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## Public-Private Partnerships Stressed at YSU Forum



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YOUNGSTOWN, Ohio -- Regional development as it relates to energy and manufacturing is best served when there is a strong partnership between the public and private sectors.

That's the consensus of speakers and panelists who participated in the first day of Youngstown State

University's sixth Sustainable Energy Forum, held Monday and today in the Chestnut Room of Kilcawley Center.

This year the program addressed not only new frontiers in sustainable energy, but also on how advanced manufacturing can help reduce a company's carbon footprint and thus reduce energy costs.

"That's really where we've focused our efforts this year," said Martin Abraham, dean of the YSU College of Science, Technology, Engineering and Mathematics, or STEM. "The impact of energy -- both the sources that we have to reduce the costs of manufacturing, plus some of the new manufacturing

techniques which impact the needs for energy. It makes a nice combination."

Abraham said 130 people were registered for the forum this year -- down from previous years -- but he expects about 150 to attend over the 1½- day program.

About 60 attended the Monday session, which consisted of a morning panel discussion centering on how NASA is playing a larger role in reaching out to collaborate with the private business community, and an afternoon panel devoted to additive manufacturing.

The forum continues through this morning and features a panel on opportunities in the natural gas industry and another on green energy technologies.

"It's a great program, and a great opportunity for people in the community to learn about what the energy opportunities are and how they're playing out around the community," Abraham said.

Central to spurring technological advancement in the manufacturing and energy sectors is continued cooperation between business and government, a track pursued by agencies such as NASA.

"What we try to do is think a little more like a business, rather than just a research laboratory hoping somebody else will figure out how to use our technology and products," said Joe Shaw of the NASA Glenn Research Center in Cleveland.

Over the last four years, NASA has become much more aggressive in seeking partnerships in the private sector to facilitate technological growth in the region. "I've been at NASA Glenn for 43 years," he said. "It's a much higher priority. We've done so much more than I can remember over the previous 30-plus years."

Aeronautical research and development born at NASA is evident on every commercial jetliner now flying, Shaw said.

"There are technologies on that airplane that allow it to perform better and be safer that were developed at NASA laboratories and transferred to our industrial partners for infusion in their product design," he said. "There's not a day that goes by that there isn't NASA technology flying around this country or the world."

Materials, communications and structural technologies developed at NASA have translated into other sectors of the economy, such as the auto industry. "We have formal working relationships with a number of the major auto manufacturers in this country," he said, "as well as supply-chain companies."

A Michigan-based automotive engineering company, for example, used mapping software developed for low-altitude fighter aircraft such as the F-18 and then integrated some of its own technologies into the design. The firm demonstrated how a traditional driver could boost the fuel average of a Chevrolet Cruze Eco manual vehicle from 42 miles per gallon to 64 mpg over 9,400 miles.

Bill Whittenberger, president of Ravenna-based Catacel Corp., says he connected with Shaw during one of NASA's "road shows" at YSU in December. NASA has turned to these road shows to create a higher profile in the region and become more integrated into the business and academic communities.

Catacel company manufactures high-energy catalysts used in fuel cell and hydrogen production as well as other advanced energy applications ([READ STORY](#)).

Catacel was one of the firms invited to attend a private session with NASA engineers, Whittenberger recalled. "We got valuable input that day," he said. "It was obvious that the NASA people captured right away what we were trying to do."

A follow-up meeting eventually led to the development of a software model that demonstrated what Catacel's product would do in the market. "It was really a great day," he said.

NASA is also a major partner in the TechBelt Initiative, noted Barb Ewing, chief operating officer at the Youngstown Business Incubator. "They're actively engaged in trying to find ways to create relationships and help with technology transition -- their own technology, as well as support technology for companies in the region," she said.

The TechBelt Initiative -- a consortium of about 30 companies and agencies in a region that stretches from Cleveland to Pittsburgh -- presents a strong collaborative punch to attract new investment, Ewing said.

Large agencies such as NASA are therefore indispensable to smaller companies that can benefit from its expertise. "And bringing smart people together is one of the most invaluable resources we have," she said, "and one of the most invaluable assets we have."

Moreover, representatives from local businesses and manufacturers can take information they pick up from these panels and put it to use so it can benefit their companies, said U.S. Rep. Tim Ryan, D-13 Ohio.

"New technologies coming online are first and foremost about conservation," the congressman said. "How can you make these systems run more efficiently and reduce the amount of energy you use, and ultimately that goes right to the bottom line."

Events such as the Sustainable Energy Forum have a practical role to play in the management and nature of everyday business, Ryan continued.

"If you're looking to manufacture in the 21st century, it's got to be efficient, and it's got to be something that you can put together that's going to reduce costs of the product over the long run," Ryan said, citing initiatives such as America Makes: The National Additive Manufacturing Innovation Institute, headquartered downtown. The Department of Defense, for example, sees this as an investment that will one day help reduce both manufacturing and energy costs for its partners, he explained.

America Makes is a consortium of 90 companies, government agencies, nonprofit organizations and academic institutions dedicated to the research and development of 3-D printing, said Mike Hripko, deputy director of workforce education and outreach at America Makes.

Hripko and Brett Conner, assistant professor and director, YSU Industrial Systems and Engineering, explained the concept of 3-D printing to the audience and how it applies to some of the R&D underway at YSU and other institutions.

Conner said the university is working with other institutions in conjunction with America Makes to develop thermal management systems used in satellites.

James McGuffin-Cawley, chairman of the department of materials science at Case Western Reserve University in Cleveland, says his department has worked with additive manufacturing for 20 years, and lauds the idea of forming America Makes.

"It would be hard to overstate the impact of America Makes," he said.

Additive manufacturing uses a layering printing process to build a part from scratch instead of the traditional machining and subtractive methods. "It combines information technology, machine control and materials knowledge," McGuffin-Cawley said.

This process is used to save time and money through the production of new tooling and other manufactured components, he said, citing a relationship the university has secured with Lincoln Electric in Cleveland.

"This is particularly exciting because we'll have a domestic supplier of very highly regarded equipment and consumables added into the additive space," he said. "It's very, very exciting."

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