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DEMA SpA. reduces sheet metal forming costs with new fluid cell press

The DEMA Group is a rapidly growing designer and manufacturer of aerospace components, serving as a Finmeccanica sub-supplier to Airbus, Boeing and other major OEMs. Founded in 1993 as a small enterprise, DEMA today has a payroll of more than 600 employees, with headquarters in Naples, Italy and several modern facilities in the Campano/Pugliese aeronautical industrial district, Emilia Romagna and Lombardia. The company also has operations in Canada and Tunisia.

Growth in demand has created a need for expanded capacity in the group's sheet metal forming operations, which had been using a low-pressure rubber pad press for the bulk of its production. DEMA management evaluated the potential efficiency improvements of both a newer rubber pad press and a Flexform™ fluid cell press from Avure Technologies prior to making a purchasing decision. Test runs were conducted on seven different sheet metal parts, measuring and recording parameters including production speed, manual part reworking time, part quality off the press, processing flexibility, and equipment and maintenance costs.

The results clearly favored the Flexform press. Total production and reworking

time for the seven test samples was 26 percent that of the existing rubber pad press and 50 percent of the newer rubber pad press. The 800 bar operating pressure of the fluid cell press, substantially higher than the other presses evaluated, produced more accurate forming to close tolerances and resulted in a significant reduction of spring back. Hours required for manual rework and calibration were reduced by 76 percent.

The press selected by DEMA was the Flexform QFC 1x2-800, a new mid-size model introduced by Avure in 2007 to better fit the capacity and part size requirements of Tier 1 suppliers such as DEMA Group. It's 1 x 2 meter forming tray can produce multiple parts in a single two-to three-minute cycle, and is well suited to the lower volumes and frequent tool changes commonly encountered in the aerospace industry. Pressure is applied by a flexible diaphragm which has been redesigned to cost a fraction of older styles and can be repaired or replaced in a matter of hours.

The press was installed in late 2008 at DEMA's Somma Vesuviana (NA) facility and is now in full operation.

"With the new Flexform press, we can now form larger and more complex parts than with the rubber pad press", said Agostino Marino, General Manager of DEMA SpA. "This has significantly expanded the capabilities we can offer our customers, and at the same time has lowered our production and maintenance costs. We were quite pleased with the excellent support provided by the Avure project management team throughout the build and install process".

Flexform presses employ a relatively simple operating principle. Unlike mechanical and hydraulic presses which use upper and lower forming dies, (often in three pieces), Flexforming uses a single, rigid, shape-defining tool half (also known as a hydroblock or die). A sheet metal blank is placed over this tool and is pressed into shape by a flexible rubber diaphragm under uniform hydrostatic pressures as high as 80 MPa (11,600 psi), an equivalent pressing force of up to 215 MN. Multiple tools and blanks are placed freely in large forming trays at each end of the press which shuttle in and out of the central frame containing the pressurized diaphragm. Multiple part sizes, shapes and gauges can be formed in a single one- to three-minute cycle.

About Avure Technologies, Inc.: Avure Technologies specializes in the design, manufacturing, installation, and global support of high pressure presses for densification of advanced materials and critical industrial parts, forming of sheet metal components, and high pressure pasteurization to keep food pathogen-free and fresh longer. With over 50 years of experience, the company has installed and serviced more than 1,700 systems in 43 countries. For more information, visit www.avure.com, or contact Glenn Hewson, Vice President of Global Marketing, at glenn.hewson@avure.com.