Sporian snags AF contract for high-temp sensor

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The Air Force has awarded MEMS sensor maker Sporian Microsystems a contract to conduct research using the firm's "polymer derived ceramic as a non-planar, conformal, thin film, high temperature sensor." The AF wants a sensor system that can monitor the temperature and strain in aircraft turbines. Temperatures in these critical materials often are well in excess of 1200°C and undergo tremendous pressures, vibrations and other strains. Quality sensors can improve turbine performance and maintenance, but the trick is coming up with something that can withstand corrosive gases and oxidation.

Sporian says its PDC materials work well in these harsh environments and "can be tuned by modifying the polymer precursor. Because the ceramic starts out in polymer form, there is also significant opportunity to shape the components using micromolding, photolithography, or thin film deposition techniques. The resulting components can be produced very cost effectively."

The classic measurements conundrum of how does one measure without interfering in the process itself is a major consideration with turbine testing, but Sporian says they have the solution.

"Our goal is to develop sensors for blades and vanes for various compressor stages of turbines. The size and shape of the sensor needs to be such that it doesn't interfere with the air flow. Such a capability could initially help improve the design of new turbines and eventually be used to improve the availability and performance of these systems," said Sporian's Yiping Liu.

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