

10-12-2011

Quick Fix

Follow this and additional works at: https://ecommons.udayton.edu/news_rls

Recommended Citation

"Quick Fix" (2011). *News Releases*. 816.
https://ecommons.udayton.edu/news_rls/816

This News Article is brought to you for free and open access by the Marketing and Communications at eCommons. It has been accepted for inclusion in News Releases by an authorized administrator of eCommons. For more information, please contact frice1@udayton.edu, mschlange1@udayton.edu.

University of Dayton, Ohio (url: <http://www.udayton.edu/index.php>)



Quick Fix

10.12.2011 | Research, Engineering

The University of Dayton Research Institute has received a \$23 million-ceiling Air Force contract to perform a comprehensive program of research and development in nonmetallic materials for maintenance, repair and manufacture of Air Force air, space and ground vehicles. The seven-year contract supports the Air Force Research Laboratory's Systems Support Division and allows University of Dayton researchers on campus and at Wright-Patterson Air Force Base to continue a wide variety of activities in adhesives, sealants, elastomers (materials that behave like rubber), textiles, composites and other materials, work they've performed for the Air Force for more than 30 years through a series of contracts.

"The Air Force makes it a priority to be aware of new technologies and materials that have the potential to improve systems performance and capability while reducing risk, cost and environmental impact," said Roger Rondeau, leader of the Research Institute's sealants, elastomers and adhesives group, who will serve as principal investigator for the work. "We work closely with AFRL engineers to identify, evaluate and even develop new materials and application processes for current and future aircraft. We also provide assistance in transitioning those new technologies into practical use."

Nonmetallic materials such as sealants and elastomers are used throughout aircraft and other vehicles as fluid barriers, gap fillers, vibration suppression and other applications that require a nonstructural material.

In addition to evaluating existing materials and processes to find the best technology for each application, researchers are often asked to evaluate new or emerging materials being considered for use in the manufacture of future aircraft.

"New materials being developed for the commercial market may also work well for Air Force applications, but first we need to determine whether they will meet Air Force specifications," Rondeau said.

The contract also covers work in adhesives, composites and other nonmetallic materials and processes for repair of modern and aging aircraft.

"A lot of aircraft still flying are known as 'legacy' aircraft because of their age," he said. "They were built with aluminum which, over the years, has a propensity to crack. Newer aircraft are made in part with composite materials, which can sustain damage from foreign objects, moisture absorption and excessive heat. We develop patches and bonding techniques for a variety of damage and material types. We also ensure those repairs will hold up under the extreme conditions and environments that Air Force aircraft are exposed to."

Rondeau said patches and repair procedures are developed in laboratories on base, then subjected to a battery of tests to ensure they meet all performance requirements.

"Once we're confident those repairs will work the way they're supposed to, we document the step-by-step procedures for Air Force maintenance personnel. We often demonstrate those techniques as well by actually repairing damaged aircraft." Rondeau said.

Although there are cases where repairs are required on individual aircraft, UDRI is most often called to address systematic problems that are occurring fleetwide, according to Rondeau.

The new contract allows researchers to also continue testing the compatibility of various metallic and nonmetallic materials with aircraft fluids.

"With the continuing development of new biofuels, synthetic fuel blends, additives, oils and coolants, we have to determine what effect those fluids will have on different types of materials that come in contact with them, especially for an extended period of time," Rondeau said.

For media interviews, please contact Pamela Gregg at 937-229-3268 or pamela.gregg@udri.udayton.edu.

For media interviews, please contact Pamela Gregg at 937-229-3268 or pamela.gregg@udri.udayton.edu.