Bethany McLean on the Shocking Fall of Fannie Mae

The 100 Best Companies to Work For

No. 1 WEGMANS
PLUS
Starbucks, Microsoft, Cisco, Genentech, and more

JANUARY 24, 2005 $4.99

www.fortune.com (Vol. Raymond Fortune)

Scott Adams
The robot paint stripper's spinning nozzle shoots water at pressures as high as 50,000 pounds per square inch.

**WET WORK**

The traditional way to remove old paint from a ship's hull involves erecting a scaffold from which a bunch of guys blast garnet grit propelled by compressed air. It's a filthy, dangerous task. Workers risk falling off the scaffolding, and the process spews toxic dust downward.

Seeking a cleaner way to get the job done, Ultrastrip Systems in Stuart, Fla., developed a high-pressure waterjet nozzle equipped with a vacuum hose that carried away the paint dust and water for filtering and disposal. But the system was a tough sell because it worked only half as fast as grit blasting.

To reduce the labor involved, Ultrastrip decided to automate the process by building a self-propelled stripping head. Robotics at Carnegie Mellon helped the company develop the M3500 striping robot, which moves on steerable rubber wheels and features powerful permanent magnets that cling to the ship's hull.

Efforts to equip the robot with a vision system to make it autonomous proved overly complicated in practice, so the device is run by a joystick-wielding worker. The spinning waterjet nozzle shoots water at pressures as high as 50,000 pounds per square inch. (A pair of cables secure the robot as a safety backup while it's working on a ship.) The nozzle can be raised or lowered to navigate past welds and other obstacles. Water hits the hull hard enough to warm its surface, which dries quickly after the robot passes by.

"Each robot replaces about ten men, and the quality of the stripped surface is actually superior to what you get with grit blasting," claims Ultrastrip CEO Stephen Johnson.

Ultrastrip has sold seven of the $900,000 systems, Johnson says. Ultrastrip robots keep Carnival Cruise Lines ships looking spiffy. And another robot stripper was used to work on the guided-missile destroyer USS Cole after it was damaged in a terrorist attack in Aden, Yemen, in 2000.