



MECHANICAL

Powertrain COMPONENT Report

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THE 2011 DIESEL PROGRESS INTERNATIONAL MECHANICAL POWERTRAIN COMPONENT REPORT

A look at some of the latest products and news from global powertrain component and system suppliers.

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Melissa Sauer, director of government and community relations

New Products

Allison Transmission has introduced the new 5620 and 6620 heavy-duty models to its transmission lineup. The new units are designed to respond to changes in engine characteristics, which Allison said are increasingly prevalent in the construction sector. The transmissions incorporate digital control for engines with greater torque response through the driveline and additional upgrades to protect the drivetrain.



Allison's heavy-duty 6620 transmission.

A lock-up clutch, turbine shaft,

turbine hub and flywheel were engineered with additional design, manufacturing and material improvements to reduce maintenance costs and downtime, Allison said. The transmissions also received new software updates.

Transmissions up to and including the 4000 Series now feature enhanced electronic controls and incorporate other features such as Load-Based Shift Scheduling (LBSS) and Prognostics. The LBSS automatically selects between Performance, Economy and Super Economy shift schedules based on the vehicle's actual payload and the grade at which the vehicle is operating. While results may vary depending on operating conditions, the LBSS has achieved up to 5% fuel savings, Allison said.

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New Products

Brevini Power Transmission has introduced a range of Atex-compliant planetary gearboxes suitable for applications with the potential explosive atmospheres or areas with the presence of gas mixtures and/or combustible powders (Zones 1, 2, 21, 22).



An Atex-compliant planetary gearbox from Brevini.

To ensure compliance, every Brevini Atex gearbox undergoes a special painting cycle to eliminate electrostatic discharge and is supplied with

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a specific user instruction manual and conformity statement according to CEE94/9/CE Directive, Enclosure 8.

The Atex-compliant gearboxes are flange-mounted units from Brevini's ED (two stages), ET (three stages) and EQ (four stages) series. The gearboxes are supplied with splined female outputs and are designed for a wide range of industrial and processing applications with a nominal torque up to 8500 Nm. Transmission ratio is rated up to 3.3 and output power is up to 50 kW.

Similar to Brevini's standard series planetary gearboxes, the Atex-compliant units are designed with a flexible modular system, which allows the planetary stages to be combined easily and matched with increasing torque being transmitted through a gearbox. The company said the Atex gearboxes also provide the operating advantages of a traditional planetary design such as high efficiency (97% per stage), low weight, compact size and low maintenance.

Brevini Power Transmission is a manufacturer of planetary gearboxes and mechanical transmissions for various industrial applications, including material handling.

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New Products

Carraro Drive Tech recently presented its Trax ECU, a transmission controller proprietary of Carraro, that communicates via CANbus with other engine control units (ECUs) in the vehicle.

The Trax ECU is used on Carraro's transmissions such as the full power-shift TLB2, the servo-synchro TLB-

1SPS and the two-speed TB172 for hydrostatic drivetrains.



The Trax ECU transmission controller by Carraro Drive Tech.

Carraro Drive Tech said the Trax ECU enables the control parameters to be widely customized and is fitted with an auto-diagnostic loop. It is designed to provide two control strategies: Semi-Auto and Auto, and it extends its control to the entire drivetrain, including traction and steering.

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New Products

New from Comer Industries is the EL96 electric wheel with vertical motor. The new electric wheel was added as an additional transmission size to its new range of products for warehouse vehicles.

The EL96 has a capacity rating of 1500 kg, maximum torque on the wheel of 500 Nm, and can be fitted into machines with a maximum wheel diameter of 260 mm.

The company said the design of the range of vertical electric wheels fits vehicles with wheel diameters between 230 and 470 mm and is aimed at achieving compactness and low weight, combined with product flexibility and modularity.

For example, the electric wheels offer the integration of the steering ring in the support casting and the option of integrating the drive steering units in the vehicle chassis, supplied as two separate kits.



