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## Case Study: Automotive Specialty Manufacturer Puts New Program in High Gear with Applied Stats Software

This American automotive specialty manufacturer, founded shortly after World War II, designs, manufactures and markets a full line of off-road equipment and accessories that enhance the performance of four-wheel-drive vehicles, ATV's and utility vehicles. In addition, the company markets electric and hydraulic winches and hoists to commercial, industrial and severe duty customers around the world.



*Gearsets are turned from bar stock on the three lathes on the new line.*

### The Challenge

"We have a \$750,000 investment in new equipment for our gear line," said the company's director of manufacturing. "This is part of the production line for our next-generation hub, which will be integrated into the vehicle's wheel to provide improved gas mileage."

"Implementation of the new production line adheres to Six Sigma principles," he said. "We already have three people who are Six Sigma Black Belts who have worked hard to bring this process online."

The three lathes on the new line are used to turn bar stock into gears that are co-branded and used on the latest models of pickup trucks and sport utility vehicles from one of the largest North American manufacturers.

### The Applied Stats Solution

"Our key characteristics are ID, OD and chamfer diameter," the director said. "Probes are used to measure these characteristics on all three lathes. The first eight inches of each bar being fed into the machine must be perfectly straight to maintain tolerance during the production run." A transducer measures height and the ball bar measures the X and V axes. All data collected by the probes is fed into the PLC using the OPC client.

Only one operator workstation is needed for the three machines. Applied Stats runs on the workstation and is interfaced to the lathes via an OPC driver taking the data from the PLC. When a lot is completed, the PLC sends a signal to Applied Stats to search the tables in the PLC for data on each lot.

The first four parts from each lot are measured to determine an average value. If the bar is straight, then 45 more parts are produced to complete the lot. If the bar is within control limits, it is running in the green, with a green indicator light showing for that lathe. If the bar is running outside the spec limits, in the red zone, then Applied Stats triggers an alarm condition, including a red "stop" light, and the line will be shut down. If shutdown occurs, the quality engineer is notified immediately. Good parts continue to the next operation, while bad parts are sent to an MRB area for inspection.



*Probes are mounted directly on the turret to measure the X and V axes of the bar stock being fed into the lathe.*

Applied Stats is also used on the coupler line, where parts are measured using a micrometer feeding data to a workstation via an ASI DataMyte MicroPort multiplexer.

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## Benefits

Applied Stats is helping the manufacturer to meet its goal of adding increased automation and higher technology to its manufacturing operation. "We no longer need to have an operator for each machine or an inspector dedicated to a particular production line," the director said. "At this point, Applied Stats also helps prevent operator over-control. Our eventual goal is 'lights-out manufacturing,' that is, unmanned operation," he added.

Applied Stats is helping this manufacturer deliver a higher quality product in the face of increased overseas competition. "It helps us to market our products on the basis of higher technology and increased value versus our competition," the director said.



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