Tool Wear and Breakage Monitoring System - Automotive Applications

Machining Torque Converter Housings

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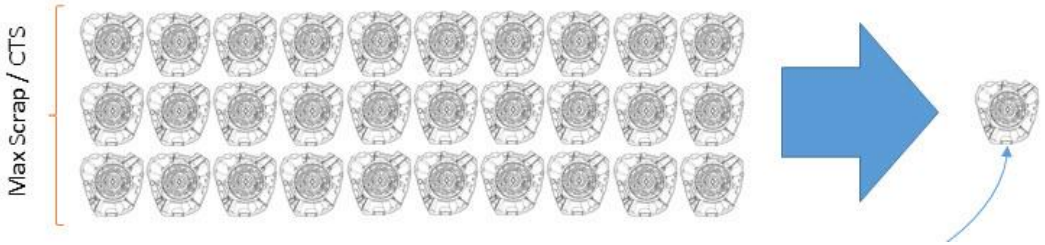
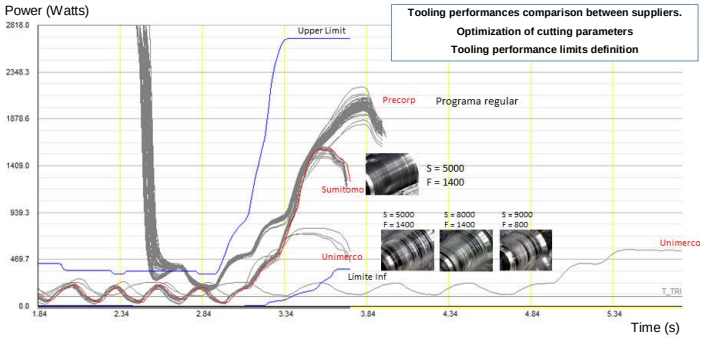


An Auto Manufacturer Did An Extended WattPilote Trial Before Deciding To Retrofit a Torque Converter Housing Line

This manufacturer was seeking a reliable tool breakage detection system that functioned on ALL the cutting tools used when machining TCHs. It also needed a real-time machining monitoring system. WattPilote was the answer.

An Instrument for Process Optimization and for Comparative Tooling Studies

Using data collected by the WattPilote, it was possible to optimize cutting tool life for this machining process. The effects of speed and feed changes could be quantified in terms of the stresses they imposed on the tooling. The relative performance of various manufacturers' cutting tools could be measured. The number of unscheduled tool changes could finally be minimized. Cycle time was reduced. The process became more repeatable.



More Than a 96% Reduction in Scrap Part Production

The existing laser-based tool breakage sensor often did not detect broken tools (due to the presence of the coolant stream, chips, oil, and dirt). This limitation led to the production of scrap parts. In addition to this problem, the existing breakage sensor had high maintenance costs, it added cycle time, it could not detect chipped inserts, it could not check large-diameter (>20mm) tools, and it could not detect worn tools.

And a Further Reduction in Scrap Production on a Subsequent Operation

	Tool	Unscheduled Tool Changes	CPU	Total
Bore G	T05		$1,994	$9,970
	T06		$1,093	$24,046
	T07		$2,330	$123 ,490
	Total replaced			$157,506

The WattPilote is a "window" into the process and allows it to be improved. Before the manufacturing process was optimized, unscheduled tool changes led to parts being scrapped in a subsequent machining operation due to straightness issues, bad surface finish, and broken tools.

Total savings (on only 1 HMC in only 12 months!)

$122,262 USD in Annual Cost Avoidance = $2,854 reduction in scrap caused by broken tools + $14,704 elimination of maintenance on laser-based tool breakage sensor + $94,504 tooling optimization savings + $10,200 reduction in scrap on next OP machine.

WattPilote

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