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## Manufacturing Day speakers focus on bridging the skills gap

Andrew Careaga Special to Phelps County Focus  
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Dr. Richard Billo, director of Missouri S&T's Kummer Institute Center for Advanced Manufacturing and the Missouri Protoplex, discusses the Protoplex's potential impact during S&T's Manufacturing Day Oct. 4.

Blaine Falkena/Missouri S&T

Dr. Richard Billo had been on the job at Missouri S&T for less than a year when he learned a memorable lesson about the challenges rural Missouri educators face when it comes to encouraging high school students to go to college.

The lesson came during the Missouri Governor's Conference on Economic Development in the fall of 2022. Billo, who joined Missouri S&T in January 2022 as director of the Kummer Institute Center for Advanced Manufacturing, was part of a panel discussion on workforce development. He and his fellow panelists heard from "six or seven" superintendents from rural communities who said many high school students from their districts had no interest in attending college, community college or trade schools, or joining the military.

By the time many kids were in high school, it was too late to convince them to further their education, the superintendents said.

"They said we should start with 9-year-olds instead, to show them what their options are," Billo said as he discussed this experience during Missouri S&T's Manufacturing Day event Friday, Oct. 4, on the S&T campus.

At that same 2022 conference, a state representative asked the panel why community colleges, colleges and universities weren't working together to get more students interested in education beyond high school.

Those exchanges inspired Billo. He began to contact colleges across the state to gauge interest in working together to improve manufacturing education. Some campuses were more receptive than others.

"I found community colleges one of the easiest groups to work with," Billo told the Manufacturing Day attendees.

Today, Billo and Missouri S&T are partnering with five community colleges in the state on various workforce development projects. One of those projects, funded by a \$9.1 million MoExcels Workforce Initiative grant, involves East Central College and St. Charles Community College to modernize Missouri's manufacturing industry and develop its workforce.

"Bridging the Missouri Manufacturing Critical Skills Gap" was the theme of this year's Manufacturing Day at Missouri S&T. About 70 educators, manufacturing leaders, community leaders and others attended the event, which was held in the Havener Center. The event was part of a national initiative to raise awareness of modern manufacturing careers and included presentations on workforce development programs for veterans, case studies from manufacturers, a panel discussion on overcoming the state's manufacturing workforce

shortage, a tour of S&T's Center for Aerospace Manufacturing Technologies and a student competition by high school juniors and seniors who were on campus to take part in Student Manufacturing Day.

Speakers included 124th District State Rep. Don Mayhew, R-Dixon; Chuck Gatschenberger, coordinator of the Missouri Department of Economic Development's Office of the Missouri Military Advocate; Jack Stack, president and chief executive officer (CEO), and Chad Myers, executive vice president, both of SRC Holdings Corp. of Springfield, Missouri; and Dr. Aaron Birt, co-founder and CEO of Solvus Global of Worcester, Massachusetts.

The day began with a welcome from Missouri S&T Chancellor Mo Deghani.

"What you see here was a dream four years ago," Deghani said, referring to the university's first Manufacturing Day event, which was held in 2020 at the height of the COVID-19 pandemic. Missouri Gov. Mike Parson and then-U.S. Sen. Roy Blunt both attended that event, during which Deghani and other university leaders laid out their vision for making S&T a hub for manufacturing research and development in the state.

That vision is unfolding now, thanks to partnerships with companies and community colleges, funding from private and public sources, and construction of the 116,000-square-foot Missouri Protoplex, a manufacturing research and development center at Missouri S&T that is scheduled to open in 2026.

"Our vision is to become a destination of choice for small to medium-sized companies who need R&D but don't have the bandwidth for their own research and development," Deghani said.

### Rebuilding Missouri's manufacturing base

The story of manufacturing's decline in the United States is nothing new. In his remarks, Mayhew noted that the offshoring of manufacturing jobs over the past few decades led to "80% of our manufacturing not being in the United States." In a prerecorded video message, SRC Holdings Corp. CEO Jack Stack told attendees that when he started the company in 1983, manufacturing made up 25% to 30% of the nation's gross domestic product, compared to 11% to 12% today.

