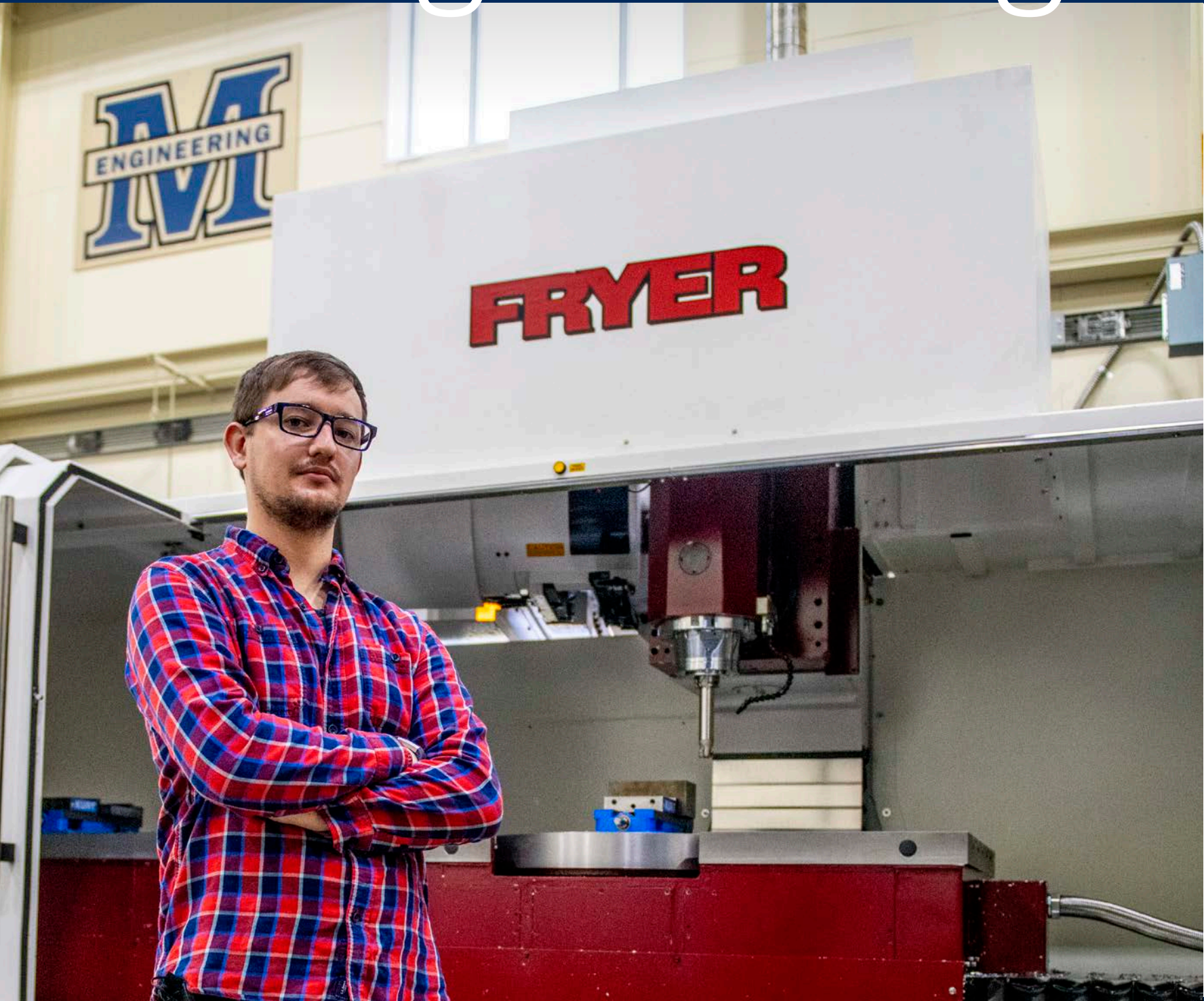


UMaine

2021/2022

Engineering



ADVANCING AND ENABLING ENGINEERING

Leadership, vision and resilience today for tomorrow

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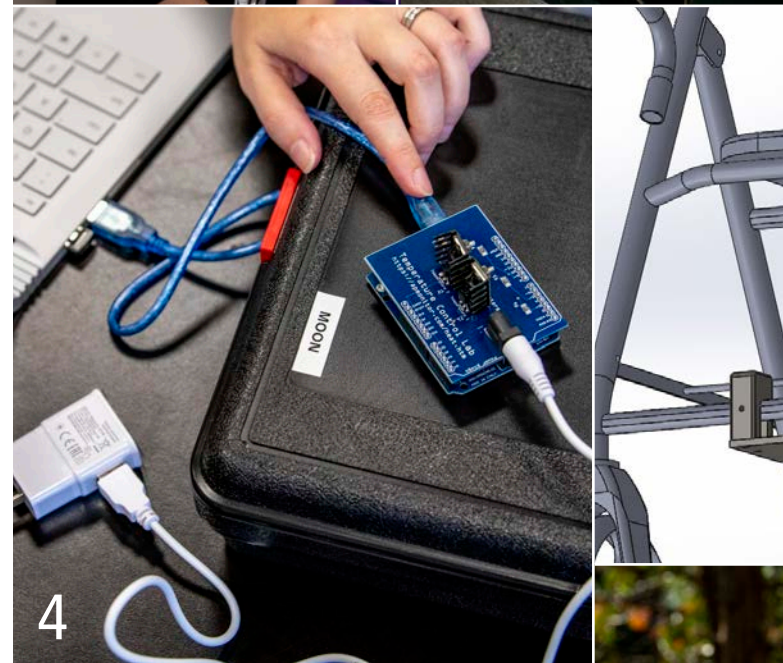
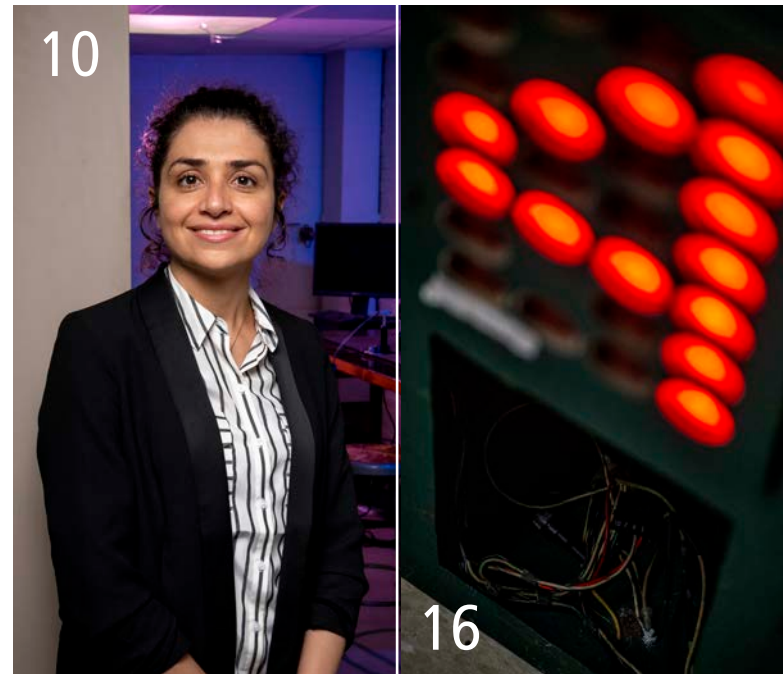
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Primary editorial content by Marcus Wolf, primary photography by Adam Kuykendall, design by Jenna Davenport, editing by Margaret Nagle, Division of Marketing and Communications



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Instagram and Facebook: @umaine.engineering
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Big things are happening in the UMaine College of Engineering! Construction of the Ferland Engineering Education and Design Center continues, with the project being on schedule and on budget. As I'm writing this letter on a sunny November day, I'm watching the masons reach the 70% done mark for the brickwork. The ribbon-cutting ceremony will happen sometime during the week of Aug. 22, 2022. Watch for further news on that and read more about Ferland EEDC in this issue.



