

LTU's Innovative Materials Lab Steps into Spotlight

by Gerald Scott
News Dept.

One of the "hottest" materials labs in the entire state of Michigan might be one right here at Lawrence Tech University in Southfield.

Ten days ago, a large contingent from the Engineering Society of Detroit toured the CIMR, or Center for Innovative Materials Research.

Then, just last week, Gov. Rick Snyder chose CIMR as the launch point for his state road repair and infrastructure improvement speech.

Snyder chose this location, in part, because of the leading edge research that CIMR does on behalf of MDOT and the state of Michigan as far as bridge work, freeway surfaces and road repair of concrete thoroughfares is concerned.

"I'd like to say a few words about the facility where we are," said Maria Vaz, LTU Provost, prior to her introduction of Snyder to more than 100 visitors for his infrastructure speech.

"As you can see, this is a one-of-a-kind type of facility. We have several state-of-the-art pieces of equipment: one is our life-sized, fire chamber and another one is our life-sized environmental chamber - in addition to other testing equipment you see around you."

Vaz further credited the Michigan Congressional delegation, TARDEC in Warren, the Michigan Economic Development Corp., MDOT and the National Science Foundation for helping LTU to make this facility a reality.

"CIMR was just named by the Michigan Dept. of Transportation as a Center of Excellence in sustainable infrastructure (research)," she



Dr. Nabil Grace, center, dean of Engineering at Lawrence Tech, explains the work that goes on at LTU.

added, pointing out the leading edge corrosion-free materials research that CIMR champions.

The director of the lab is LTU Dean of Engineering Dr. Nabil Grace, who is one of those industrial professionals who may be better well-known on the national front than he is here locally.

Other states, including Maine, have turned to Grace and CIMR for advice and consultation on road and bridge repairs to their infrastructures - Grace is the go-to guy for advising states and road commissions nationally on best practices and practical solutions when devising multi-million-dollar bridge, overpass and freeway repairs.

Made possible a few years ago by an \$11 million cooperative research agreement with the Army Research Lab (ARL)

and the U.S. Army Tank-Automotive Research, Development and Engineering Center (TARDEC) - an unprecedented federal partnership with a private Michigan university - this new Center is a state-of-the-art laboratory for the research, development and testing of carbon fiber composite materials for defense applications.

The initiative supports Lawrence Tech's effort to become a regional leader in applied research of materials and structures, energy, and automotive engineering.

This \$3.2 million research center is actually the first building on Lawrence Tech's campus to be funded completely with federal dollars. The Department of Defense and Department of Housing and Urban Development have provided earlier funding.

Lawrence Tech's Center for Innovative Materials Research focuses on research and development of materials to strengthen existing U.S. military structures and vehicles against attacks or natural disasters.

Much of the University's current applied research work has centered on new and innovative applications for carbon fiber composites.

"There are excellent defense applications for this carbon fiber material, so we're eager to work with the Army Research Lab and TARDEC," said Nabil Grace, chair of the University's civil engineering department and a pioneer in development of carbon fiber reinforced polymers for use in roads, bridges, and automotive drive shafts.

"The new center builds on Lawrence Tech's leadership in



Visitors from the Engineering Society of Detroit check out the displays at the Center for Innovative Materials Research (CIMR) on the campus of Lawrence Tech University in Southfield.

structural materials research. While our earliest work focuses on applications for carbon fiber, we also intend to explore applications utilizing other advanced materials such as ceramics and polymers," Grace said.

Grace said that TARDEC and other Army lab customers look to CIMR for research and development of carbon fiber and other exotic

materials for possible application to tracked and wheeled vehicles as the Army seeks to get better gas mileage on its huge vehicle fleet without reducing lethality or safety the heavier vehicles provide.

And to think that all of the above happens at the LTU campus in the CIMR lab, just off 10 Mile Road and Northwestern Highway in the heart of suburban Southfield.

Samuel Morse, a 19th Century Steve Jobs, Gave Nation Instant Communication

By JOHN ROGERS
Associated Press

LOS ANGELES (AP) - Long before there was an Internet or an iPad, before people were social networking and instant messaging, Americans had already gotten wired.

This month marks the 150th anniversary of the completion of the transcontinental telegraph. From sea to sea, it electronically knitted together a nation that was simultaneously tearing itself apart, North and South, in the Civil War.

Americans soon saw that a breakthrough in the spread of technology could enhance national identity and, just as today, that it could vastly change lives.

"It was huge," says Amy Fischer, archivist for Western Union, which strung the line across mountains, canyons and tribal lands to make the final connection. . . . With the Civil War just a few months old, the idea that California, the growing cities of California, could talk to Washington and the East Coast in real time was huge. It's hard to overstate the impact of that."

On Oct. 24, 1861, with the push of a button, California's chief justice, Stephen J. Field,

wired a message from San Francisco to President Abraham Lincoln in Washington, congratulating him on the transcontinental telegraph's completion that day. He added the wish that it would be a "means of strengthening the attachment which binds both the East and the West to the Union."

A rudimentary version of the Internet - not much more advanced than two tin cans and a string - had been born. But it worked, and it grew.

Just a few years after the nation was wired, telegraph technology would be extended to the rest of North America, and soon cylindrical wires from Mexico to Canada would jangle with little bursts of electromagnetic juice, sending messages of every kind and redefining how communication can mean business.

