New Abrasive Belt Helps Plating Shop Increase Bumper Production

Eager to boost productivity, an aftermarket supplier of automobile bumpers created an employee incentive program and switched to a revolutionary new abrasive belt. The combination resulted in a production increase from 600 units a day to a "bumper crop" of 830 per day. The increase was accomplished with three fewer people.

"That was always our stumbling block," said Rich Monson, plant manager of North Star Plating in Brainerd, MN, a division of Keystone Automotive. Referring to the shop's limitations at the time, Monson said: "We could always use more bumpers, especially in the busy season. If a car's in an accident, you have one chance to sell. If you miss the sale, they buy from somebody else and there's no making it up. Established in 1968, North Star Plating employs 150 people at its 90,000 ft² plant. The company distributes steel bumpers directly to body shops. It also supplies bumpers for antique automobiles and recycles plastic bumpers.

Providing Incentives

By setting up polishing teams and tying pay to productivity, North Star inspired its people to reach for new heights in production. At the same time, the company began testing a new proprietary abrasive belt.* North Star found that the new belts enabled employees to become more efficient by using fewer production steps.

Previously, the shop used a 220-grit dry abrasive, followed by a 320-grit abrasive with grease. The company has now pared it down to a single step with one grade-A30 belt. The shop has been using a sequence of 180, 220



Gabe Churchill, a finisher at North Star Plating, says he noticed a big difference in finish consistency when the company switched to new proprietary abrasive belts. A-grade A30 belt is used to finish the top and sides of a bumper.

and 320 grit belts on bumpers that needed to be metal-worked to remove 60-grit grinding lines. North Star eliminated a step by using an A80 belt, followed by an A30 belt, made from the new patented process.

Increased Efficiency Offset Added Costs

From management's standpoint, the increased efficiency meant the shop could offset the additional cost of using the latest high-technology abrasives through productivity gains and labor savings. However, it was the operators themselves, with their new financial stake in the process, who pushed hard to switch over to the new abrasive belts.

"The polishers really like using the belts," Monson said. "First of all, they can get more work out and increase their earnings. Second, by eliminating steps, they only have to lift the bumper about half as much. Also, the consistency of the belt results in a much better finish."

New Technology For Producing Abrasives

The consistency comes from some unique features of the new belts. 3M Company employs a technology called microreplication-the science of creating small, precisely shaped, three-dimensional structures and then reproducing them on a surface. The proprietary products feature pyramid structures that are distributed evenly over the entire abrasive surface to ensure consistent performance and to eliminate belt-to-belt variation. The belts also contain multiple layers of abrasive mineral. As these pyramidlike structures wear, fresh, sharp material is exposed.

According to Monson, the belt's consistency helps operators of all skill levels to produce the finish North Star Plating needs. "With our old belts, you had to lighten the pressure when the belts were brand new and then press harder as they wore out," he said. "It took a lot of touch on the part of the operators to get that consistent finish. Now it doesn't depend on the operators as much. Someone who isn't as experienced can get a good finish with these abrasives. It's a little more forgiving. So if they have new guys on their team, it's easier for them to get in the swing of things and start producing efficiently right away."

Quality & Production Increased

An extra bonus for North Star Plating was its ability to increase quality along with productivity. Walking through the plant, Monson pointed to a stack of special show-chrome, copper-plated bumpers and said, "For all the extra copper plating and hand buffing and everything else, you get a gorgeous finish on a bumper. But it isn't that much nicer than what we get by using abrasive belts alone. It comes real close without all the extra labor."

The consistency and finish also allowed the company to cut down on rejects. In the past, the variables involved in polishing had caused rejects. If there was too much grease on a belt, it wouldn't cut as well. If there was too little grease, it might leave deeper lines.

Likewise, a brand new belt might bring a lined finish, while trying to stretch too much from an old belt would limit its cutting performance. The problems were compounded because defects weren't visible until after bumpers went through the entire plating line. Then it was too late and they had to be redone. "Rejects are

expensive," Monson pointed

out. "When you're plating 24 hours a day, you lose two bumpers for every



North Star employee Dudley Nord uses an A30 grade abrasive belt to finish the ends of a bumper.



reject—the one you did wrong plus the one you could have completed in its place while you're redoing it. We figure rejects cost us between \$40 and \$50 a bumper. And that might even be on the low side."

Going from 600 bumpers a day to 830 has had a profound effect on North Star Plating. Because the company could only plate what they polished, the polishing operation was once the bottleneck in their operation. Now they're keeping the plating line busy 24 hours a day, and occasionally overproducing in the polishing department.

"We increased our production with three less people," Monson said. "Some of that was because of the incentive system and some of it was because of the new belts. But I'd say we got at least a 20-to-25 percent increase just because of the belts." The increased productivity is allowing North Star to ship about two semi trucks per day, and four on Friday, from the Brainerd plant to customers across the U.S. and into Canada.

Officials and staff at North Star Plating are very pleased with the increase in production achieved by using a team incentive program and a better polishing technique. P&SF

^{*3} M^{TM} TrizactTM, 3M Abrasive Systems Division, St. Paul MN