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Expert Educator Team Releases Final Report: Aligning Lightweight Technology and Manufacturing Talent Development

College & University Faculty Team Concludes Series of Recommendations Addressing Competencies and Workforce Strategies for New Lightweighting Technologies

DETROIT – Higher education and industry need to work together to adapt current curricula to reflect the knowledge and skills necessary to thrive in work environments deploying new lightweighting technologies, materials and processes according to a fourth and final report from LIFT's Expert Educator Team (EET). Titled *Aligning Technology and Talent Development,* the final report marks the conclusion of a 2-year initiative to lead the conversation on the relationships between talent, workforce and technology development.

As technology advances, educational programs must be designed to integrate new workforce needs into their curricula. The EET's final report includes in-depth competency mapping to help technical and engineering students excel in industry environments. The report focuses on 11 critical lightweight manufacturing technologies under development at LIFT: Integrated Computational Materials Engineering (ICME); Metamorphic Manufacturing; Distortion Control; Thin-Wall Aluminum Die-Casting; Thin-Wall Ductile Iron-Casting; Powder Consolidation Processes; Agile Fabrication of Sheet Metal Components; Joining Titanium to Steel; Refill Friction Stir Spot Welding; Inorganically Bonded Sand Molds; Friction Stir Extrusion.

The EET includes specialists in materials science, engineering disciplines, and education and workforce preparation, and was assembled by LIFT – Lightweight Innovations for Tomorrow, and supported by the Association of Public and Land-

grant Universities (APLU) and the National Center for Manufacturing Sciences (NCMS).

“From our Institute’s founding, the LIFT leadership committed to align talent and technology development, and we established the EET to bring both instructional design and strategy expertise,” said Emily DeRocco, education and workforce development vice president, LIFT. “In addition to making curriculum development more agile, this initiative promotes work-and-learn strategies, creates opportunities for engineers and technicians to learn together, delivers education and training virtually, and focuses on teacher and faculty development.”

“APLU has long been committed to helping its member universities improve manufacturing talent and workforce competitiveness. The Expert Educator Team’s final report will be an invaluable resource for engineering and manufacturing educators to respond to technological innovation and prepare their students for workplaces of tomorrow,” said Sheila Martin, vice president for economic development and community engagement, APLU. “APLU looks forward to continuing to work with our partners and members on talent and workforce development issues.”

In its four reports, the EET makes nearly 40 recommendations for LIFT to explore and encourages its members and partners to join forces with the institute to undertake the initiatives suggested. The EET’s recommendations span six key theme areas in addition to the 11 technologies:

- Leveraging **LIFT- Supported Facilities and Resources,** including the LIFT High Bay, LIFT Learning Lab, and LIFT/IACMI Learning Hub to address education and workforce development needs related to emerging technologies.
- Promoting **Work-and-Learn Expansion** through the development of more prevalent and innovative models that immerse students in real-world work environments throughout their education.
- Introducing **Agile Curriculum Development** to ensure educational programs are responsive to rapidly changing industry needs.
- Facilitating **Engineer/Technician Cross-Collaboration** to expose both engineers and technicians to one another early in the educational process to ensure they have context for one another’s roles in manufacturing processes.
- Employing more **Virtual Learning** resources to expose to more audiences to expanded access to educational programming related to emerging technologies.
- Enhancing **Educator Development** opportunities so that instructors can integrate technology advancements and processes into their classrooms.

“The final report provides educators with the means to better prepare technical and engineering students and advances the overall competitiveness of the manufacturing workforce in cutting-edge industries leveraging lightweight metals and materials,” said Rebecca Taylor, senior vice president, NCMS.

The eight EET members that participated in this initiative were selected from APLU’s member universities and other LIFT university research partners because of their significant knowledge of manufacturing technologies and experience within the manufacturing industry. Staff experts from LIFT, NCMS, and APLU also served on the EET and co-facilitated its efforts.

They are: **Fazleena Badurdeen**, associate professor and director of graduate studies for manufacturing systems engineering, University of Kentucky; **Kapil Chalil Madathil**, Assistant Professor, Departments of Industrial & Civil Engineering, Clemson University; **Amy Clarke**, associate professor and site director, Center for Advanced Non-Ferrous Structural Alloys, Colorado School of Mines; **Mel Cossette**, Executive Director/Principal Investigator for the National Resource Center for Materials Technology Education; **Chad Duty**, associate professor, Department of Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee Knoxville; **Muhammad Jahan**, assistant professor, Miami (Ohio) University; **Gene Liao**, professor and director electric-drive vehicle engineering and alternative energy technology, Wayne State University; **Kelly Zelesnik**, dean, engineering, business, and information technologies, Lorain County Community College.

To read the full report and its results, visit www.lift.technology/eet.

ABOUT LIFT

LIFT, operated by the American Lightweight Materials Manufacturing Innovation Institute (ALMMII), is a Detroit-based, public-private partnership committed to the development and deployment of advanced lightweight metal manufacturing technologies, and implementing education and training initiatives to better prepare the workforce today and in the future. LIFT is one of the founding institutes of Manufacturing USA, and is funded in part by the Department of Defense with management through the Office of Naval Research. Visit www.lift.technology or follow on Twitter @NewsFromLIFT to learn more.

ABOUT APLU

APLU *is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities in the U.S., Canada, and Mexico. With a membership of 238 public research universities, land-grant institutions, state university systems, and affiliated organizations, APLU's agenda is built on the three pillars of increasing degree completion and academic success, advancing scientific research, and expanding engagement. Annually, member campuses enroll 4.8 million undergraduates and 1.3 million graduate students, award 1.3 million degrees, employ 1.3 million faculty and staff, and conduct $44.9 billion in university-based research*

ABOUT NCMS

The National Center for Manufacturing Sciences (NCMS) is a cross-industry technology development consortium, dedicated to improving the competitiveness and strength of the U.S. industrial base. As a member-based organization, it leverages its network of industry, government, and academia to develop, demonstrate, and transition innovative technologies efficiently, with less risk and lower cost. For more information on NCMS, visit www.ncms.org.