



RETOOLING ENGINEERS *for the* NEW DETROIT

by Marcia Goodrich

Downsizing, bankruptcies, factory closures... It's hard to find good news in Detroit. But a new partnership aims to rewrite the headlines.

It began last fall, when Terry Woychowski '78 wanted to do something to help his fellow engineers. Dreary news reports detailed the plight of automotive workers whose jobs were disappearing in droves. What Woychowski knew, and what wasn't being reported, was that hundreds of jobs were also being created. But these were jobs on the forefront of automotive design, and people with the skills for those jobs were in short supply.

What Detroit's laid-off auto engineers needed was to have their skill sets retooled for the twenty-first century, Woychowski thought.

So he forged a partnership among three players that he knew very well: alma mater Michigan Tech; the Engineering Society of Detroit, where he is president-elect; and General Motors, where he serves as vice president of global vehicle program management. What emerged was a distance-learning version of a course in hybrid vehicle engineering. Instead of

being available only on campus, Michigan Tech's Advanced Propulsion Technologies class would also be held in southeastern Michigan. GM would provide logistical support, hybrid vehicles, and facilities. The Engineering Society of Detroit would recruit students from southern Michigan's pool of laid-off engineers.

Just in time for the spring semester, it all came together, and over sixty laid-off engineers were enrolled. Most of the students were years—even decades—out of school. So, while the tuition was free, they would all pay a steep price in sweat equity, mastering advanced math as well as sweeping new concepts in electrical and mechanical engineering and computer science. The organizers weren't sure how many would make it.

But when the course ended in June, nearly everyone who started was still standing. "It went great, better than any of us ever expected," said the class coordinator, GM design release engineer Jennifer Goforth.

Jason Lungstrom '00 of Westland, Michigan, near Detroit, was among those who graduated. "No one knew what to expect, but it went really well, and we



all got a lot out of it," he said. "It was hard, but it gave me a whole new skill set that I hope to be able to use in a growing industry."

Paul Blust '85 had been away from the classroom almost twenty-five years. "It was a challenge to hop back into the academic world," he said. "But they were very tolerant of the fact that we'd been out of school for awhile."

"I used to work for General Motors, and it really made me feel proud to be part of a program that was put together by GM and my alma mater."

Because it was a distance-learning course, the students could have stayed home and watched the three weekly lectures online. But that's not what they did, said Goforth. "The majority came to class every week to meet with their team," sometimes driving two hours or more to Southfield. "The students recognized the commitment that Michigan Tech made, and that meant so much to them. It brought it to a personal level."

A crew of volunteers from General Motors guided the students through their lab work. "We had a recognition dinner for all the volunteers, who put so much of their personal energy into this," Woychowski said. "They came up afterward and asked, 'What's next?' That was an indication that this was a significant achievement that touched a lot of people. I'm proud of my alma mater, I'm proud of General Motors, and I'm proud of the Engineering Society of Detroit: they all worked together and did something constructive for southeastern Michigan."

The students, too, are eager to take the next step. "The feedback has been phenomenal," said Goforth. "I've received countless emails thanking us for

making the class a reality. Many are asking, what's next? Where can I go from here?"

Funny they should ask. The class's lead teacher, Associate Professor Jeff Naber, has received two grants, one to offer another course in Detroit, another to develop a suite of distance-learning courses (see below).

"We can point to this as a successful pilot," said Woychowski. "But there are still lots of problems to be solved, lots of designs to be created. We did it once, and now we are ready to do it even better." ■

Terry Woychowski '78, left, forged a three-way partnership with Michigan Tech, the Engineering Society of Detroit, and General Motors to offer a free class on hybrid vehicle technologies to laid-off auto engineers.

Back by popular demand

Tech to develop curriculum for hybrid vehicles, expand classes in Detroit

If something works, keep doing it. Last spring's class for displaced auto engineers was such a success that the University is offering a similar class this fall and again in spring 2010. It will emphasize battery technologies, which are at the heart of hybrid vehicle propulsion.

With support from the Engineering Society of Detroit, the class is being offered tuition-free to auto engineers under the auspices of the Michigan Academy for Green Mobility, in cooperation with the state Department of Energy, Labor and Economic Growth. The academy promotes worker training in green technologies for the auto industry.

In the meantime, an interdisciplinary team of Tech faculty will be developing an entire curriculum to train engineers and technicians to design and build the next generation of hybrid electric vehicles, thanks to nearly \$3 million in federal stimulus funds provided under the American Recovery and Reinvestment Act.

"We'll be training and retraining the next generation of engineers to produce vehicles that reduce fuel consumption and emissions," said Jeff Naber, associate professor of mechanical engineering—engineering mechanics and lead faculty member on the project.

