ALTe Truck Conversions Operate on Battery Power All the Time

Story and Photos
by Bill Springer

When Kyle Maki isn't hunting, fishing or racing, he is at ALTe Powertrain Technologies in Auburn Hills, where he is senior mechanical engineering technician.

In that position at ALTe, Maki is responsible for preparing and completing all testing of the prototype vehicles and components.

ALTe's business model is to electrify the fleet industry by providing retrofit options for existing fleet vehicles, according to Maki.

"Our converted vehicles give up no payload or towing capacity, while improving fuel economy," Maki said. In fact, the electrified Ford F-150 towed a 10,000-pound asphalt eater at highway speed.

According to Maki, ALTe is the first company to take a Ford F-150-converted ALTe prototype on a road trip, covering 2,200 miles in five days of driving all over Michigan.

A significant part of the road trip was spent with U.S. National Forest personnel in their real-world scenario.

ALTe first removes the factory engine and replaces it, in the case of the prototype conversion, with a Ford 2-liter 4-cylinder engine. The production conversion will use the 2.5-liter Ford engine.

The Ford engine is mounted transversely, and is not connected directly to the drivetrain, but instead drives the generator.

Pratap Naick, controls and simulation engineer for ALTe, pointed out that there are two benefits to the ALTe system.

"First, because the engine can be run at its peak efficiency rate all the time, the overall efficiency of the system improves to 30 to 35 percent.

"Second, it's a plug-in hybrid, so you can plug the vehicle into the wall charger at night, and use that energy to drive the vehicle. That reduces the depending on traditional diesel or gasoline fuels," Naick said.

When the gasoline engine is running, it does so at three different levels, or established RPMs to drive the generator, which charges the battery.

The battery pack powers the AC three-phase permanent magnet electric motor through a DC-to-AC power inverter.

The battery pack is also charged by regenerative braking, fed backwards through the electric motor acting as a generator. The power that is recaptured is fed back through a rectifier to charge the battery, as well.

The electric motor runs at 250 to 700 volts, with 345 volts DC coming into the inverter. The battery pack is rated at 300 to 405 volts DC.

"In short, every mile is electric, with the DC battery driving the wheels," Maki said.

All of ALTe's customers will be fleet customers. The company was funded by John Thomas, Jeff DeFrank and Nam Thai Tang, all from Tesla Motors, and now at ALTe headquarters, located on Purks Rd. in Auburn Hills.

Maki stressed that they have not received any public funding, and that ALTe is not yet publicly traded.

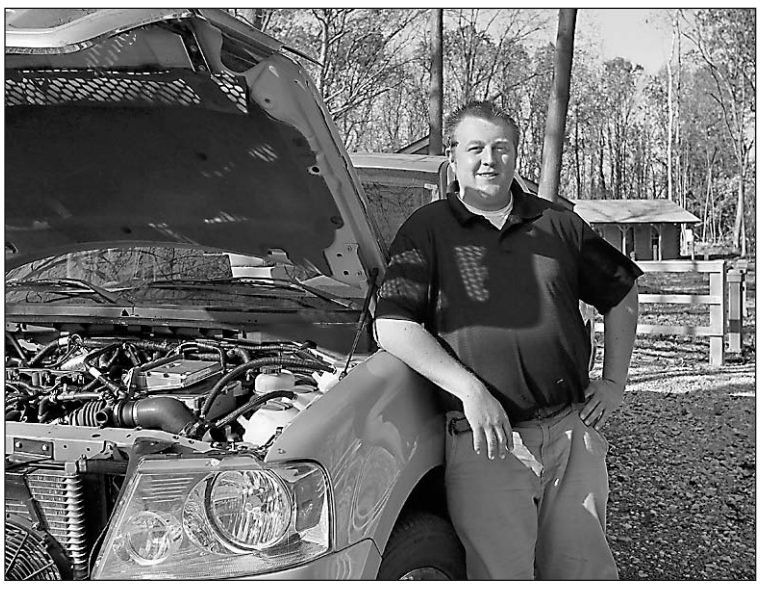
An interesting anecdote to this story is that ALTe presently removes the torque converters from the stock automatic transmissions used on the prototypes, because the transmission isn't directly coupled to the gasoline engine.