The global shortages and supply chain disruptions experienced during the COVID-19 pandemic were a wake-up call, and many company leaders began to reconsider the wisdom of offshoring manufacturing. But some were raising concerns before then, said Dr. Doug Bristow, professor of mechanical and aerospace engineering at S&T and director of the Center for Aerospace Manufacturing Technologies.

“Ten years ago, we were just starting to get the idea that manufacturing is maybe important,” said Bristow, who moderated the panel discussion on workforce development. “Fifteen years ago, we were all told we were moving to an information economy. But now there are a lot of people working on the problem” of revitalizing U.S. manufacturing.

Billo said that Missouri’s manufacturers are operating at 73% capacity and are hungry for workers. This labor shortage is not confined to Missouri, he added, as nationally there are 55 available workers for every 100 jobs. But it’s worse in Missouri, where only 47 workers are available for every 100 jobs.

Compounding the problem is a significant skills gap, Billo said, as education and training have not kept pace with rapid advances in manufacturing technologies and methods.

Corporate leaders tell Billo that college graduates are not skilled in the emerging advanced manufacturing technologies needed to keep companies globally competitive. Furthermore, the companies that supply those large corporations are not adopting technologies such as additive manufacturing – essentially, 3D printing of metal or composite components – or friction stir welding, which involves stirring two pieces of steel together to make the material stronger.

This is where the Missouri Protoplex will help, Billo said. It will house equipment that specializes in advanced manufacturing techniques as well as space for training and education.

“The Protoplex is for you,” Billo told Manufacturing Day attendees. “The objective is to make your companies competitive.”

When it opens in 2026, the Protoplex will become a hub for what S&T officials call the Manufacture Missouri Ecosystem, or MME. The MME will bring companies large and small together to share ideas and technologies.

The MME is already coming together, with four community college partners – East Central College, Ozarks Technical College, St. Charles Community College and St. Louis Community College – as well as corporate launch partners including Boeing, Lockheed Martin, Raytheon and Sikorsky, small to medium-sized enterprises like SRC Holdings Corp. and Williams Patent Crusher and Pulverizer Co. Inc., and manufacturing trade associations like the Missouri Association of Manufacturers, America Makes and the Society of Manufacturing Engineers.

The MME effort has received federal support in the form of \$6 million for equipment from the U.S. Department of Labor and Department of Education and \$5 million from the Department of Defense’s Manufacturing Community Support Program.

“There is a sense of cooperation here ... that has allowed us to come together to solve a singular problem: workforce development,” Billo said.

‘Don’t ever forget the people side’

While acknowledging the need for the latest equipment to keep pace with global competitors, most Manufacturing Day speakers also addressed the importance of developing human capital. No amount of automation or artificial intelligence will replace the need for people who have the skills needed to operate the equipment and, just as importantly, bring their brain power to the table to solve future problems.

“It’s not so important what you’re manufacturing today. What is important is who will be doing the manufacturing tomorrow,” said Birt, the co-founder and CEO of Solvus Global.

“Ideas are cheap; we have lots of them. Execution is difficult. And people are the only thing that matters,” Birt said.

In his remarks, Stack, the SRC Holdings Corp. CEO, emphasized “the soft side of manufacturing.”

Companies need “creativity and forward thinking,” he said, and not just in the corporate offices. Instilling these characteristics in all employees will “lead to a clear sense of purpose, strong camaraderie ... and a sense of contributing to the well-being of communities,” he said.

The financial security of a good manufacturing job leads to emotional stability, Stack added, which in turn leads to more stable communities.

“There’s a sense of pride that goes into creating something that contributes to the well-being of a community,” he said.

“Don’t ever forget the people side,” Stack said. “Manufacturing does something to the person, it makes you feel proud that at the end of the day you’ve sent something to the marketplace that the marketplace really enjoys.”