Pilot program

*Earning an MS from Afghanistan . . .
and points beyond*



by Marcia Goodrich

Some Michigan Tech students choose online learning to avoid scheduling conflicts or to dodge the dreaded eight o'clock roll call. Air Force Captain Kenneth Burgi is earning a degree online for another reason. It's tough getting to class when you are copiloting 250 tons of aircraft, people, and cargo all over the world.

Dennis Wiitanen, a professor of electrical and computer engineering and one of Burgi's teachers, never expected to be teaching a warrior on active duty. "It's amazing," he said, "and a little hard for me to get used to."

Burgi is earning an MS in Electrical Engineering with an emphasis on power systems. His typical online-learning classmate is an industry employee looking to develop skills in a high-demand field.

Burgi, who got his BS in Electrical Engineering from Tech in 2002, before joining the military, has a different goal. "I hope to get into Air Force Test Pilot School, one of the most competitive programs in the Air Force," he said. "A master's in electrical or aeronautical engineering is highly desirable."

Burgi couldn't be earning that master's without the flexibility offered by online learning. In fall 2008, he

was flying fourteen-hour missions in a C-17 Globemaster III, transporting troops and supplies into Afghanistan.

In January, he returned to Charleston Air Force Base, in South Carolina. It's still too far to commute, so Burgi remained an online learner while he flew missions to destinations as disparate as the Middle East and the Summit of the Americas in Trinidad and Tobago. During spring semester, his job and two electrical engineering classes kept him busy up to eighteen hours a day.

Figure in eating and sleeping, and there wasn't much time left over. "It was really hard," he admits. "I got a lot of gray hair last semester completing two classes at once. It was awesome to finally be done."

Online learning, with all its opportunities, has its challenges. Burgi has had no peers to study with, and he can't drop in on his professors during office hours. "It can be hard to ask an engineering question via email, but my professors have done an impressive job replying," Burgi said.

Nevertheless, says Wiitanen, "Ken's a great student. He has lots of good insights. He was struggling with one problem, and before I could even get back to him he got back to me with a solution I hadn't even thought of. I asked him if I could use it next year."

An online master's program can be a superb option for those who have already launched their careers, Wiitanen says, but it's not for everyone. No matter where you study, no matter how glitzy the technology, the old rules still apply. "The people who are highly motivated and do the work succeed," said Wiitanen. "Those that don't watch the videos and don't bother doing the homework, don't."

Online learning could land Burgi that coveted slot in test-pilot school. In retrospect, he suggests that undergraduates pursue advanced degrees the old-fashioned way.

"If you know you'll need a master's degree, stay at Michigan Tech for an extra year or two and get it," he advises. "You will never have less responsibility than you do right now."

However, not all 21-year-olds have drawn a bead on their dream job. For many, including Burgi, learning from a distance offers a second chance to get it right. ■



Looking up at the ice arena

Skyboxes and luxury suites on tap for 2009–10 hockey season

by Ian Marks

Over two million fans have cheered for the Hockey Huskies at nearly seven hundred games since the John J. MacInnes Student Ice Arena opened its doors in 1972. Now those fans have something more to shout about.

Last year, the arena got a new epoxy floor and comfortable, new black-and-gold seats replaced the wooden originals. An entire section at ice level was made handicapped-accessible. The improvements were supported by donations from alumni and friends and from student fees.

By the time the first puck is dropped in 2009, fans will also be able to enjoy games from ten luxury suites overlooking the ice along the west end of the arena. Each will have its own theme, and all are equipped with a wet bar, a drink refrigerator, and a flat-screen TV with both cable and an in-house feed of the game. Complete food service from Michigan Tech Catering Services will also be available. The suites were made possible through a \$1 million donation by Tech benefactors Ruanne and John '61 Opie.

The two larger suites seat eight, with an additional standing capacity of four. Rent for an entire season is \$5,500, which includes twelve season tickets. The eight smaller suites have seating for six, with standing capacity for four. Cost to rent a smaller suite for

the season is \$4,500, including ten season tickets. Three-season packages are available at a significant discount.

For those who just want to whoop it up at a game with a few dozen of their closest friends, the two existing skyboxes are being renovated. Each holds 65 to 130 people; prices start at \$400 per game and include most of the amenities of the luxury suites.

The suites and skyboxes will not only give fans an exciting new way to enjoy hockey, they may also help recruit players, said head coach Jamie Russell.

“When we are out recruiting, facilities are the one tangible that we can show a prospective student-athlete,” he said. “We can’t show them a travel budget or a recruiting budget. Facilities are the one object that we can use to show a player the commitment that the school has toward our program.”

Athletic Director Suzanne Sanregret agreed. “The WCHA is the most competitive hockey conference in America,” she said. “We need to have a top-notch facility to stay competitive with the other teams in the league. These improvements will keep us on par with the other arenas in our league and around the nation.”

For more information or to reserve a suite or a skybox for the 2009–10 hockey season, contact Jonathan Hamilton at 906-487-0914, jbhamilt@mtu.edu. ■