As the United States rebuilt itself following the devastating Civil War, it did so in no small part with money wired from Washington. In 1869, when the final piece of track connecting the transcontinental railroad was laid in Promontory, Utah, a young news organization called The Associated Press sent a story about it out on the wire.

"I really see the telegraph

as the original technology, the grandfather of all these other technologies that came out of it: the telephone, the teletype, the fax, the Internet," said telegraph historian Thomas Jepsen, author of "My Sisters Telegraphic: Women In Telegraph Office 1846-1950."

In its time, the telegraph was in some ways an even greater influence on the way people communicate than the Internet is today.

"The transcontinental telegraph put the Pony Express out of business in the literal click of a telegrapher's key. That's not an exaggeration," says Christopher Corbett, author of "Orphans Preferred: The Twisted Truth and Last-

ing Legend of the Pony Express."

Indeed, the Pony Express, which boasted it could deliver a letter from Sacramento to St. Joseph, Missouri, in the unheard of time of 10 days when it began operations on April 3, 1860, shut down 19 months later - on the same day the transcontinental telegraph went live.

Though dramatic, that was a short-term effect. "But the longer-term effect was we connected the nation in real time . . ." says Fischer. "For the first time, businesses could do business nationally. The government could communicate nationally in almost real time."

GM to Invest \$385M in Romulus Plant

ROMULUS, Mich. - General Motors will invest approximately \$385 million to prepare the Romulus Engine plant for production of an all-new, fuel-efficient engine program, creating or retaining about 320 jobs.

"Customers care about fuel efficiency and performance," said Gerald Johnson, GM manufacturing manager.

"We continue to innovate to meet both these expectations and the Romulus team will be an important part of our efforts."

The plant, which currently employs about 840 workers on two shifts, produces a variety of V6 and V8 engines that power GM full-size vans, SUVs and pickups, including the Chevrolet Express, Silverado, Tahoe, Suburban and Colorado, GMC Savana, Sierra, Yukon, Canyon, and Cadillac Escalade. Romulus engines also are used for marine and industrial applications.

"The gains we achieved through collective bargaining not only help our membership, but also provide opportunities to members of the communities where GM builds vehicles," said Joe Ashton, UAW vice president representing the GM Department.

"Today's announcement of a new engine program for the Romulus plant will mean more good-paying job opportunities for the Metro Detroit area.

"It shows that the members of UAW Local 163 have the skills and abilities to compete with any workforce in the world."

The investments will support tooling and equipment upgrades.



General Motors Romulus Engine Plant employee Winfred Pride installs a rocker cover on an 8-cylinder engine.



GM Romulus Engine Plant employee Christy Seay stuffs a piston into an 8-cylinder engine. General Motors announced last week it will invest \$385 million to prepare the facility for production of an all-new, fuel-efficient engine program.

Ford Reports \$1.6 Billion In 3rd Quarter Earnings

By DEE-ANN DURBIN
AP Auto Writer

DETROIT (AP) - Ford Motor Co.'s third quarter profit dropped slightly as the company took a charge for hedging on commodities. But sales rose and the results beat Wall Street's forecasts.

Ford said last week that it earned \$1.6 billion in the third quarter, down 2 percent from a year ago. Ford's earnings amounted to 41 cents per share. That compares with earnings of 43 cents per share in the July-September period a year ago.

Ford took a \$350 million non-cash charge to reflect falling prices of some commodities like copper and aluminum. Copper prices fell 25 percent in September alone, Ford said. Ford said the charges could reverse if commodity prices rise in the future.

Without one-time items, including personnel reductions and continuing dealer pay-

ments and other costs for last year's closure of the Mercury brand, Ford earned 46 cents per share. That beat Wall Street's expectations, which had forecast earnings of 45 cents per share.

Ford says revenue was \$33.1 billion, up 14 percent from last year. This year's figure topped analysts' estimate of \$29.9 billion.

Ford reported a pretax profit of \$1.6 billion in North America, unchanged from a year ago. Higher prices and rising sales of more profitable vehicles like pickup trucks helped offset higher costs for materials. Ford lost money in Europe and Asia, where it recently embarked on a four-year expansion plan.

Ford has had a string of positive financial news in recent weeks, topped by the fact that Ford workers approved a new four-year contract with the United Auto Workers that will increase the company's labor costs by less than 1 percent each year.

Orion Plant's 'Green' Paint Process Shines '12 Chevy Sonics

DETROIT - To many buyers, the shine and sparkle of their new car is a key purchase driver.

With the 2012 Chevrolet Sonic, the only subcompact car made in America, drivers can admire the gloss knowing the latest paint processes were applied in a new eco-friendly paint shop to ensure high quality with less environmental impact.

General Motors is the first automaker in the United States to use a unique water-based "three-wet" paint process.

Fast becoming a global trend, the process eliminates the need for a primer bake oven, normally used between the primer and color-coating layers. The Orion Assembly Center allows three layers of paint to be applied one after another while still wet before a single trip through the oven.

This process reduces the paint shop footprint by 10 percent, providing additional floor space and reducing the energy needed to heat and cool these areas.

This process also upholds the car's glossy sheen, reflectiveness and durability expected to last years beyond the purchaser's final car payment.

"Cutting our greenhouse gas emissions and reducing our energy consumption were key to implementing our water-based 'three-wet' paint process," said Mauricio Pincheira, paint manager at Orion.

"We want to provide a durable paint that impresses our first-time Sonic customers and maintains the tough environmental standards we have across the company."