


issues & trends

A KELLY AUTOMOTIVE SERVICES GROUP™ REPORT



“Today’s high tech vehicles require highly skilled people involved in all areas of the vehicle life cycle,” said Robert Lauro, senior director of Kelly Automotive Services Group, a business unit of Kelly Services that specializes in automotive staffing. “Continuous education and training of today’s automotive professionals is mandatory to keep up with vehicle technology.”

NEW AUTOMOTIVE AGE DAWNING

Wanted: New Skills, Training, Manners of Thinking

We may well look back in the rearview mirror on the year 2004 as the dawn of a new automotive age. This year marks the beginning of the proliferation – and apparent public acceptance – of motor vehicles powered by something other than the gasoline internal combustion engine that has been around for a century or more.

New propulsion systems for motor vehicles are under development to increase fuel economy and lower pollution, as is required by laws in California and overseas. Now their proliferation begins, setting the stage for the future.

Hybrid Popularity

While automakers eke out higher mileage and fewer emissions from traditional gas engines, resurrect and refresh diesel technology, and explore fuels other than gasoline, they are also introducing completely new technologies, notably hybrids, vehicles with more than one power source. At the moment, the combination is a small gasoline engine with electric motors, though future hybrids will include diesel engines and fuel cells.

The new automotive age requires people from the research community to invent new technologies, materials and processes for the new kinds of vehicles, experienced people who know how to take a vehicle into production line, and ultimately to dealerships and people who can diagnose problems and fix them.



In 2004, Honda's Insight and Civic hybrids and Toyota's hybrid Prius were joined by General Motors' full-size pickup truck hybrids and Ford's Escape Hybrid sport utility. Toyota's Lexus introduced the RX 400h, the first luxury sport utility hybrid. All major manufacturers have many more hybrids planned for the next five years.

The public appears to be ready for hybrids. The Toyota Prius has won several prestigious awards, including 2004 North American Car of the Year, given by 50 North American journalists across the country, as well as *Motor Trend* magazine's 2004 Car of the Year, indicating hybrids are gaining acceptance from the press.

New Vehicles, New Needs

In addition to overcoming technical and infrastructure hurdles, these different types of vehicles require different types of skills, training, and thinking for the people working on them, from designers and engineers developing them to technicians who service them.

"Today's high tech vehicles require highly skilled people involved in all areas of the vehicle life cycle," said Robert Lauro, senior director of Kelly Automotive Services Group, a business unit of Kelly Services that specializes in automotive staffing. "Continuous education and training of today's automotive professionals is mandatory to keep up with vehicle technology."

The new automotive age requires people from the research community to invent new technologies, materials and processes for the new kinds of vehicles, experienced people who know how to take a vehicle into production line, and ultimately to dealerships and people who can diagnose problems and fix them.

Research and Development

The top automakers recognize they must develop a core competency in these new kinds of propulsion systems to exist in the future. Smaller ones likely will partner or buy the technology.

Ford, for instance, has made a strategic decision to develop hybrid skills as a core competency, and those skills are unique, says Mary Ann Wright, the chief program engineer for the Ford Escape hybrid. The Escape hybrid has unique brakes, powertrain and battery, components that require vast integration and interface structure through computers. Skills and people needed to develop the Escape hybrid have been

found largely in Ford's research labs. They are experts in complex software architecture design, advanced electronics and controls. Ford then melded these researchers/inventors with engineers experienced in putting vehicles into production, no easy task, Wright notes, as the goals and methods of the two groups typically are very different.

General Motors found a similar situation when developing its electric EV-1 in the 1990s. Bob Purcell, who then headed GM's Advanced Vehicle Team to produce the EV-1, described how he approached the challenge in a speech he delivered to the University of Michigan's automotive management conference, which he titled "This is Rocket Science" to emphasize the complexity of the effort.

Purcell gathered a team made up of two kinds of people. One group was made up of mostly young, aggressive, and highly educated people – more than half had advanced engineering degrees and a fifth had doctorates. Most were recruited from other industries around the globe. They came from electronics, aerospace and defense and from such companies as Hughes, Westinghouse, General Electric, General Dynamics, and even NASA. As Purcell described them in his speech, they were wired to take on high levels of technical risk and thrive on it. The other half of his team was comprised of long-term GM engineers who knew how to get a vehicle into production.

Purcell talks about then blending these two disparate groups into what he calls a learning organization, which was breaking new ground and establishing tribal knowledge existed.

