Plastics offer a head start on future

SAE 100 *Future look*

In celebration of SAE's Centennial in 2005, industry executives discuss the future of mobility technology.

*by **Greg Adams**, Vice President, GE Advanced Materials, Automotive*

Forecasting the future is more art than science. In the global automotive industry, however, we are seeing important trends that already are influencing the design and construction of future vehicles to create a point of differentiation for auto manufacturers. Shaped by government regulations, technological innovation, competition, and, of course, consumer preferences, these trends include reducing weight for improved fuel efficiency, consolidating parts to lower costs, reducing component mass to squeeze in more content, easing environmental impact with new materials and processes, and increasing safety for drivers and pedestrians.

In aesthetics, key trends include new color effects, larger rear and roof glazing panels, and sleek silhouettes that minimize seams and emphasize curves. The call for differentiated materials solutions is critical in this market for increased vehicle customization.

The result is that automotive suppliers and OEMs are looking for new materials technologies that will allow them to capitalize on these trends and carve out a unique competitive position in each area. New innovations in thermoplastic and composite technologies are doing just that, and are giving the automotive industry a head start on future trends.

One area in which these materials are shaping the future is paint. Painting automotive body panels and other components may not only add to costs and cycle time from secondary operations, but it can also potentially impact the environment through the release of volatile organic compounds (VOCs). If automotive OEMs were to choose to replace painted parts with engineered resins offering technology such as molded-in color, this could help them reduce emissions with the added benefit of new special effects that paint cannot deliver.

Consumer and regulatory demand for improved vehicle fuel efficiency is prompting OEMs to put their designs on a weight-reduction plan and is another area we are watching closely. Replacing traditional materials with lighter resins and composites and consolidating parts through greater design flexibility can be potential solutions, and are fast-growing trends in the automotive industry. For even greater results in fuel efficiency, more and more manufacturers are asking for lighter materials to produce larger panels—including complex, three-dimensional units—with properties that exceed those of conventional plastics.

Another area of focus is automotive electronics, which has moved beyond the engine to transmissions, all-wheel-drive and traction systems, brakes, navigation systems, climate control, audio, safety systems, suspensions, and diagnostic equipment. Thanks to their relatively low cost, more electronic capabilities are being added even to low-priced vehicles, creating the need to offer newer wire solutions that help get more wiring into the same amount of space, and to avoid undesirable weight.

Last but not least, automotive safety is also becoming a major competitive arena as car manufacturers introduce new technologies to help protect drivers, passengers, and pedestrians across the globe. The use of thermoplastics and composites can help automakers meet these safety requirements by combining safety features with superior aesthetics.

GE Advanced Materials, Automotive has a range of products and technologies to address these trends. For example, the company's Visual*fx* resins provide a wide array of molded-in color and special effects that may eliminate the need for paint, and the newest grade of Noryl resin for wire coating reduces the wire weight of a vehicle while also helping to eliminate VOCs and increase packaging space under the hood. Cycoloy, Xenoym, Ultem, and Lexan resins are other GE products that may answer many of today's—and tomorrow's— challenges in automotive design engineering.

Although no one can know for sure what the future will bring to the global automotive industry, the versatility, performance, beauty, and added value of thermoplastics can help suppliers and OEMs differentiate themselves and prepare for just about anything on the horizon. Furthermore, they can offer a broad range of new manufacturing and consumer benefits that were not previously possible while opening vast design options for the years ahead, limited only by the imagination. ***aei***

Lexan SLX resin for automotive body panels

Noryl resin for automotive wiring