

## R&R Cycle

# Mastercam Helps Motorcycle Engines Breathe Deep

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— **Reggie Ronzello**  
R&D/Programming Manager  
R & R Cycle, Manchester, NH

To boost horsepower and set speed and horsepower shootout records, R & R Cycle gives motorcycle engines the ability to breathe deep. However, to do this requires unique manufacturing equipment and software.

R & R Cycle (Manchester, NH) produces aftermarket products for Harley Davidson style V-Twin engines and for their own engines used in custom motorcycles. One problem they continually face is how to keep these components reliable and competitive on the street and at the drag strip, and stay ahead of the competition.

To do this, they use state-of-the-art CAD/CAM software and five-axis machining that allows them to "grow as a company by developing unique street and racing components," said Reggie Ronzello Sr., R&D/programming manager.

Reggie Ronzello Jr. started R & R Cycle in May of 1994 doing motorcycle repairs. Now R & R Cycle manufactures cylinders, heads, rocker boxes, cam covers, engine bottom ends (cases), shafts, oil pumps, push-rod tubes, and complete V-twin engines patterned after the Harley

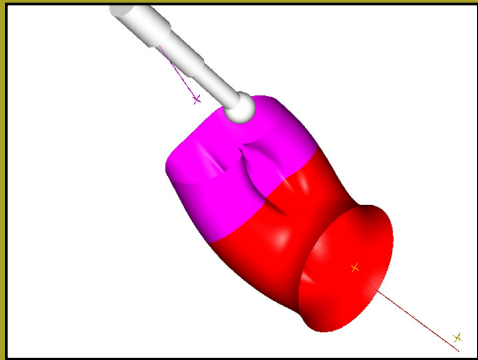
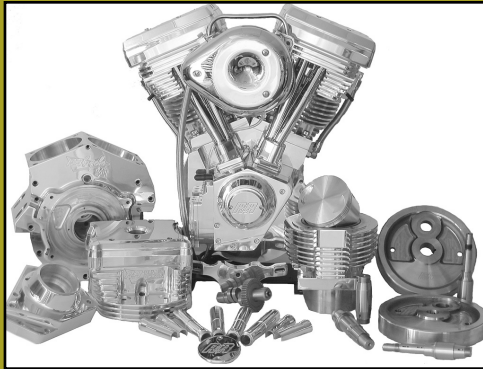
Davidson design. Ronzello Jr's father, Reggie Ronzello Sr., works with him to do all the machine-tool programming and engine research and development. Starting out, the company used manual mills and lathes.

"We have many different engines," said Ronzello Sr. "We're coming out with new ones right now. We'll have all new fuel-injected designs on the board, and new large-displacement models."



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To develop these unique components and engines and get the most horsepower from them, the company uses advanced flow testing for heads and dynamometers for testing their engines. But another important tool is Mastercam CAD/CAM software from CNC Software, Inc. that doesn't limit the company's ability to develop these products. As Ronzello Sr. said, "Our business was literally grown by Mastercam, and as Mastercam has advanced, we have grown. Mastercam's software capabilities are always advancing, letting our business grow by allowing us to produce parts that keep us ahead of our competitors."

R & R Cycle wanted to use the five-axis equipment to do their most important work: the modification of cylinder heads and porting to allow them to "breathe" better, which increases horsepower. Originally programming was extremely tough, because R&R was using the machining center's software.

## Mastercam to the Rescue

Ronzello Sr. said they bought Mastercam CAD/CAM software to develop fast and efficient programs for porting. "Once we had the Mastercam programs complete, then we could go in and make every port identical on the machining center. Without Mastercam, it couldn't be done efficiently."

He added, "Mastercam has also helped us tremendously by letting us create two things: an accurate surface that we can cross-section, and an analysis of its square inches. If we want a very special surface or size in an exact area, we could now measure it with the new features from Mastercam. The most important thing with the new technology that they have is that we can port the cylinder head and have the port come up accurately.

Ronzello Sr. remarked, "Machining with Mastercam is much faster now, because we can control the cutting tool's step-overs. We don't have to worry about gouging, because we can literally watch what it's doing on the computer screen before actual machining. We can clean up any surfacing problems too."

Mastercam has allowed the company to be more exacting in developing their algorithms that ultimately insure a more accurate port design. Because of their sophisticated algorithms, R & R designs their ports instead of reverse engineering them.

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