Comer's EL96 electric wheel with vertical motor.

One of the features of these vertical transmissions is the possibility of having the drive motor integrated to the truck frame, both in the case of the power steering and manual steering versions. The motor is fastened to the frame to ensure easier installation of the electric wheel and to eliminate the wear normally affecting the cables during use, Comer said.

The vertical electric wheels were also developed with a broad speed range and silent running capability thanks to optimized-parameter ground gears and oil-bath lubrication.

These systems require very little maintenance and can be easily serviced, said Comer. The assembled parts such as the motor, brake and wheel were also designed to be fitted and removed without having to detach the transmission from the vehicle.

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Corporate News

GKN Walterscheid has developed the new P 800 Power Drive universal shaft specifically for power outputs ranging between 186 to 373 kW. The new universal shaft is aimed at large tractors and ag equipment in this power class.

The design of the freewheel of the P 800 was newly developed and adapted to meet the growing demand in this power class required by applications such as forest mulchers and wood felling, said GKN.

The P 800 has compatible installation space of the P 700 model, which provides simplified connecting and disconnecting of the drive shaft, as well as maintenance of the joints. The integrated internal bracing allows the use of flexible cones and provides increased reliability. Profiled thick-walled protective pipes prevent the two protecting halves from twisting toward each other. With the optional full protection version, there is no need at all for holding chains, GKN said.

In addition, the new P 800 is integrated into the new GKN Walter-scheid ServicePlus system. This system defines maintenance intervals specific to the application. Depending on its location of use, the P 800 has a maintenance interval of up to 250 hours, GKN said.

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New Products

Hangzhou has been devoting substantial effort to upgrading its technological capabilities.

The company has introduced the HCQ700 high-speed transmission, which combines light weight with com-

pact size and operability, the company said. Its debut means domestic ship-builders no longer need to rely on imported transmission, thereby reducing parts costs by over 60%, it said.

Hangzhou will also be producing a dual-clutch transmission for vehicles to be built by the joint venture with Fiat, the Italian car maker, in China. In an announcement made by Fiat in mid-June, a DCT transmission will be produced by Hangzhou Haveco Automotive Transmission, a joint venture equally owned by Fiat, Guangzhou Auto and Hangzhou.

According to Hangzhou, production of the transmission is scheduled to commence in 2013. Total investment in the new plant is expected to exceed US\$355 million and annual production is expected to reach 500 000 units.

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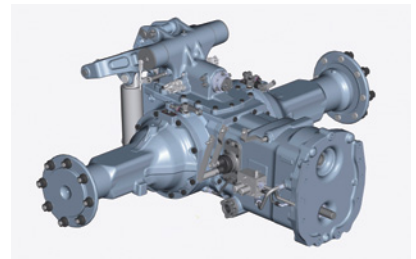
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Mansuri Çaynak, marketing and business development manager

New Products

Hema has introduced the H102 transaxle for agricultural tractors ranging from 51 to 75 kW.

The H102 has a modular design and was developed for easier maintenance. Thanks to the modular design, it is possible to configure the transaxle with a standard synchro-type transmission or with an optional hydrostatic transmission or similar drive system.



The new H102 transaxle by Hema.

The transaxle consists of a transmission with 12 forward and 12 reverse gears or 16 forward and eight reverse gear options for speeds up to 40 kph. The transaxle is also available with an electrohydraulic actuated 100% differential lock and hydraulic wet type brake; an electrohydraulic actuated 4WD clutch; and reversible three-speed independent PTO. It also features a high-capacity hydraulic lift with electronic control options.

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Technology Developments

Jian'an Industry, in collaboration with SAIC-GM-Wuling (SGMW), a joint venture between General Motors and Shanghai Diesel, has optimized the design of its rear axle geardrive using advanced noise vibration and harshness (NVH) detection technology, effectively reducing noise level.

