LTU Contest Highlights Versatility of Steel

by Irena Granaas

Three Lawrence Technological University students won scholarships for their innovative renderings entered in the Fourth Annual Steel Wheel Design Competition at the LTU campus in Southfield.

The contest challenged students to come up with wheel designs that illustrate the advantages of steel wheels. The Steel Market Development Institute (SMDI) Task Force and Michelin announced the winners. SMDI is a business unit of the American Iron and Steel Institute (AISI).

"This year's student designers took steel to a new level, finding ways of building on the performance advantages of steel in a creative and imaginative way," said Ronald Krupitzer, vice president, automotive market for SMDI.

He explained that the purpose of the contest is two-fold.

First, to build a core of students who can build with steel by teaching them the fundamentals of what steel can do for the automobile. Almost every component in the vehicle is in "hot competition" with other materials due to the race among auto manufacturers to get ready for the 2025 CAFE (Corporate Average Fuel Economy) standard of 54.5 mpg.

The second purpose is to showcase today's lighter, yet very strong steels that are cost-effective.

To earn high marks, a student's design had to be functional, yet offer plenty of eye appeal.

"We know in the marketplace, in order to be competitive, a wheel is actually like a piece of jewelry. People really look at wheels from a styling standpoint as something that really sets the car off," Krupitzer said.

"So, for steel wheels to be successful, they have to, first, for the engineer, take weight off the car, and second, for the designer, they have to add beauty to the vehicle, so that's what this project is all about."

From left to right, Brian Clauw, chair, GM Steel Wheel Design Competition; LTU students Michael Levich, Greg VanderVoord and Peter Corey; and Jackie Stachowski, chair, Wheels Task Force, Nucor Corp.

The winners are: Greg VanderVoord, first place, who won a $1,500 scholarship; Peter Corey, second place, receiving a $1,000 scholarship, and third place, Michael Levich, who received a $500 scholarship.

VanderVoord's wheel, designed for a military vehicle he called the Terradyne Gurkha, utilizes shape memory technology, which allows the metal to deflect from its original form, then quickly return to form when heat is applied, eliminating the need for rubber tire and letting the all-steel design do the job of a wheel and a tire.

Krupitzer noted that Michelin has a steel wheel that doesn't have an inner tube. It is called a Tweel and is being introduced as a new product, so VanderVoord's idea may have potential for practical applications.

Corey designed his wheel for the Tesla Motors Model L, for electric and hybrid vehicles. Electric vehicles are almost noiseless, creating a danger to blind pedestrians and children. Corey used steel to create a mellow resonating sound effect, a solution inspired by Corey's familiarity with acoustic steel guitars.

Michael Levich was the third-place winner, earning his award for a wheel designed for the Ford Police Interceptor Sedan 3.5-liter EcoBoost V6. Levich's wheel used parallel plate hydroforming, resulting in stronger steel than with conventional stamping.

"He put two plates together and had a die in the shape of a wheel, and used water to blow it out in the shape of a wheel," said Krupitzer. "It certainly spoke to the lightweighting techniques usable for steel and its very high strength."

Contests like this are a way for SMDI to instruct engineering students on the versatility of steel, as well as the general public.

"When we can marry the commitment we have to students to bring them to a point where they become familiar with our industry and can use the time with them to make them smarter about working with steel, something we hope they'll design with in the future, and we can also add to that some of our industry's key messages along the way, it's like a perfect marriage," he said.

Students are given this challenge, which they can actually complete over the course of one semester. Along the way, they learn steel is cost-effective, functional and also adds beauty because of its unique properties.

Krupitzer commented that while industry insiders are aware, members of the general public may not realize the advances made in making steel and steel manufacturing in the last 10 years, for example the enormous growth in the use of high-strength steel in vehicle manufacturing.

"Today, for example, the real benefit you get out of a modern car is . . . you're buying a much safer vehicle because they have a lot more high-strength steel in them, and they pass much tougher crash tests," he said.

Strong Auto Sales During March, J.D. Power Notes

There's good news for automakers. New-vehicle sales remain strong in March, as both the light-vehicle retail selling rate and the total light-vehicle rate are consistent with February's performance at 12.1 million units and 15.3 million units, respectively, according to a monthly sales forecast developed by J.D. Power and Associates' Power Information Network and LMC Automotive.

March new-vehicle retail sales are expected to come in at 1,158,000 vehicles, which represent a seasonally adjusted annualized rate (SAAR) of 12.1 million units, with volume approaching a double-digit increase from March 2012.

The average new-vehicle customer retail transaction price ($28,504) is up 3 percent from March 2012. Leases account for 23.1 percent of new-vehicle retail transactions in March 2013, up from 20.0 percent in March 2012.

Also, the percentage of retail sales with a 72-month or longer loan is at record levels, reaching 32.1 percent in March 2013, an increase from 30.4 percent in March 2012.

"While longer loan terms have traditionally been a cause for concern to the industry due to the risk of purchase cycle extension, it is not necessarily as daunting as it may seem," said John Humphrey, senior vice president of the global automotive practice at J.D. Power.

"The longer loans are being offset by more leasing and the low-interest environment, which means that consumers are able to put more of their monthly payment towards their loan principal rather than interest fees," he said.