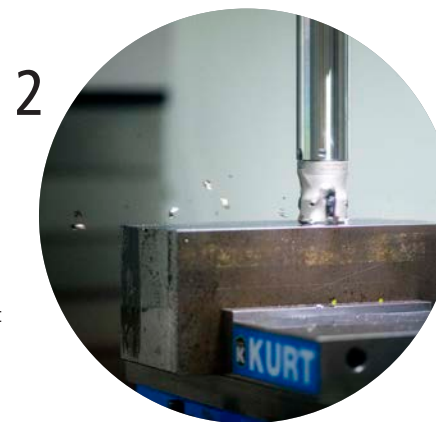
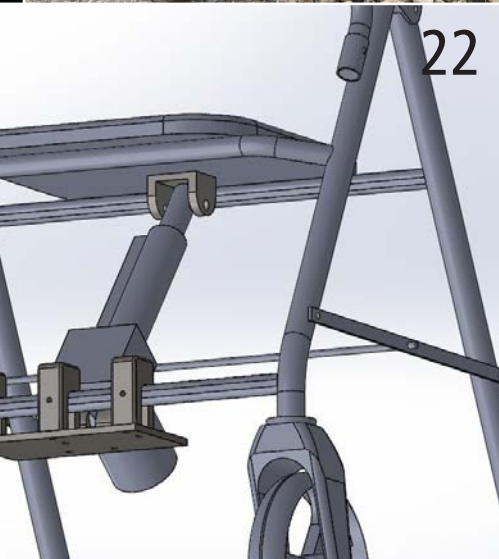
In October 2020, the Harold Alfond Foundation announced a \$240 million pledge for the University of Maine System. This includes \$50 million that must be matched 1:1 for renovation/replacement and expansion of Boardman, Barrows, Jenness and Crosby to meet the needs of engineering and computing. The team of Perkins Eastman/SMRT is formulating a master plan for this work, which is expected to be completed over the next decade. The Harold Alfond pledge also includes \$25 million for the Maine College of Engineering, Computing and Information Science. Over 100 faculty and staff are working together to guide the formation of this new college. This is an exciting opportunity, with the long-term goal to double the number of engineering and computing graduates.

UMaine Engineering continues its tradition of hands-on programs. All of our seniors do capstone projects and 80% of our graduates have at least one internship, co-op or major research experience. Hundreds of our undergraduates are involved in research with individual faculty and in our research centers, including the Advanced Structures and Composites Center, Advanced Manufacturing Center, and Frontier Institute for Research in Sensor Technology. The placement of our graduates remains strong, with 99% reporting full-time employment or full-time in graduate school within six months of graduation.

This magazine highlights just a few of the accomplishments of our students, faculty and alumni, but there is more! I encourage you to come and visit campus — we have a lot to show you.

Dana G. Humphrey

Dr. Dana Humphrey
 Dean, College of Engineering
 Saunders Professor of
 Engineering Leadership and Management



On the cover Fourth-year electrical engineering technology major Ezra Serdynski of Old Town, Maine is an electrical engineering intern in the Advanced Manufacturing Center, where recent equipment upgrades include a 5-axis Fryer vertical machining center. The state-of-the-art technology helps meet business and manufacturing needs statewide and beyond, and provides hands-on experience for Serdynski and other students — the workforce of tomorrow.

Enhanced capabilities

New AMC equipment furthers the future of Maine manufacturing

The University of Maine's Advanced Manufacturing Center has completed a series of major equipment upgrades designed to enhance capabilities to support industry partners and develop workforce, as well as accelerate the adoption of additive metal manufacturing in Maine.

