

Hybrid Hydraulic Excavator

Features

Features of the hybrid hydraulic excavator (ZH200-6)

- ◆ Significantly reduces fuel consumption with the improvement of the hybrid system and the hydraulic system
- ◆ Conforms to Japan's emission regulations without urea SCR
- ◆ Adopts a large capacity lithium-ion battery

Basic Concept or Summary



Photo 1: Exterior appearance of hybrid hydraulic excavator (ZH200-6)

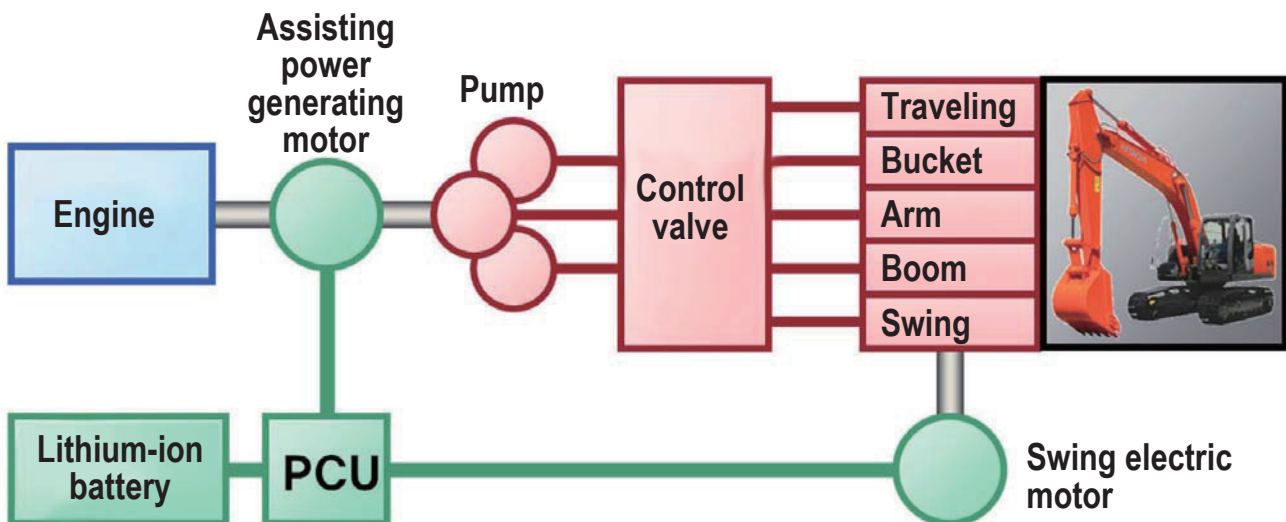


Figure 1: Schematic diagram of the system

Hitachi's hybrid hydraulic excavator is the world's first 20-tonne class excavator that does not use urea solution to reduce Nox. With an enhanced cooled EGR system, the excavator conforms to the 2014 exhaust gas regulation.

The TRIAS-HX II system, which combines a high-efficiency hydraulic system with a hybrid system composed of an engine that integrates a high-power assisting power generating motor, a lithium-ion battery, etc., is used to significantly reduce fuel consumption.

The lithium-ion battery is stored in a sturdy aluminum case for improved impact resistance, waterproof, and dustproof performance. It also has a temperature control for a longer battery life.

● System overview

Hybrid hydraulic excavator stores electricity in a lithium-ion battery by collecting energy and generating electricity, using swinging energy when the swing device of the electric motor decelerates, while assistance is provided to the hydraulic motor when accelerating. Furthermore, the assisting power generating motor, which is connected to the engine and the hydraulic pump, provides auxiliary power when the unit requires more power on the other hand when the unit does not require much power and, then stores electricity in a lithium-ion battery.

This results in a reduction in fuel consumption. The improvement of the energy-saving hydraulic system also contributes significantly to the reduction in fuel consumption. The energy-saving hydraulic system, "TRIAS" with three pumps and three control valves installed on the previous model has been upgraded with addition of new functions including electronic control of pumps. The update has enabled more precise control of output, which contributes to the reduction of the loss of hydraulic pressure.

The hybrid system that fuses this energy conserving hydraulic system and the electric power auxiliary system at a high level is the "TRIAS-HX II". Each component supplements the other in an optimum way to carry out the work load equivalent to our standard equipment (ZX200-6) but with a 20% reduction in fuel consumption*1.

*1: A comparison of the PWR mode (Power mode) of standard equipment ZX200-6 and PWR mode (power mode) of ZH200-6 Busing our proprietary measuring method.

● Automatic idling stop function

A function for stopping the engine automatically has been made available to deal with conditions where no operation occurs continuously. Wasteful consumption of fuel during idling is suppressed, while also helping to reduce exhaust gas and noise emissions.

Effects or Remarks

- ◆ Certified by the Ministry of Land, Infrastructure, Transport and Tourism as "Low Carbon Type Construction Equipment"
- ◆ Certified by the Ministry of Land, Infrastructure, Transport and Tourism as "Construction Equipment Compliant 100% with the 2020 Fuel Efficiency Standards" in the certification system for construction equipment compliant with fuel efficiency standards
- ◆ ZH200-6 has achieved a reduction in the fuel cost by 20%^(*1) in comparison with the standard model, ZX200-6.

It has achieved a reduction of the fuel cost by 25%^(*2) in comparison with the previous standard model, ZX200-5B.

*1: Comparison between the standard model, ZX200-6, in the PWR (power) mode and ZH200-6 in the PWR (power) mode with the measurement method developed by Hitachi.

*2: Comparison between the standard model, ZX200-5B, in the PWR (power) mode and ZH200-5B in the PWR (power) mode with the measurement method developed by Hitachi.

Installation in Practice or Schedule

Domestic Released in Japan in September 2017

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