The N300L rear axle was developed by Jian'an specifically for SGMW. After three rounds of optimization exercises, the prototype was put through a series of tests. Test results showed that under high operating speed, with the throttle fully opened and engine speed at 2200 to 2600 r/min and over 3700 r/min, noise emitted by the rear axle is 5 to 10 dB(A) lower.

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OERLIKON GRAZIANO

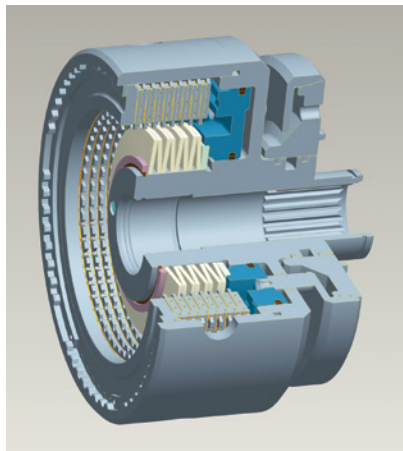
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New Products

Oerlikon Graziano has introduced a new powershift transmission for agricultural applications. The transmission integrates a double clutch for powershuttle functions, a powershift module with three gears (low, medium and high) and a single clutch with a safety brake device and PTO function.



The new powershift transmission by Oerlikon Graziano.

The company said the transmission's design allows the gear shifting sequence to be performed by the powershift clutch assembly, providing an almost seamless gear change with no power interruption.

The new powershift is more compact and modular with increased reliability and durability attributed to the use of the latest friction plate material technology currently available, said Oerlikon Graziano.

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Corporate Developments

A large tranche of capital totaling approximately US\$35 million was raised by drive shaft manufacturer Xuchang Yuandong to support the building of a new manufacturing facility in China. The new facility is expected to have an annual capacity of 1.5 million drive shafts for commercial vehicles. Construction is scheduled to be completed in two years.

Xuchang Yuandong Drive Shaft develops, manufactures and distributes nonconstant speed drive shafts and related spare parts. The company offers four series of drive shaft products: the light series for application in light trucks, pick-ups, SUVs and MPVs; the medium series for application in medium-duty trucks, buses and coaches; the heavy series for application in heavy trucks and special vehicles; and the industrial series for construction equipment such as loaders, cranes and land scrapers.

ZF

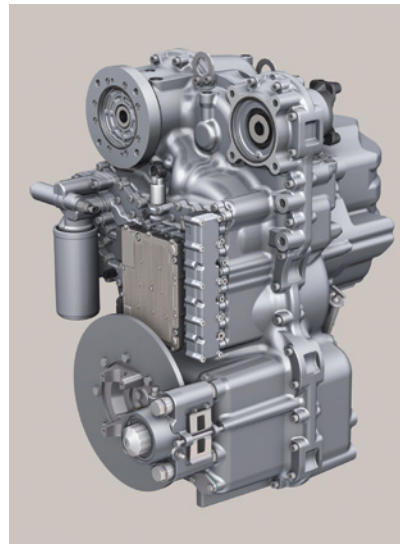
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New Products

Targeting the construction equipment markets, ZF has launched the cPower continuously variable transmission (CVT). Already known, for its CVT technology in the ag sector, ZF has introduced the cPower for construction machinery and material handling vehicles.



The ZF cPower CVT transmission.

The fully powersplit transmission offers up to 30% less fuel consumption and up to 20% more efficiency, said ZF. It integrates a transmission control unit, and onboard electronics that are engineered to ensure continuously variable performance over all driving ranges.

The CVT operates at low speeds during high loads to provide an optimum operating environment for off-road machinery, ZF said. It allows the engine to operate at generally lower speeds — independent of the vehicle's operating speed — which stabilizes the engine operation and results in improved fuel economy, ZF said.

The cPower transmission series uses proven construction kit modules and is interchangeable with ZF's Ergopower transmission series. ♦