Maki said that the production transmissions will allow regenerative braking in all gears. He would not elaborate, except to say that "traditional production transmissions don't lock in all gears."

All this being said, Maki, Naick and others at ALTe summed their system up as one that "allows fleet operators to meet a substantial portion of their daily operation with electric miles from the plug-in lithium ion battery.

"The balance of their daily duty cycle is achieved through running a 4-cylinder gasoline generator operating at its most efficient points to extend the vehicle range up to 300 miles.

"The series hybrid architecture leverages a powerful permanent magnet electric motor and high operating system voltage, enabling it to be applicable for a broad range of vehicles, from light- through medium-duty trucks and vans."



Kyle Maki, ALTe senior mechanical engineering technician.

Pratap Naick, ALTe controls and simulations engineer.

Faurecia Honored by PDMA for Its 'Innovation Success'

Faurecia, which maintains its North American offices in Auburn Hills and is the sixth-largest global automotive supplier, has been recognized for its sustained and quantifiable innovation success by the Product Development & Management Association (PDMA) at the organization's annual global conference Oct. 20-24 in Orlando, Fla.

The award is presented to innovators in such diverse categories as computer technology, materials science, automotive, health care and consumer products. Faurecia was acknowledged for its innovation in the automotive industry and for its ability to spot trends and turn ideas into products.

The PDMA chose to honor Faurecia after a rigorous nine-month examination of the company's processes and products. The PDMA study focused on the activities of Faurecia's "xWorks" innovation incubator in Holland, Mich., one of the company's dedicated centers that conceptualize automotive seating products.

The team and its process have developed such products as SmartFit, a system that enables drivers and occupants to use their smartphones to automatically adjust their vehicle seats to the best position for their own body.

Another innovation that was developed using Faurecia's methodology was the Performance Seat, a unique dynamic comfort system and composite back technology to create a comfortable, safe seating system that is 20 percent thinner and 20 percent lighter than conventional seats.

While Faurecia engaged the PDMA Outstanding Corporate Innovator (OCI) Committee with its seating innovations, the Outstanding Corporate Innovator Award recognizes the innovation process that Faurecia employs across all the company's product groups, include automotive seating, emissions control technologies, interior systems and automotive exteriors.

The committee indicated that particular interest in top management's direct engagement in the innovation process and the way that Faurecia's innovation has translated directly into commercial activity.

"Faurecia is focused on open innovation," said Rob Huber, vice president of innovation for Faurecia North America.

"We're constantly looking outside the company and the industry to find the best ideas that can move our industry forward in such arenas as light-weighting, passenger wellness and comfort, premium features and other critical trends. We're set up to work actively with people outside the company to translate these concepts into real products."

Recipients of the innovator award were required to demonstrate a sustained record of sucess in launching new products or services over a five-year period. They also were required to produce significant and quantifiable business results delivered by new products or services, consistent use of a set of teachable new-product development practices, and distinctive innovative organizational characteristics.

The PDMA committee indicatd five areas where Faurecia's innovation process excelled – management participation and commitment; trend analysis and ignition workshops; dedicated xWorks innovation group, which has established a novel and proven capability that integrates trend identification; opportunity space exploration; robust open innovation networks and rapid prototyping.

The PDMA is a nonprofit association and advocate for product development and management professionals, accelerating the contribution that innovation makes to the economic and professional growth of people and businesses and societies around the world.

"The OCI Committee was impressed with Faurecia's commitment to a strategy of creating value and changing industry dynamics through innovation," said PDMA Committee Chair Sally E. Kay.

TRW's 3d Quarter Net Income Up 3 Percent; Earnings Hit $163 Million

LIVONIA (AP) – Auto parts maker TRW Automotive Holdings Corp. said last week that its third-quarter net income rose 3 percent, helped by higher vehicle production levels in North America.

The Livonia-based company earned $163 million, or $1.28 per share, up from $158 million, or $1.22 per share, in the same quarter last year. Excluding one-time items, the company said it posted an adjusted profit of $1.24 per share.

Revenue rose about 1 percent to $3.97 billion from $3.92 billion. Excluding the effects of currency exchange rates and divestitures, TRW said its sales rose 9 percent.

TRW, like other companies that do significant business outside the U.S., can be hurt by a rising dollar because revenue earned in foreign currencies shrinks when it's translated back into a stronger U.S. dollar.