

UMaine Student Teams Competed for Lemforder Design Prize

ORONO — The hissing of pneumatic cylinders and the thwack of wood striking metal greeted visitors to a University of Maine student work site high on a catwalk above a factory shop floor in Brewer last spring. The scene demonstrated a new and growing relationship between the School of Engineering Technology and the Lemforder Corporation which builds parts for the automotive industry.

Students benefit by applying classroom theory to the practical day-to-day needs of one of the country's most technologically advanced manufacturing plants. According to plant manager Jim Stacey, Lemforder is a leader in computerized metal working and finishing systems which demand extraordinary skills from workers.

Herbert Crosby, professor of mechanical engineering technology, and Dave Palilunas of Lemforder supervised the projects in which the students completed their senior Capstone design projects.

"The students really worked hard on this," says Crosby. "It's only one part of the course, but I think they'd rather do this than just about anything else. The competition brings out the best in them."

The challenge was to build a mechanical butler of sorts. Lemforder needed a device to pick production parts off a slowly moving chain track. Once removed, the parts had to be delivered to an assembly station on the shop floor.

Last fall, the students divided into three teams and began their work. By spring, the hissing of pneumatic cylinders and the thwack of wood striking metal greeted visitors to the student work sites high on a catwalk above the Lemforder shop floor. Each team has taken a different approach and hopes that its design will be selected for further development by the company.

"Lemforder had already spent time working on this problem," says Dennis Poole of Orono, a UMaine student who works part-time for the company. "They were unsuccessful. We threw concepts out and started over. One of the biggest hurdles was convincing the management to give us a year to work on this. Normally, they would give their own engineers two weeks."

To test their ideas, the students built prototypes, and one team experimented with a hammer hung from a ceiling pipe. Team members wanted to see if it would knock the parts off hangers to which the parts were attached.

"Our team was split over two approaches," says Bangor resident Steve Morin. "We could grab the parts off the hanger or knock them off. The hammer test showed that knocking them off would work."

Another team built wooden models to refine their ideas. "We spent weeks figuring out what would work," says John Belding of Lovell. "There are so many angles to consider. We had to make decisions and then go with them."

"It's not like a textbook where there's a right or wrong answer," says Poole.

Jim Stacey, manager of the Lemforder plant, says the project benefits both the company and the students. "Today, we manually unload these parts, put them in totes and carry them across the shop floor. We'd like to eliminate that non-value added activity."

"We use a team approach in this facility," Stacey adds. "We believe ten minds are better than one. This project gives us the opportunity to select the most effective design. It also gives the students the opportunity to apply theoretical knowledge they gain in the classroom to practical problems in the workplace."

The students have found the experience to be invaluable. "You can't duplicate this in a classroom," says Poole. "It's been an important part of our learning process."

"We've worked with some of the employees at Lemforder, and they've been patient with us," agrees Morin. "They are a very professional crew."

Each team has been given access to Lemforder's spare parts room and a \$500 budget for new supplies. While most of the design and construction has taken place in the mechanical engineering shop on the Orono campus, the designs are being tested and modified at Lemforder.

The design competition reflects Lemforder's commitment to education, Stacey says. "We use state-of-the-art technology here and have the advantage of being able to select the best engineers. We are very concerned with the technical knowledge of the general population, and we also work with the high schools and the technical colleges. We've hired several engineers from the University and look forward to hiring more in the future."

The project came to a head on April 24 when judges rated the designs for how quickly and reliably they could remove 100 parts from the moving track. The winning design was the creation of Sean Watson, Larry Doucette, Larry Paul, Mike Townsend, Steve Moulton and John Belding.

