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PERFECT

The inside track on the new GM and Ford co-developed **10-speed automatic** transmission, which is set to debut in a raft of 2017 vehicles

TWO-STEP SHUFFLE

How OEMs are continuing their search for increased efficiency through e-transmission variants

A SPREAD TOO FAR?

With new-gen mass-production gearboxes reaching new levels for ratios used, what is the limit for passenger car applications?

PARTNER FOR LIFE

In a rare media interview, Porsche AG's transmission chief, Gerd Bofinger, shares his views on the latest gearbox trends

Breakthrough CVT

Fuel consumption in lightweight vehicles can be reduced by as much as 10% with this revolutionary new beltless CVT design

Dana's new VariGlide technology is scalable for applications in vehicles from sub-A class to full-size pickups, in primary to hybrid transmissions

Although major technology advances in belt CVTs have taken place over the past decade, the inherent limitations associated with a metal belt design remain. Traditional belt CVT designs are difficult to control, sensitive to slip-induced damage, limited in torque capacity, and generally incompatible with RWD configurations.

With the Dana VariGlide beltless variator, the promise of a versatile CVT can be realized. This new system features a high-efficiency, modular, coaxial design compatible with RWD, 4WD and AWD configurations. The high-pressure pump and complex control system associated with traditional belt CVTs are eliminated and replaced with a durable, passive, mechanical system that instantaneously reacts to torque demand.

With the potential for fuel savings as high as 10% greater than competitive belt technologies and robustness against slip-induced damage, Dana's VariGlide beltless variator represents the logical CVT solution for OEMs looking to meet 2025 fuel economy targets. To date, the VariGlide variator has in excess of 75,000 hours of accumulated durability testing.

A Cadillac ATS test vehicle on the rolling road at Dana's Cedar Park global technology center, where the 36-strong VariGlide team oversees in-house design, prototype manufacturing, and simulation

"VariGlide technology delivers a CVT without the traditional CVT limitations," says Bob Pyle, president of Dana Light Vehicle Driveline Technologies. "Dana has made CVT technology practical, offering far more efficiency than competing solutions. We are developing custom prototypes for OEMs that are exceeding expectations in efficiency, durability, and power capacity – these are some of Dana's core strengths."

The variator operates via a set of spinning planets fitted between an input ring driven by the engine, and an output ring that transfers power to the drivetrain elements. The speed ratio of the unit is controlled by modulating the contact diameter by tilting the planets. Traction fluid transfers torque between the ball and the ring through elastohydrodynamic lubrication.

The VariGlide variator's unique coaxial design is a key enabler for more than 300 transmission configuration possibilities, including towing applications. The ability to shift to full ratio extremes in 200ms provides engineers with the tools they need to maximize driveability.

Originally licensed from Fallbrook Technologies, Dana has made substantial investments in developing the technology for light-duty primary transmission applications. With a team of engineers based at the dedicated 45,000ft^2 global technology center in Cedar Park, Texas, designs are rapidly created, manufactured, and tested.

Targeting a 2020 commercial release with current customers, Dana's VariGlide CVT technology is rapidly gaining traction among vehicle OEMs worldwide.

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