



# Industry Partners = Career-Ready Students

## Milwaukee School of Engineering Students Test New Elastomer Material

The adage “never stop learning” is alive and well for both the students at Milwaukee School of Engineering (MSOE) and its Additive Lab Consortium members. The school of 2,900 students, located in the heart of downtown Milwaukee has ties with 47 manufacturing companies, including Kohler, Snap-on Tools, Baxter Medical and Master Lock.

The Consortium was born out of necessity 27 years ago when MSOE was faced with a 50 percent shortfall in the funds needed to get an additive lab up-and-running. The school approached industry and opened partnership talks around additive technology. Four founding partners came on board, each contributing one-eighth of the cost of the lab. In turn they were provided with non-competitive, shared access. Currently, consortium members pay yearly dues in return for lab hours and access to additive manufacturing expertise.

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Vince Anewenter

**MSOE**



Milwaukee School of Engineering offers an innovative partnership between business and education in its Additive Manufacturing Lab.





An air intake hose printed in flexible FDM TPU 92A elastomer material.

## Learning Through Doing

With a focus on applications development, education and training, there's significant value for both industry and education, says Vince Anewenter, director of the Rapid Prototyping Consortium at MSOE. "We function as that conduit of information that helps companies understand new technologies, learn to design for AM and train students in what we call 'economic engineering,' the process of improving something and making sure it's financially viable," said Anewenter.

MSOE does more than simply house an additive lab; the RP Center employs students who work with industry to help businesses solve unique challenges focusing on new product development. "We walk that tightrope of being centered in an educational institution but needing to perform on industry timelines. The greatest gift we can give students is the opportunity to work on resume-worthy projects," said Anewenter.

Design for additive manufacturing (DFAM) continues to be the biggest challenge for

industry, says Anewenter. "Not everything should be machined and not everything should be 3D printed. The trick is learning the ins and outs of the benefits of each process," Anewenter says.

"Manufacturing today is completely different than manufacturing was twenty years ago. Not having access to 3D printing on campus isn't really an option. It's assumed that schools will provide additive technology the way it's assumed we'll have wi-fi."

The 3D printing lab at MSOE supports numerous additive technologies, making it a unique model for connecting industry and education. Materials are a frequent point of discussion and "there's been lots of demand for functional rubber parts by industry, specifically tougher materials, with engineered resilience, capable of producing complex structures," said Anewenter.



Anewenter specifically points to soluble support on the [Stratasys F123 Series printers](#) as being instrumental in enabling the printing of large, complex parts. Also, said Anewenter, “it was 15 minutes from the time we uncrated the printer to the time we started printing successful parts.” MSOE’s success with [FDM TPU 92A](#) didn’t surprise Anewenter. “Stratasys typically doesn’t introduce a new product until it’s vetted and game-ready.”

Another stage of preparing career-ready students has been the Stratasys Certification Program, says Anewenter. “Honestly, the comprehensiveness of the program has opened our eyes to some of the gaps in our training of students.” In another nod to the partnership between education and industry, Anewenter points to the benefit to industry in enabling the workforce of tomorrow. “Many of our Consortium members are very excited about the Certification Program. It means companies can hire future employees with the confidence they need to ensure that an employee has a comprehensive knowledge of additive manufacturing.” Best of all, says Anewenter, “it’s a way for our students to articulate that knowledge in a standardized way.”

The partnering of industry and education is a win-win, says Anewenter. “We can train students on additive, and at the same time help Consortium members integrate additive manufacturing into their internal operations in ways that make financial sense to them.”



The interchangeable print head enabling easy and fast change-over to elastomer printing.

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