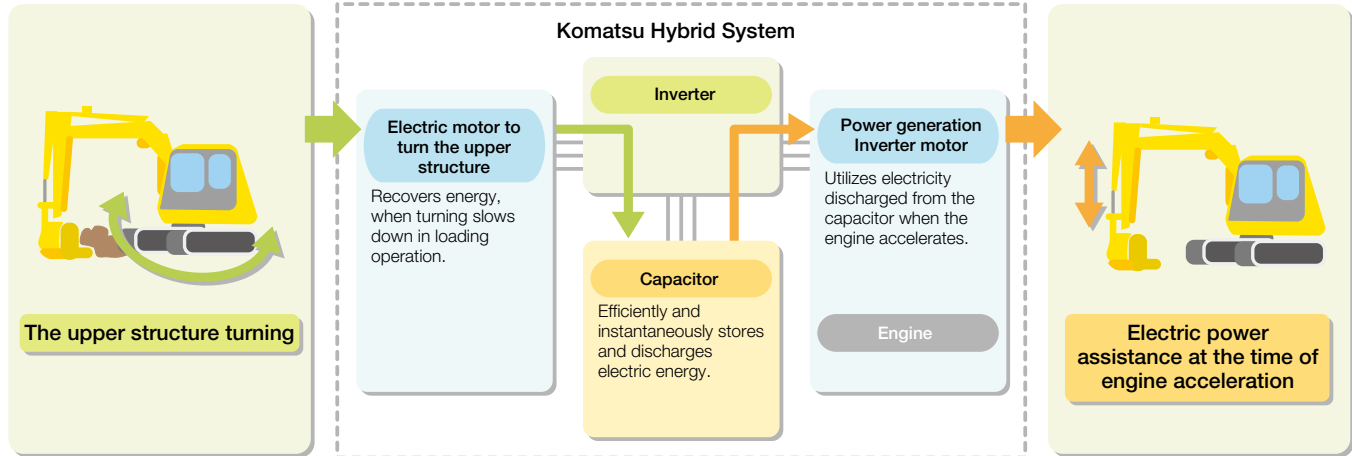


## Announcing the Hybrid Hydraulic Excavator

Komatsu invited journalists and industry analysts to the Roppongi Hills Arena in Minato-ku, Tokyo, Japan in May 2008 to announce the Komatsu hybrid hydraulic excavator. The event included an address by President and CEO Kunio Noji and a presentation involving the excavator, followed by a lively question and answer session with participants.



### The Komatsu Hybrid System



### Outline of the Komatsu Hybrid System

Our proprietary Komatsu Hybrid Hydraulic System recovers energy generated when the upper structure reduces its speed while turning, stores the energy in the capacitor, and uses it to assist the power of the engine via the power generation motor when the engine accelerates. To ensure high reliability and durability, we manufacture all components of the Komatsu Hybrid System in-house, except for capacitor cells.

### Comparison with Standard Construction Equipment

While standard equipment normally uses a hydraulic motor to turn the upper structure, for this movement, we have developed an electric motor exclusively for the Hybrid System, which recovers regenerative energy when the upper structure's turns slow down. Through the use of this new motor, we have achieved a hybrid excavator.

Standard construction equipment uses only diesel engines for power, whereas our new hybrid excavator utilizes regenerated energy to assist the engine when it is accelerating, enabling the use of the engine in a low revolution zone with high-efficiency combustion. In addition, while the engine runs idle, our hybrid excavator keeps the revolution at a super low level, thereby achieving impressive reductions in fuel consumption.

Compared to the PC200-8 standard model, we have achieved an average of 25% reduction in fuel consumption. Furthermore, in the field tests with our customers, we have confirmed the maximum reduction of 41% at a jobsite where the machine's upper structure turns more frequently.

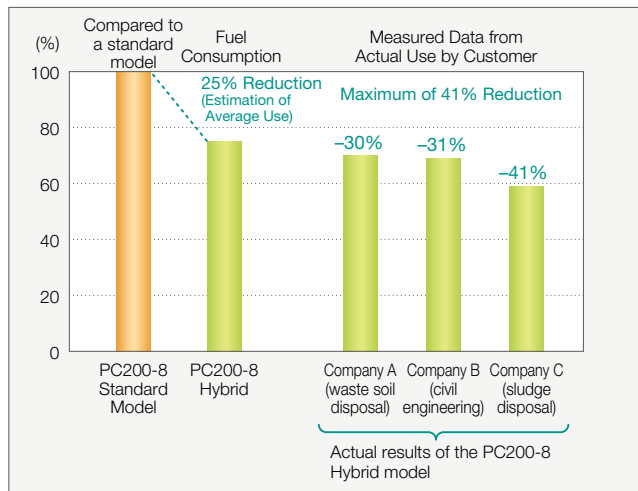
\*Computed according to our internal-use standard concerning average ways of using construction equipment.

### Comparison with Hybrid Cars: Capacitors vs. Batteries

Hybrid cars require a large amount of electric energy when they start moving and accelerating, then they can run with relatively stable engine revolution. By comparison, construction equipment has to accommodate dynamic and frequent fluctuations of the engine revolution, for example, for excavation work. To assist the engine for such fluctuations, the PC200-8 Hybrid is mounted with a capacitor.

Automotive batteries work on the principle of chemical reactions, thus it takes time for them to discharge electricity, lacking sufficient support when applied to construction equipment. Meanwhile, capacitors can instantaneously and efficiently recover, store and discharge electricity.

### Comparison of Fuel Consumption



### Capacitors vs. Batteries

