

## CASE STUDY

### PRODUCT - FLEX-HONE® TOOL

### APPLICATION - LAWN TRIMMER MANUFACTURER

#### Deburring Tool Cuts Costs For Lawn Trimmer Manufacturer

Counter rotating brushes save time and boost quality

A semi-automated surface deburring system, has increased production threefold over manual methods in the finishing of cylinder walls for 31cc (1.9cu. in.) two-cycle engines used to power grass and weed trimmers. The new system also has increased the accuracy and consistency of the deburring process.

Manufactured by Riobi Powered Products, Inc. (Chandler, AZ), the lawn trimmers are sold under numerous brand names to the consumer market. The trimmer's assembly is die cast by an outside vendor to the company's specifications of 380 aluminum alloy.

According to Rich Reimer, value engineer at the company, Riobi Powered Products is extremely cost and quality conscious. This philosophy led the company to install an innovative deburring system known as Flex-Hone®. The tool, manufactured by Brush Research Manufacturing Co., Inc. (Los Angeles, CA), is a resilient-based hone with abrasive laminated to the ends of high-density nylon filaments. Riobi Powered Products has set up two separate deburring stations each incorporating two flexhone units. At each station the hones are connected to gear motors and held by chucks. The motors rotate one hone in a clockwise direction, the other in a counterclockwise direction. The hones are 1.5-in. in diameter, 2-in. long and 240 grit silicon carbide.

The new cylinder deburring at Riobi Powered Products works as follows: the company receives its cylinders from its suppliers and inspects them prior to finishing. The cylinder's mount flange is machined to a smooth surface for the gasket.

The cylinder is then bored and air gauged to make certain it is within specification. At that point it is ready for deburring.

An operator at the First Flex-Hone station takes one cylinder in each hand and hones them on the counter rotating brushes. He then switches the cylinders in his hands and repeats the process. The cylinders are next

chromed, inspected and Flex-Honed, at the second deburring station, where an operation similar to that of the first station takes place. The only difference is in the filaments of the hones. At the first station they are .032 diameter nylon. At the second station they are .036 diameter nylon, which is stiffer for the deburring of the chromed cylinders. The cylinders then go to a rigid honing operation and on to assembly.



During the honing operation the operator deburrs each cylinder with several strokes, then switches the cylinder in his hands and repeats the process.

As a result of Flex-Honing, says Reimer, the company has saved money and increased quality. Without the tool the company would need to have operators deburr the cylinders with a burring knife or swivel burring tool to eliminate the sharp edges. This operation, according to Reimer, is tedious, expensive and inaccurate. Flex-Hone, he observes, is easily three times faster than any manual techniques.

At the same time, the quality of the engine has been improved. The Flex-Hone eliminates the sharp edges from chrome build-up in the cylinder that can be detrimental to engine operation. The tool also produces a smooth crosshatch pattern, which improves oil retention during the break-in of the piston ring.