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The 100-Year Effect

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The university’s leadership in educating engineers and nurturing innovation over the past century has aided local job creation for years and contributed to millions of dollars in economic impact around the state.

“It’s the spirit of innovation in this country that got us to be the economic leader globally,” said Tony Saliba, dean of the School of Engineering. “If we can nurture that spirit of innovation into our students and our graduates, that’s where the new jobs are going to come from.”

Since its founding in 1911, the school has graduated more than 16,000 engineers and issued 281 U.S. and foreign patents. But the school’s reach goes beyond the accomplishments of its graduates.

For more than two decades, UD engineers working in conjunction with the Air Force Research Laboratory (AFRL) at Wright-Patterson Air Force Base have been at the forefront of aerospace and energy research.

In 2009, five UD programs were named Ohio Centers of Excellence by the Ohio Board of Regents, two each in the areas of Advanced Energy and Transportation and Aerospace.

The university’s von Ohain Fuels and Combustion Center is ranked by NASA among the top three fuels and combustion programs among national universities and receives more than $1 million in funding annually from industry partners including GE Aviation and AFRL.

The department’s energy work is varied. UD fuel researchers developed low-temperature jet fuel for the Air Force to use in unmanned aerial vehicles that fly at high altitudes. In 2006, a UD developed 50/50 blend of synthetic jet fuel was successfully demonstrated by the Air Force, earning the research team the Federal Aviation Administration’s 2007 Excellence in Aviation Research Award. And UDRI scientists are leading synthetic fuel efforts at the Air Force’s one-of-a-kind Assured Aerospace Fuels Research Facility that opened in May. The facility is capable of converting biomass and other feedstock into jet fuel in large quantities.

“The Dayton area has always been known for aerospace. And having the aerospace hub as part of this community is going to help tremendously with job creation and job development ... but energy is, in my opinion, an area that we need to continue to develop, because that’s an area that will create jobs. Energy is the single most important challenge facing humanity,” Saliba said.

Dilip Ballal, director of the von Ohain Center, said UD energy research has received strong support from the Department of Defense, Department of Energy, the Federal Aviation Administration and NASA. He said the message from Washington is clear. “Our country cannot depend on imported sources of energy,” he said. “We need to produce our own fuels.”

Testing new products

Through its centers of excellence and partnerships with local industry the school has also given local companies access to top research facilities and personnel to help them develop and test new products and grow their business.

In the past five years, the UD-created Institute for the Development and Commercialization of Advanced Sensor Technology, or IDCAST, has created nearly 300 jobs through its incubation of five startups and attracted numerous businesses, mostly small, to Dayton. According to its website, the institute has had a state-wide economic impact of more than $140 million since its inception in 2007.
The institute helps companies commercialize sensor and camera technologies in partnership with UDRI and the AFRL.

IDCAST Director Larrell Walters said the institute is currently incubating nine companies, which usually involves providing space and resources for a small company to create and test prototypes.

“Building those first five (prototypes) is the hardest part,” Walters said. He said the institute’s facilities and equipment along with access to students and professors who can be extra hands in the lab can make a huge difference for a one- or two person startup.

“Even though they are a small company, they can do research and testing like they’re a $20 million company,” he said.

IDCAST, which has won $93 million in research dollars in addition to $28 million in initial state grants, has also helped established companies, like L-3 Cincinnati Electronics, win new contracts.

In 2007, L-3 Cincinnati Electronics, a division of L-3 Communications Corp., improved its infrared imaging technology used in both the military defense and commercial sectors to secure a $4.2 million purchase order from IDCAST. The company was then able to market that improved technology to the Department of Defense and win a multimillion-dollar government contract in 2009. The company completed a 15,000-square-foot expansion of its Mason facility this year with the potential to create 120 new jobs.

“They leveraged the intellect and university resources to create jobs,” Walters said.

Building future NCRs

In a region hit hard by manufacturing job losses, Saliba said he is confident that continued cooperation between the School of Engineering and local industry will lead to even more job growth.

“Manufacturing has to come back to this country, for this country to continue to be the global leader, and we are doing something about it,” Saliba said. “We can do it because we have the knowledge, the people, the expertise and the innovation in the areas of automation and control. We can use technology that nobody else has.”

The School of Engineering offers a concentration in automation and control, putting students into the lab to make manufacturing processes simpler, more efficient and more automated.

“I truly hope that when the history books are written and they talk about a darker time in the history of the Dayton community, when companies left town, when manufacturing was being sent overseas, that the University of Dayton played an important role in developing companies... collaborating with other partners in the community in helping create jobs,” Saliba said. “And that the University of Dayton played an important role in educating the complete engineer, that has the innovative spirit and entrepreneurial mind set... that they stayed in the Dayton area, they built the new companies, they built the future NCRs... and the community is thriving again.”

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