

## ***New development at HEINZMANN: second generation of electric motors for the hybrid drive available***

*HEINZMANN collaborating with manufacturers of combustion engines to develop innovative hybrid drive concepts. The latest development is being presented at the bauma exhibition in Munich, April 19 – 25, 2010.*

### ***Generation 1***



#### **Distributed winding**

Manual winding design of electric motor

Housing produced as a one-off customer-specific item

Length of electric motor: 150 mm/20 kW



### ***Generation 2***



#### **Single-tooth winding**

Cheap design of electric motor can be automated

Virtually serial production cast-iron housing with integrated cooling channel

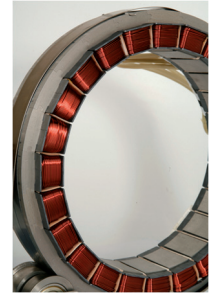
Length of electric motor: 80 mm/20 kW

## **Latest test results for a hybridised construction machine**

In a standardised test, a construction machine with a 120 kW diesel engine was compared directly with an identical design of hybridized machine with a hybrid output of 115 kW (55 kW diesel + 60 kW peak output from electric motor) from the equipment manufacturer. The test results show that in actual operation, consumption savings of approx. 20 % can be achieved with the hybrid machine for a simultaneous increase in productivity of over 40 %. The driving characteristics of the machine, especially acceleration and braking behaviour, were noticeably improved.

## **The hybrid drive performs the following functions**

- ✓ *Start/stop – avoiding idling phases*
- ✓ *Power boost – covering output peaks with the electric motor*
- ✓ *Recuperation – utilising braking energy to charge the battery*
- ✓ *Charging the battery – using excess output from the combustion engine to charge the battery*
- ✓ *Downsizing/downspeeding – smaller combustion engine, simplifying subsequent treatment of exhaust gas*
- ✓ *On-board power supply – allows electrical consumers (fans, water pump, air-conditioning compressors, 220 V connection etc.) to be supplied with power*
- ✓ *Higher productivity and higher working dynamics*



## **HEINZMANN ([www.heinzmann.com](http://www.heinzmann.com))**

Founded in 1897, HEINZMANN is one of the leading system suppliers worldwide for engine and turbine management solutions. We produce mechanical and electronic speed control systems for diesel, gas and dual fuel engines as well as for turbines.

The product range includes mechanical and hydraulic actuators, analogue and digital control units, **electronic fuel injection controls and complete common rail systems**. We are experts for **air fuel ratio, dual fuel and generator management systems**. Our solutions are completed by remote communication and visualisation tools.

Latest developments are an **engine emission management solution for diesel engines** and our **hybrid drive for diesel, gas and gasoline driven off-road vehicles**. Our products are used in marine, rail, off-road or genset applications.

HEINZMANN is also a renowned manufacturer of electric drives up to approx. 60 kW. It develops and manufactures direct-current and brushless disc armature motors, external rotor motors and wheel hub motors for special machines.

Designed for use in rough industrial environments, HEINZMANN drives meet the requirements of an enormous range of applications. The benefits of these high-performance electric motors are their small dimensions, compact design, reliability and ruggedness. They are used in fans and pumps, in handling and robotics, for conveying, moving and positioning and also in light-duty electric vehicles.

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Example for a HEINZMANN hybrid application: MECALAC 12 MTX