ANNOUNCEMENT AND INVITATION

We are pleased to inform you that Southern Methodist University Research Center for Advanced Manufacturing ("RCAM") has placed an order for the newest electron beam-based rapid manufacturing/prototyping machine, A2, manufactured by ARCAM AB, Gothenburg, Sweden ("ARCAM"). The machine will be installed in RCAM's facility by the end of October 2007. This will be the second A2 installed in the country. The first one was installed at the North Carolina State University a few months ago.

The operating principle of ARCAM's Electron Beam Melting process ("EBM") is similar to the operating principle of the Selective Laser Sintering or Stereo-lithography process. A thin layer of powder is spread across the powder bed to be sintered by a focused electron beam. The layer's sintering process is done in two steps. First, the top layer of powder is preheated with an electron beam of lower power. Second, the layer of powder is melted with an electron beam of maximum power. Then, a new layer of powder is spread over the just sintered layer in order to continue the building of the 3D structure. Preheating the layer of powder during the structure's fabrication decreases the effect of residual stresses development in the structure. Currently, the electron beam of 3.5 kW in power is used as a heat source. The entire process is performed in a vacuum chamber (www.arcam.com).

In May 2007, ARCAM launched a new machine, A2, which has two interchangeable working chambers. The build envelop of the higher chamber is 7.87 x 7.87 x 13.78 in. The wider chamber is in the form of a cylinder with a diameter of 11.81 in. and height of 7.87 in. This new machine has a number of improvements with respect to the older version, such as: 75% larger built components, better heat model, better beam quality control and new software. The positioning accuracy of the electron beam has been improved from +/- 0.050 mm to +/-0.025 mm. These improvements will provide new opportunities in building a family of parts made of different materials. The fully dense parts have been made of Ti6Al4V, commercially pure titanium, supper Ni-alloys, aluminum, tool steel, low alloy steels, Cobalt-chromium alloy, magnesium, and of combinations of metals and ceramics that are of interest to a large number of industries (www.arcam.com).

With respect to Laser-beam Direct Metal Deposition, EBM has many advantages such as: higher energy efficiency; applicability on any electrically conductive materials, including highly reflective ones; and higher quality buildups because the process is preformed in a vacuum. EBM can build solid, porous or hybrid structures that have applications in different industries such as aircraft, automotive, marine equipment and aerospace. One of the most promising applications is in building bio-implants such as custom designed orthopedic implants and scaffolds.

RCAM and the Center for Laser-aided Manufacturing (CLAM) are also equipped with a number of high power lasers, such as: a IPG fiber laser of 4 kW in power, a Lumonix Nd:YAG laser of 1 kW in power, a NUVONYX fiber coupled laser of 1 kW in power, and a NUVONYX direct diode laser of 2 kW in power, used for rapid

manufacturing/repair, cladding, alloying, heat treatment, welding, brazing, and paint stripping. RCAM and CLAM are equipped with a four-axis CNC controlled positioning station integrated with a Spectra Physics HIPPO Q-switched Nd:YVO4 diode pumped laser system. The laser system has four modules with the wavelengths of 1064 nm, 532 nm, 355 nm, and 266 nm that could be used for micro-machining of different type of materials (plastics, ceramics, metals). By the end of 2007, RCAM and CLAM in cooperation with Synova S.A. from Switzerland will introduce a Laser-Microjet technology for cutting and dicing Si-wafers and gallium arsenide-wafers, as well as for micro-machining of ceramics, solar cells, and stencils. The Laser-Macrojet technology, patented by Synova in 1997, is based on a principle of guiding pulsing laser beam by waterjet.

More information on RCAM and CLAM is available at www.engr.smu.edu/rcam and www.engr.smu.edu/clam.

Please consider using RCAM's and CLAM's facilities and expertise in your future R&D work related to advanced manufacturing and materials.

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