



Real-Time Tool Wear Monitoring Eliminates Downtime and Cuts Tooling Costs by 50%



CHALLENGE

This customer, machining high-volume firearm safety levers, was experiencing costly collet replacement and downtime due to operators running tools to their breaking point. They were making decisions based on tool life estimates and time in cut.

INDUSTRY: Firearms Manufacturing

MACHINE: Horizontal Lathe

TOOLING: 1/2" 5-Flute End Mill

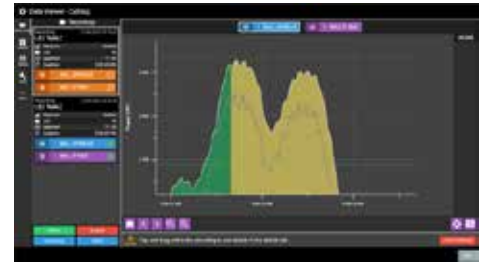
MATERIAL: Hardened 4140 (Steel)

THE SOLUTION

The customer implemented Caron Engineering's adaptive tool monitoring system, TMAC. TMAC calculates the power consumed over the duration of the cut to calculate tool wear. As tools wear, TMAC is calculating this in real-time, and the measured wear is easily viewed by the shading of the monitored cut. If a tool reaches the wear percentage (limit), TMAC finishes the cut and expires the tool. If a tool breaks, TMAC stops the machine and retracts the tooling before damage can occur. By assessing tool wear prior to a tool breaking, this customer has dialed in their wear limit parameters so well that the tool is safely pushed to a point of real tool wear without going over the edge and breaking. This allows the customer to get the maximum life out of the tool. They have the work wear limit set at 95% to retire the tool. Beyond that, the likelihood of breaking is extremely high.

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TMAC



TMAC Data Viewer – cuts are overlaid to show the new tool in cut requiring less cutting power (gray line) compared to the (yellow shaded) worn tool previously expired

RESULTS

- 50% reduction in tooling costs
- Eliminated damage and downtime from tool breakage



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