

Auto advantages

THE INDUSTRY CONTINUES ITS MARCH TOWARD AUTOMATIC TRANSMISSIONS, CITING FUEL ECONOMY, DRIVETRAIN LONGEVITY, DRIVER COMFORT – AND SAFETY



Transmission Technology Corp's 10-speed LLPS0150 model.

Just as there are many reasons for drivers' transmission preferences, there are many reasons why manufacturers see growth opportunities for automated and automatic transmissions.

"Automated transmissions represent the future," says Charlie Allen, ArvinMeritor's national service director for commercial vehicle systems. "Driving the truck is more demanding than ever in terms of all the traffic congestion and all the things we ask the driver

to do. Asking the driver to be a powertrain manager – not only making shift decisions, but synchronizing the speeds of transmission parts during shifting – is asking a lot."

The industrywide move toward automatics has made easier much of the work in spec'ing a transmission. When ArvinMeritor focused its transmission marketing entirely on the ZFMeritor Freedomline fully automated 12-speed, some were surprised. But Allen says the company made the right call for a number of reasons.

One of those is the ability of an automated transmission to offset the loss in fuel economy caused by 2007 engine technology. While that amount might be slight, what is certain is that the driver is the biggest factor in wasted diesel, be it speeding unnecessarily or turning high rpms when not required. "The transmission does not have to look at the guy ahead and does not even look beyond the front bumper," Allen says. That means it will shift up whenever possible, even if it will remain in that gear for only a short time, he says.

The Freedomline transmission has sophisticated shift algorithms that control gear selection. The selections are continuously being "honed" to optimize performance and fuel economy, Allen says. Eaton offers several multispeed automatics that also are good at keeping the engine in the sweet spot.

ArvinMeritor also sought the automated design because of a change in driver demographics and the increased clutch pedal effort that comes with increasing engine torques. It's difficult for a 130-pound driver to depress throughout the day a clutch pedal that requires a 60- to 70-pound force, Allen says.

Drivers love the two-pedal concept, and that is helping to curb turnover rates for fleets making the move to automation, says Stephanie Bell, product planning manager for Eaton and Roadranger. Less physical stress means improved driver safety, as does the elimination of the need to concentrate on shifting: The driver can be more alert to traffic.

The industrywide increase in torque comes from a high priority on fuel economy and

driveability, Bell says. "To best accomplish this, more and more fleets are spec'ing multi-torque engines – and that, in turn, requires a higher torque or multi-torque transmission," she says. Automated products offer another bonus: less driveline abuse, which results in reduced downtime and repair costs.

Other advantages: reduction in clutch wear and the elimination of clutch adjustments. The Eaton UltraShift uses a clutch that requires no adjustment because it is engaged centrifugally, says Dan Gochenour, customer support manager of the Eaton's clutch division. Weights quickly swing out as you raise rpm from an idle, and the mechanism will compensate for wear, which is controlled by the engagement mechanism communicating with the engine control module to coordinate the clutch and throttle.

On the Freedomline, clutch life is more than 1 million miles, says Charlie Auer, director of sales and engineering at ZF-Sachs. "A human can't engage a clutch like a computer," he says. The device never needs adjustment because its diaphragm-shaped system provides near-constant clamp load even as the facing wears until the clutch is nearly worn out. The long clutch life is "part of the cost justification" for this fully automated transmission, Auer says.

"In the past few years, we have seen a pretty strong push toward automation," says Mike Kidd of DESC Automotriz/Transmission Technology Corp. Given the increased cost of new engines – \$6,000 to \$8,000, to meet 2007 emissions standards – it's too early to tell whether this trend will continue, Kidd says. TTC's sales of multispeed transmissions continue to increase, Kidd says. And the company recently introduced a double-overdrive 18-speed with an overall ratio of 21.27 and a .70:1 top gear. "The improved performance from the use of multispeed transmissions, including improved fuel economy, seems to be driving the trend," Kidd says.

Volvo also has jumped into the automated market with three versions of its I-Shift fully automated 12-speed. These include both direct-drive and overdrive units rated at 1,850 lb.-ft. for Volvo's 11- and 13-liter engines and

OWNER-OPERATOR VIEW

WAYNE DE LONG Whitesville, Ga.



Wayne De Long has had his CDL since 1991 and has been an owner-operator for seven years, and he's driven nothing but manual transmissions the whole time. But if he were to spec new today,

"It would definitely be an autoshift," he says.

Automateds provide better fuel economy because they cut unnecessary shifting and are easier on the driver, De Long says. Plus the old bugs such as faulty sensors have been worked out of the newer automated and automatic transmissions. For veteran drivers, shifting gears "is so second nature to the job, you don't even realize you're doing it." But for drivers with less experience, shifting could be a distraction, and automateds are advantageous "because then drivers have both hands on the steering wheel rather than going through five shifts to come to a stop in the city," De Long says.

Automatics eliminate the "shift shock" that occurs when drivers run the engine up to the rated rpm and then dump the clutch. That creates "shock" on the entire drivetrain that leads to premature U-joint failure and rear-end failure – which puts the truck out of commission. As older drivers phase out of the industry, many fleets will switch to automateds as a means to eliminate downtime, De Long says.

a 2,300 lb.-ft. overdrive unit designed for the company's 16-liter engine.

Neither ArvinMeritor nor Eaton sees a significant trend toward multispeeds, though the Freedomline has steps in the range of 26 to 31 percent, a bit more narrow than those of the company's previous bread-and-butter transmission, the 10-speed.

WHEN TO SPEC FOR A HIGHER RATING

Experts stress the importance of spec'ing transmissions for adequate torque, and that includes selecting a product that can be properly matched for upgrading. "Too often, the customer specifies a transmission for the lowest torque rating of the engine, and later the engine is turned up to its maximum torque rating, and the transmission is subject to failure," says Mike Kidd, a manager at DESC Automotriz/Transmission Technology Corp.

The transmission needs to complement the entire truck, says Stephanie Bell of Eaton and Roadranger. "A truck and the driveline need to be viewed as one harmonious system," she says. Rating a transmission for the maximum torque rating provided by the engine, or using a multitorque setup, also will increase the truck's resale value.

When spec'ing an engine, drivers need to tell the engine manufacturer the cruise speed they'll be running, says Charlie Allen of ArvinMeritor. Also important is getting the gearing recommendations to achieve the optimum balance of performance and fuel economy.

TRANSMISSION SPECS. The transmissions included in the spec listings represent the products from each manufacturer that are most popular with owner-operators. Consult a dealer for information on other models; contact information begins on Page 6. ■