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USF Vacu-Blast International

Universal Shot Peening Machine Developed by USF VACU-Blast for Aeroengine Components

United Kingdom. USF Vacu-Blast International, part of the USF Surface Preparation Group, has developed a self-contained, "universal" shot peening machine, capable of processing an extensive range of fan blades, discs and shafts from most aeroengines in current service in both the civil and defence aviation sectors. The machine improves the fatigue resistance of these critical parts, in line with aeroengine manufacturers' specifications, and can be used for both production and repair/overhaul applications.

The new peener incorporates a sophisticated process control system and has been designed primarily to process defined areas of aeroengine turbine blade "roots" and their associated turbine disc blade slots, which are subject to both wear and fretting fatigue during service. The machine can accept blades of up to 1000mm long and 250mm wide and discs of up to 1100mm diameter and 350mm wide, and can also be used topeen other parts measuring up to 1100mm in diameter by 600mm wide.

The processing enclosure measures 2500mm x 2000mm x 1850mm high, and features a two-axis manipulator with an array of up to six peening nozzles. Three or four axes nozzle manipulation can be incorporated if required. The nozzles are universally adjustable and can be strategically positioned to provide total

coverage of parts of differing sizes and shapes. The parts are located in custom-designed work fixtures on a powered precision indexing turntable, itself fitted to a roll-in/roll-out rack-and-pinion driven work carriage, which is loaded outside the enclosure by electric hoist. A special feature of the machine is a "slot tool" designed to ensure the efficient peening of disc blade slots of up to 280mm length. This operates independently of the main peening nozzles.

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The "universal" shot peening machine developed by USF Vacu-Blast International for aeroengine components. The special "slot tool" can be clearly seen through the access door.

