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In the News...

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How a Spinoff Can Make Jet Planes Safer

By Andrew Webb

Of the Journal

TECH BYTES: Albuquerque engineering company Mechtronic Solutions Inc. has officially spun off a new company to reduce manufacturing waste and extend the lives of expensive, precise aircraft parts.

Vibrant Corp. already has early agreements and pilot projects with engine builders Williams International and Rolls-Royce and with Delta Airlines to safely and quickly test parts such as turbine blades that are stressed to the point of failure or were made incorrectly in the first place.

Lem Hunter, CEO of the new company, says Vibrant plans to eventually do not only undestructive testing in-house, but to install hardware and software systems at parts manufacturers and airline maintenance shops.

"We're looking at increasing yields in manufacturing processes, decreasing the number of defects that slip through, and life management of engine components," he said.

Parent company Mechtronics Solutions Inc. does engineering and light electronics manufacturing for corporate and government clients. Last year, the 15-year-old business licensed technology developed by Albuquerque-based Quasar International that causes a component to vibrate, then measures the resulting resonance—the vibrational feedback returned by an object, such as a plucked guitar string.

The results are shown as waves on a computer screen, and parts that are correctly made will all have the same "ring." Parts that are beginning to show the effects of fatigue will make different wave patterns, and parts that are cracked will often show dead spots where resonance stops altogether.

The images and measurements are then compared to known measurements for a new, perfect part, thereby indicating internal cracks or loss of structural integrity without actually destroying the part.

Quasar's family of undestructive test systems are used by auto parts manufacturers around the world to test engine blocks and suspension components for flaws.

Vibrant, which is financially backed by MSI and several private "angel" investors who put \$750,000 into the project, will use the technology to test new parts like turbine blades, which are literally "grown" from crystals of metal and can cost thousands of dollars apiece.

"One of our customers, 67 percent of what they're making, they're throwing out," Hunter says of the unreliability of present testing methods and visual appraisals of parts.

It will also use the technology to lengthen, if possible, the life of high-stress parts already in use. The technology will allow airlines to track parts and know earlier when one is about to fail. "We have customers who are interested in earlier and earlier signs," Hunter said.

Most aircraft have required service intervals at which "hot" engine components and support components such as wheels, landing gear and frame, must be removed and tested for signs of fatigue.

That testing often involves penetrating dyes, X-rays, ultrasound and techniques that require they be stripped of paint or coatings. For instance, the sandwiched wheels of 737 jets must be checked once a year for evidence of cracks.

Vibrant is not the first Quasar-related spinout company. Quasar's computer algorithms were adapted to seek patterns in genomic markers and licensed to Albuquerque-based Exagen, which was founded in 2002 to develop tests that predict the development of diseases like breast cancer and hepatitis C in different patients, allowing doctors to customize treatments.

Vibrant employs three and could employ 15 by year's end, Hunter said.

