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Dual-clutch gearbox production rapidly expanding

PARIS — Dual-clutch automated manual transmissions that can shift like an automatic will triple their penetration in the next few years, as two new facilities to produce them come on line.

Last month, BorgWarner Inc. broke ground on a new factory at its site near Tulle, France, to build more of its hugely acclaimed Dual Clutch Transmission (DCT), and last summer, the Getrag Ford Transmissions GmbH joint venture invested E300 million ($364 million) in a new plant in Slovakia that will begin making dual-clutch transmissions under a BorgWarner license. BorgWarner's current DCT production is at its factory in Arnstadt, Germany, next to the BorgWarner European Advanced Transmission Development Center.

BorgWarner developed DCT with Volkswagen AG (VW has tagged the transmission Direct Shift Gearbox, or DSG) for introduction in 2003 on the VW Golf R32 DSG and the Audi TT 3.2. The technology has been added to nine other VW Group products since and was shown last year in the Bugatti 16.4 Veyron.

While only Volkswagen Group so far has deployed the technology, it soon will spread to Ford Motor Co. and three other European auto makers. In addition, BorgWarner Chairman and CEO Tim Manganello said a year ago he expected the dual-clutch automated manual to gain a foothold in North America and Japan by 2010.

Normal manual transmissions, and robotized versions, require an interruption in torque flow during gear changes, when the clutch is disengaged and re-engaged as the next gear is selected. The dual-clutch technology shifts seamlessly because two individual clutches ensure the next desired gear already is engaged when the clutch for the current gear is disengaged.

The system appeals to drivers who want sporty control, as the system permits seamless manual shifting, sequentially, as well as a full-automatic mode. All clutch work is automatic, and there is no clutch pedal.

Largely because there is no power-sap-

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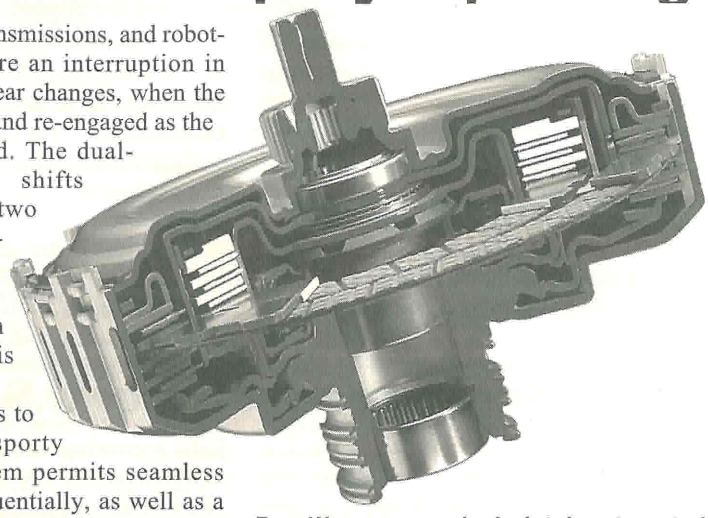

BorgWarner says dual-clutch automated manual can be 15% more economical than a conventional automatic, yet costs less. European market share for dual-clutch automated manuals is on the rise.

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ping torque converter, BorgWarner says the system generates 15% better fuel economy when compared with a traditional automatic, and it costs less.

Ford apparently plans to use the technology in both cars and SUVs, as competitor Getrag GmbH displayed transmissions for both kinds of vehicles at the Frankfurt auto show in September. BorgWarner also says it has three new European customers for the technology, but it has not revealed them. Consultants Frost and Sullivan in London predict Renault SA, PSA Peugeot Citroen and General Motors Corp. also will offer the technology by 2012 in significant volumes.

In their study published last summer — "European Market for Next Generation Transmission Technologies" — the consultants said dual-clutch transmissions "are expected to gain a market share of about 12% to 13% by the year 2012."

BorgWarner is more enthusiastic. Manganello has predicted 18% of the European market by 2010, and the company also has said DCT penetration will reach 20% by 2015.

Auto makers leading the market now for manual transmissions will benefit most from the dual-clutch versions, says the Frost & Sullivan study, because their customers are ready to move upscale and will pay for the convenience and performance.

In 2004, conventional 3-pedal manual transmissions dominated about 71% of the European market, conventional torque-converter automatics held about 22%, continuously variable transmissions (CVTs) about 3%, and robotized manuals and dual-clutch transmissions about 2% each.

Dual-clutch automated manuals and simpler single-clutch robotized manual transmissions are each expected to reach 12%-14% of the market by 2012, reducing the share of conventional manual transmissions to 49% by 2012, according to the consultants, while CVTs and automatics hold their current shares.

The Getrag Ford Transmissions joint venture has grown since it was established in 2001, from 3,700 employees to 3,900, and another 750 are expected at the plant in Czech Republic, which will begin making motorcycle transmissions in 2006 and dual-clutch automotive transmissions in 2007.

Getrag Ford is investing about €300 million ($364 million) in its greenfield plant at Kechnec, Slovakia, where it broke ground last July. The JV expects to reach annual revenues of €300 to €400 million ($486 million) at full production.

Getrag Ford Transmissions is based in Cologne, Germany, and has production sites in Bordeaux, France; Halewood, U.K.; and Cologne as well as a Product Development Center in Gothenburg, Sweden.

BorgWarner has an existing operation for transmission components in Eyrein, France, near the town of Tulle, but the workers there will shift to the new 160,000-sq.-ft. (50,000-sq.-m) facility when it is completed in 2006, with no planned new hires. The company did not specify the amount of its investment.

"We are very encouraged by the growth of dual-clutch transmissions in Europe," says Bernd Matthes, president and general manager of BorgWarner Transmission Systems, based in Detroit. "We believe the momentum for this technology will continue to increase, as more customers and drivers experience the fuel economy and performance benefits of this exciting technology."

Matthes, who was heavily involved in the development of the DCT technology when he was based in Germany, was promoted to his post last June. The DCT business was the only bright spot in BorgWarner's Drivetrain division in 2005, as declining sales at Ford and GM ate into volume and profitability.

In a financial statement for investors, BorgWarner says for the first nine months of 2005 Drivetrain segment earnings were off by 7.4% or $5.8 million "as a result of weaker SUV and light-truck production in North America, partially offset by increased sales of DualTronic transmission modules." ❑

— William Diem