The individuals who worked on the now-defunct EV-1 have been spread throughout GM. Purcell now is involved in strategic planning of all future propulsion technologies from diesel, improved gasoline engines, hybrids and fuel cells, using what he learned on the EV-1 as his model.

Service: Diagnosticians Needed

As hybrid vehicles and eventually fuel cell cars begin traveling the roads in increasingly larger numbers, dealerships need technicians to service them.

A decade or so ago, the job of service technicians changed dramatically when fuel injectors replaced carburetors. Instead of dealing with a mechanical component made of small, delicate parts that wore out or broke, service technicians now work with fuel injectors, made up of fewer parts that rarely wear out but have more electronics. The technician has

“One of the challenges automakers face today is to keep employee training and development on pace with new technologies,” said Lauro. “Highly skilled technicians are essential to support the launch of any new vehicle technology. Automakers recognize that consumers have high quality expectations and vehicle service organizations have put many service programs in place to successfully support their new vehicle technologies.”



become less of a person who adjusts or replaces mechanical parts and has turned into a sleuth who diagnoses complicated electronics. At that time of the conversion to fuel injectors, existing technicians were re-trained in the new technology; new ones entering the field were trained in new ways from the start.

“One of the challenges automakers face today is to keep employee training and development on pace with new technologies,” said Lauro. “Highly skilled technicians are essential to support the launch of any new vehicle technology. Automakers recognize that consumers have high quality expectations and vehicle service organizations have put many service programs in place to successfully support their new vehicle technologies.”

Automakers believe this changeover already has set the stage for the new automotive age of hybrids and fuel cell vehicles. This new era requires technicians with far more education and training than before and with a diagnostic manner of thinking. Paul Williamsen, in charge of Toyota’s service training programs, says the new technician requires a high order of diagnostic and synthesis skills. They require the ability to take things they know from different areas, for instance, and combine them in a new way.

And they will require life-long training. Toyota, for instance, says its 9,000 technicians now take, on average, 33 hours worth of courses per year. Technicians most heavily use the automakers’ famous University of Toyota, which offers education via the Internet.

For its Prius hybrid, Toyota added a certification component. Only technicians who have taken specific classes and achieved master’s technician status are eligible for Prius certification. They then take a sequence of courses to even be invited to the hybrid certification training. Today, of the 9,000 Toyota technicians, about 2,000 are certified to work on hybrids, with at least one at every dealership. Toyota also has established a sophisticated recruiting and counseling program in state schools and universities, from which it hires 300 to 400 of the best students annually. Toyota’s philosophy is for these students to gain the best all-round education possible, and the automaker will provide the specific training beyond that.

Toyota intends to use a similar approach to prepare technicians to work on fuel cell cars and diesel engines, which it currently does not sell in the United States but may in the future. The

Toyota model likely will also serve as a model for the rest of the industry as hybrids and ultimately fuel cells proliferate.

Paving the Way for the Future

Hybrids on their own aren’t as significant as where they suggest we are going in this industry. Automakers generally agree that in the U.S., at least, the interim answer to demands for increased fuel economy and lower emissions is hybrid vehicles. Further, hybrids lay the groundwork for the ultimate answer to issues of fuel economy, oil dependency and emissions, which are fuel cells.

Automakers generally agree these devices that generate electricity from hydrogen to power electric motors will become widely available in the 2020 timeframe. Indeed, every major auto manufacturer is working feverishly to further develop fuel cells. Already, Honda, Toyota, General Motors, and DaimlerChrysler have fuel cells running around on public roads for real-world evaluation. Many of the technologies in hybrids transfer to fuel cells.

Conclusion

The automobile is evolving into a technical wonder, with electronics that rival mainframe computers of a decade ago. The auto industry is evolving from a smokestack industry to a high-tech industry. As a result, the people in the auto industry need to be well-educated, up-to-date on skills and knowledge and have the adventurous spirit to pioneer new paths to fully participate in the new automotive age.

Kelly Automotive Services Group provides staffing solutions to major automotive manufacturers and their suppliers and places employees in a variety of technical, non-technical and administrative positions including engineering, manufacturing, design, operations, facilities management, professional, office/clerical, information technology and graphic arts. For more information, please visit www.kellyautomotive.com.

To receive **FREE** white papers on the latest issues and trends facing the automotive industry, register at www.kellyautomotive.com/asgwhitepapers.

For media inquiries, or to receive this article electronically, please contact the Public Relations department at **248-244-4305** or e-mail publicrelations@kellyservices.com.

