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Lambda Technologies' Paper Wins 2007 Best Application Paper Award from American Society of Mechanical Engineers

Cincinnati, Ohio – August 8, 2008 – The paper entitled “Mitigation of Fretting Fatigue Damage in Blade and Disk Pressure Faces with Low Plasticity Burnishing,” written by Paul S. Prév y and Narayanan Jayaraman of Lambda Technologies along with Ravi A. Ravindranath of NAVAIR and Dr. Michael Shepard of the Air Force Research Laboratory has received the 2007 Best Application Paper Award from The International Gas Turbine Institute of The American Society of Mechanical Engineers.

Low Plasticity Burnishing (LPB) has previously been shown to produce through-thickness compressive residual stresses in the edges of gas turbine engine blades and vanes to mitigate foreign object damage (FOD.) In the current paper LPB tooling technology recently developed to allow the processing of the pressure faces of fan and compressor blade dovetails and mating disk slots is described. Fretting induced micro-cracks that form at the pressure face edge of bedding on both the blade dovetail and the dovetail disk slots in Ti-6Al-4V compressor components can now be arrested by the introduction of deep stable compression in conventional CNC machine tools during manufacture or overhaul. The compressive residual stress field design method developed at Lambda Technologies is described in its application to mitigate fretting damage. The logistical, cost and process control advantages over laser shock processing (LSP) are described.

LPB is a proven surface treatment that develops a deep layer of high magnitude compressive residual stress (RS) to mitigate fretting fatigue, corrosion fatigue, or fatigue from foreign object damage in the fatigue prone areas of expensive and critical aircraft components such as landing gear, propeller hubs, and turbine engine blades.

Application of LPB delivers significant fatigue life extension with minimal initial capital investment and low, “on-site” production costs. A turn-key system consisting of the hydraulic control system, tooling, and proven computer numerical control (CNC) code files is delivered to the client for integration into their manufacturing operations. LPB is the only surface enhancement process providing closed loop process control exceeding 6-sigma. The entire LPB process provides unique, real-time quality control monitoring that is recorded and uploaded to a secure web server for Statistical Process Control (SPC) analysis.

To discover how implementing LPB into your process will improve component performance, visit www.lambdatechs.com and navigate to the “Surface Enhancement Methods” web page.

Lambda Technologies is an innovative company incorporating a premier materials research laboratory with a world-class engineering and production enterprise dedicated to the development and optimization of surface treatments to improve component performance. For additional information on Lambda Technologies or licensing the LPB process, contact Kimberly Bellamy at (513) 561-0883 or visit www.lambdatechs.com.

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