After a series of delays related to the coronavirus pandemic, the full suite of new equipment — made possible by two significant grants totaling \$2.5 million — was installed in 2021. The upgrades include a Desktop Metal FDM additive metal machine with testing equipment, 5-axis machining center, hybrid metal additive cell, wire EDM (electrical discharge machining), 4-axis lathe with live tooling, a coordinate measuring machine and a 6KW 5-axis laser with directed energy deposition.

“The pandemic has really brought into focus the dynamic needs of Maine manufacturers,” says AMC director John Belding. “Over the last 18 months, we’ve seen firsthand how important it is to be able to meaningfully support R&D and offer companies a risk-free opportunity to experiment with new technologies, not to mention being able to deliver the skilled workforce they’ll need to expand their own capabilities in these areas. This new equipment is critical to fulfilling that dual mission, and we’re very excited to expand our work with Maine’s manufacturing sector and beyond.”

Communicating the capabilities of emerging additive metal technology (fusing small metal particles together through 3D printing to form solid metal objects) is a key goal of AMC’s Center for Additive Manufacturing of Metals (CAMM). CAMM’s initial funding came from a nearly \$500,000 Maine Technology Institute (MTI) cluster initiative program grant, with matching funds from the university and 35 Maine companies, bringing the total to \$1 million.

In 2019, the Maine Manufacturing Extension Partnership (Maine MEP) received a \$1 million National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP) Competitive Awards Program grant to support and enhance CAMM. The project aims to develop state and regional additive manufacturing capacity by making additive manufacturing services at AMC accessible to Maine businesses and entrepreneurs. The funding provided for additional measurement and laser manufacturing equipment that is used to help qualify and then machine parts.

This effort is already showing results. Since the grant was received, CAMM has completed more than 30 industry projects for 42 companies, training more than 200 engineering students per year. In the past year, AMC has assisted Maine companies to create 32 new jobs and realize \$12.24 million in new sales, retained sales, new investment and cost savings.

“Our organizational mission at Maine MEP is to assist Maine’s small manufacturers to compete on a global scale, so applying for a grant to help build out AMC’s Center for Additive Manufacturing was an easy yes,” says Larry Robinson, Maine MEP president. “For today’s manufacturers, being able to compete means being innovative in both product and process — and to be innovative, one has to be able to iterate quickly and inexpensively. That is where CAMM comes in. The center provides the technology and world-class know-how to assist Maine manufacturers to rapidly iterate their new product and process ideas.”

Maine MEP is a public-private partnership and an affiliate of NIST under the U.S. Department of Commerce. It facilitates economic development in Maine by delivering technical services and workforce training solutions to Maine’s small manufacturers.

Workforce development helps build resilience into Maine’s manufacturing sector, one of the central goals of a \$1.5 million grant, also awarded in 2019, that helped fund the purchase and installation of state-of-the-art additive and subtractive manufacturing equipment. That money includes a \$750,000 investment from the U.S. Economic Development Administration, with matching funds from UMaine’s Office of the Vice President for Research and College of Engineering, as well as the Maine Technology Institute.

With the new machinery, AMC is able to offer companies innovative technical assistance and access to cutting-edge technology, while students are developing the skills they’ll need to excel in the increasingly technical 21st-century manufacturing workforce.

“This new equipment is very relevant to the industry, so we’re able to do more projects with Maine companies to show them the benefits of the technology,” says Belding. “Simultaneously, we’re training students who will enter the job market well prepared to help businesses adopt and use it themselves.”

This all adds up to good news for Maine’s manufacturing sector and the companies that depend on it. ♦

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AMC's Center for Additive Manufacturing of Metals (CAMP), launched with a 2019 grant to the Maine Manufacturing Extension Partnership, has completed more than 30 industry projects for 42 companies and trained more than 200 engineering students.