

# Our friend **EMMA**

New sanding tool helps painters, boosts morale

By KATHLEEN SPICER

The Boeing 737 Rudder Paint shop in Renton, Wash., is using a new sanding device that reduces the vibrations painters experience while sanding rudder skins prior to painting.

The new tool, called EMMA for Easily Manipulated Mechanical Arm, was used during a trial period last year and was fully implemented in November 2004.

The rudder skins arrive with a topcoat, and before being painted, the surface must be reactivated by sanding with a hand-held, air-powered sander so that the paint adheres to it. Sanding also eliminates any material defects or imperfections to ensure a quality product for customers.

Hand-held sanders subject painters to hand-arm vibration, high-grip forces and many awkward postures. These are risk factors that may cause soft tissue injuries that are both painful and costly.

But the new tool uses a mechanical arm controlled by two joysticks that painters manipulate at a distance from the sander,

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said Tom Lobb, project manager in Material and Process Technology (M&PT), who oversaw the engineering evaluation and testing and installation of the device into the Rudder Paint shop. "The device is dramatically more ergonomic and user-friendly than manual sanding," he said.

Dave Schaffer, paint lead, said that since he's been using EMMA to sand rudder skins the work has been "pain free," and production, as well as morale, has "gone through the roof."



Dave Schaffer, paint lead in the 737 Rudder Paint shop in Renton, Wash., controls a new tool to sand rudders using a remote joystick. The new tool reduces worker exposure to soft-tissue injuries caused by vibrations during manual sanding operations.

"EMMA has become my best friend in the shop," Schaffer said. "It saves so much time and allows painters to concentrate on the quality of work."

Schaffer's home life has improved as well. "It's a great feeling to come home and play with my kids without hurting or soreness in my shoulder from working, and I can even play golf again," he said.

Kenny Downs, M&PT factory support, said that during the trial phase the tool helped this step in the painting process to be more efficient. During testing, EMMA was able to maintain a sanding rate over continuous surfaces of 300 square feet (27 square meters) per hour on the topcoat. This compares with an estimated average rate of 42 square feet (3.8 square meters) per hour with manual sanding.

"Using our old method, painters could only work for a couple of hours before they'd have to rest because of tingling and numbness in their shoulders, arms and

wrists," Downs said. "It's really made a difference in terms of employee morale."

John Wentz of Temple Allen Industries, and general manager and inventor of EMMA, said the real champions in the shop are the painters, as opposed to the tool.

"The brains and skill behind the mechanism is the painters as they maintain 100 percent control of the process and quality of work," Wentz said. "EMMA is not a robot. It's an extension of the painters themselves using a better tool."

Lobb said that EMMA has potential for reducing worker exposure to vibrations in scores of shops throughout Boeing that require the sanding of detailed parts.

The Composite Manufacturing Center in Frederickson, Wash., is implementing an EMMA this month to prepare the surface of 777 bare composite components. Other Boeing shops are evaluating the tool. ■

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