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AERONAUTICAL ENGINEERING

NEW FLEXIBLE BED REPLACES FIXED TOOLS

PAUL PROCTOR/SEATTLE

A next-generation CNA Manufacturing Systems' modular pogo fixture in this combined artist's rendition/photo holds a typical aircraft skin panel in preparation for routing work.

The passive, computer-controlled fixture bed uses between a dozen and several hundred variable-height pogo shafts to rigidly hold curved and shaped panels. The beds can provide support for a variety of manufacturing operations, including milling, etching, drilling, riveting and laser and waterjet cutting, according to Joseph Perez, CNA Flexible Tooling Division marketing department.

Swivel heads on each pogo use air pressure to ease part maneuverability or vacuum to hold skins, panel or bulkheads in position. Pogos can withstand up to 1,000-lb. vertical weight with zero compression deflection and 60-lb. side forces. They have a standard stroke height of up to 3 ft.

Pogos are precisely positioned by the milling head or robotic gantry prior to the start of a new manufacturing operation. They are then automatically locked into place by an internal clamping mechanism. The pogo heads angle up to 45 deg. in each direction to accommodate part contours.

The company already has demonstrated a 16-pogo passive minisystem at its Redmond, Wash., manufacturing division headquarters. CNA already has received an initial order from a major U.S. aerospace manufacturer, and proposals have been requested by Bell, McDonnell Douglas and Vought.

The CNA pogo system easily can be used to support different shaped parts in

a mixed production run, requiring only selection of part-specific software from a master menu and automatic pogo repositioning, Perez said.

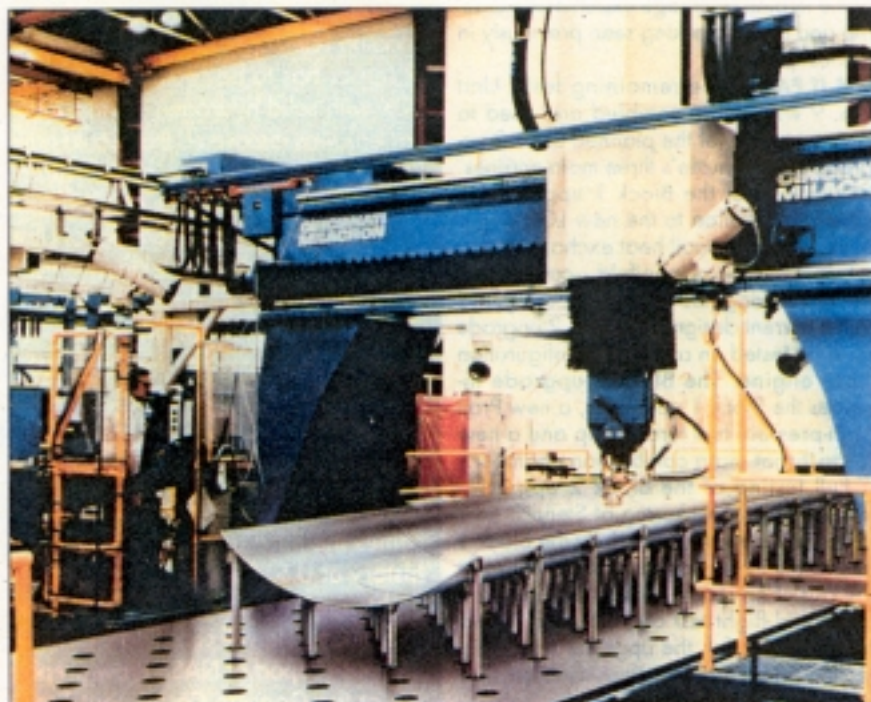
Pogo repositioning requires about 12 min. for a 100-ft-long passive bed. CATIA-based computer-aided design data can

be downloaded for quick and precise first-time part set-up.

Plug-and-play individual pogo units are positioned only where needed on the fixture bed and can be as close as 4-in. center-to-center.

By replacing multiple fixed tools, the pogo systems save extensive shop floor and warehouse space. Boeing uses three first-generation, active CNA pogo systems to help build composite parts for the new 777 transport. They cost a total of about \$4 million where equivalent conventional dedicated tooling would have cost \$12 million.

CNA's new passive pogo system is substantially less expensive, Perez said. ■



F-16XL TO TEST SLFC WING DESIGN

Northrop Grumman Corp. is studying an advanced wing design to support the proposed new Super F-16XL program. The wing design is a modification of the F-16XL wing, which is currently being tested in flight. The new design is a blended wing body (BWB) configuration, which is a more aerodynamically efficient design than the current F-16XL wing. The new design is being tested in wind tunnel and in flight. The new design is expected to be used on the Super F-16XL program.

