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In the Middle of it All

Erinn Barcomb-Peterson
Kansas State University

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Nine billion people to feed in 2050.
Diminishing water supplies.
A changing climate.

Meeting such grand challenges seems possible to those who have unmanned aircraft systems in their toolkit.

Leaders from the state’s research institutions — Kansas State University, Wichita State University and the University of Kansas — are capitalizing on this tool and are partnering with industry and government to help Kansas realize the economic potential of unmanned aerial systems.

And that potential is anything but insignificant: The Association for Unmanned Vehicle Systems International pegs it at nearly $3 billion for the state during the next decade.

Joel Anderson, director of development for research and sponsored programs at Kansas State University, is part of the Consortium for Kansas Unmanned Systems that unites academic institutions, companies, organizations and government entities.

“We’re trying to get past the geographical bias against Kansas and underscore the highly skilled, technical, innovative and resilient workforce found within our state,” he said.

Kansas has several things going for it. First of all, there’s collaboration among the three research universities and the expertise those institutions bring, from agriculture to engineering.

Secondly, Kansas State University has a Salina campus, at which one of the focuses is aviation. This is one of the first places in the U.S. to offer a Bachelor of Science in unmanned aircraft systems.

Add to that, Wichita is recognized worldwide as a well-established hub for aircraft manufacturing.

“Part of the challenge is to educate and inform the collective so they understand when they look to Kansas for unmanned aerial systems, they’re going to get the full spectrum — technology, consumer needs and operations,” Anderson said.

To broaden the understanding, the consortium organized a conference in October that drew participants from across the nation and from Hungary. The conference presented information on the uses and applications for unmanned aircraft systems.

Those uses span collecting data needed to monitor and assess agricultural crops and the environment; providing critical information necessary in making the food supply more efficient; and broader implications for environmental and energy needs, incident response and in measuring sea-level change of ice sheets in Greenland and Antarctica.

“In Kansas, we understand that the platforms are only a part of the equation to meet these global challenges,” Anderson said. “If we look at unmanned aerial systems from a holistic perspective, we can support this industry in Kansas in new and profound ways.”

By Erinn Barcomb-Peterson, Communications and Marketing
Flight team

*Kansas universities are partnering to make unmanned aircraft systems a success in the state.*

Kansas State University: College of Technology and Aviation, College of Engineering, Department of Agronomy in the College of Agriculture, Department of Geography in the College of Arts and Sciences, College of Veterinary Medicine and the Advanced Manufacturing Institute

Kansas State University Salina, as an outgrowth to its leading collegiate aviation department, established its unmanned aircraft systems program office in 2008. The program uses a hands-on approach for learning and attaining the skills needed to safely operate and manage unmanned systems. The Salina campus’s proximity to accessible restricted airspace creates an ideal setting for operational training and testing of unmanned systems.

University of Kansas: Department of Aerospace Engineering and the Center for Remote Sensing of Ice Sheets

The University of Kansas aerospace engineering department has developed the 1,100-pound, 26-foot wingspan Meridian UAV as the center’s semiautonomous ice-sounding flight vehicle. With a range of approximately 1,000 miles and an endurance of as long as 12 hours, the UAV is designed to augment crewed flights in the unforgiving polar regions in an effort to form a digital elevation map of the bedrock beneath Antarctica and Greenland.

Wichita State University: National Institute for Aviation Research and College of Engineering

These entities offer significant research and testing capabilities for a wide range of unmanned systems-related subjects, including aerodynamic characteristics, material selection, susceptibility to environmental factors, human factors, network security, computational analysis and advanced coatings. Wichita State has a strong history of supporting aviation research, including unmanned systems, and currently ranks third in the nation for aeronautical research and development expenditures according to the National Science Foundation.

Validating industry standards for the FAA

The Federal Aviation Administration is turning to Kansas State University Salina to test certification standards for small unmanned aircraft systems.

“Determining the airworthiness of small UAS is a critical steppingstone to commercial flight operations of unmanned aircraft systems,” said Mark Blanks, unmanned aircraft systems program manager at the Salina campus.

The university will validate industry standards for unmanned aircraft systems weighing 55 pounds or less using its own unmanned aircraft systems and working closely with the National Institute for Aviation Research at Wichita State University. Kansas State University Salina will use the standards to apply for airworthiness certification.

“This could well be the first small unmanned aircraft system to obtain an FAA airworthiness certificate for routine operations in our national airspace system here in the lower 48,” said Kurt Barnhart, professor and head of the aviation department and executive director of the university’s Applied Aviation Research Center.