

ZF cPOWER – continuously variable transmissions for Off-Highway machinery

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- Fuel savings up to 25%
- Technological leap in construction machinery by fully powersplit CVT from ZF

“As a technological leader, ZF is setting the trend”, states Hermann Beck, Vice Executive President of Division Industrial Technology. cPOWER is the beginning of a new technological era in construction machinery. But not only in construction machinery does ZF’s cPOWER transmission help to reduce fuel and to increase productivity. Also in the IC lift truck market, a trend towards lower engine speeds and the demand for engine stabilization by a constant speed concept are the future market challenges. The continuously variable cPOWER meets both requirements. Especially for forestry equipment, ZF is offering cPOWER for skidder and forwarder applications. In these vehicles cPOWER guarantees a maximum in traction, excellent driving comfort and easy handling.

The fully powersplit, continuously variable technology benefits from the long-term experience gained in the agricultural machinery sector and offers significant consumption benefits and productivity increases for the vehicle owner. In short – ZF ECCOM, TERRAMATIC and cPOWER form an industry leading comprehensive portfolio of perfectly tailored CVT solutions for any off-highway application. Because of rising fuel prices and a growing awareness of CO²-emissions, the market demands more efficient drive systems. New emission guidelines (USA-EPA and EU directives) implicate technological restrictions and constraints with diesel engines that can hardly be achieved today or in the future.

High loads at low speeds in combination with high dynamic are the outstanding requirements for off-highway machinery. These criteria are met optimally by the new ZF CVT transmission technology with a degree of efficiency that was inconceivable up to now. While searching for the ideal transmission concept it became clear that other technologies with mixed hydrostatic and power-split concepts had considerable disadvantages and were only compromises with constraints in performance and efficiency.

The rising demands for fuel reduction and productivity increase require new technologies in Off-Road machines, such as the CVT.

A trend towards lower engine speeds and the demand for engine stabilization by a constant speed concept are the future challenges in the off-highway machinery market. The continuously variable cPOWER from ZF meets both requirements.

In Off-Highway applications, hydrostatic-powersplit transmissions ensure significant consumption benefits compared to hydrodynamic transmissions and purely hydrostatic concepts.

The continuously variable transmissions clearly demonstrate their benefits in all ranges of the typical Off-Highway machinery operating cycle, i.e. during bucket-filling, transporting or loading.

In this process, the percentage of hydrostatic power is kept low whereby; an optimal degree of efficiency can be achieved.

Already in the start-up process the bigger part of output comes from the mechanical part of the transmission. Even in very short loading cycles, the utility of the CVT technology becomes noticeable in reduced fuel consumption.

The application of an elaborate hydraulic transmission-control unit and transmission-integrated on-board electronic unit optimally completes driving functions. The application of these units is done with reference to sensitivity and driving comfort and realizes an aligned power management.

The cPOWER transmission series deploys well-known and -proven construction kit modules and benefits from ZF competence in transmission and vehicle system engineering.

Main features of the new ZF cPOWER:

- Continuously variable drive over the whole range
- Hydrostatic-mechanical power splitting in all driving ranges,
- including the frequently used range up to 10 km/h
- Reduction of diesel motor speed independent of driving speed
- Up to 25 % less consumption
- Up to 20 % higher efficiency
- Installation-compatible with ZF ERGOPOWER

Source: ZF Friedrichshafen AG