LARGE DIAMETER BORING CASE STUDY

Project Overview

Component: Gearbox Casting

Industry: Windpower Location: Belgium, China & India

Material: Steel Bore Size: Ø 360 - 670mm O/T

The manufacturer's process on horizontal machining centres used traditional flange boring tools which were manually adjusted. Maintaining accuracy, improving operator safety and increasing output were major KPIs for the project

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CHALLENGE

The challenge was to eliminate scrapped parts & increase output without compromising operator safety.

Difficulty in Adjustment: The large casting size and restricted access in the machine made it difficult to manually measure critical component features and set the tools. Process safeguards to ensure operator safety were also negatively affecting production.

Machine Downtime: Bore sizes drifted due to temperature changes. This caused more machine downtime to adjust the cutting edge during machining.
The manufacturer required a more efficient approach to increase output and meet customer lead times.

Part Quality: The high cost of the casting, setup time, and tool changes meant that scrapping a part was not an option.
Manual adjustments in a suboptimal machine environment further jeopardized this goal.

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SOLUTION

Rigibore developed the ActiveEdge Nexus boring module for this application mounted on a standard aluminium flange.
This automated system combined the Nexus with in-process measurement to monitor bore sizes and make adjustments for insert wear.

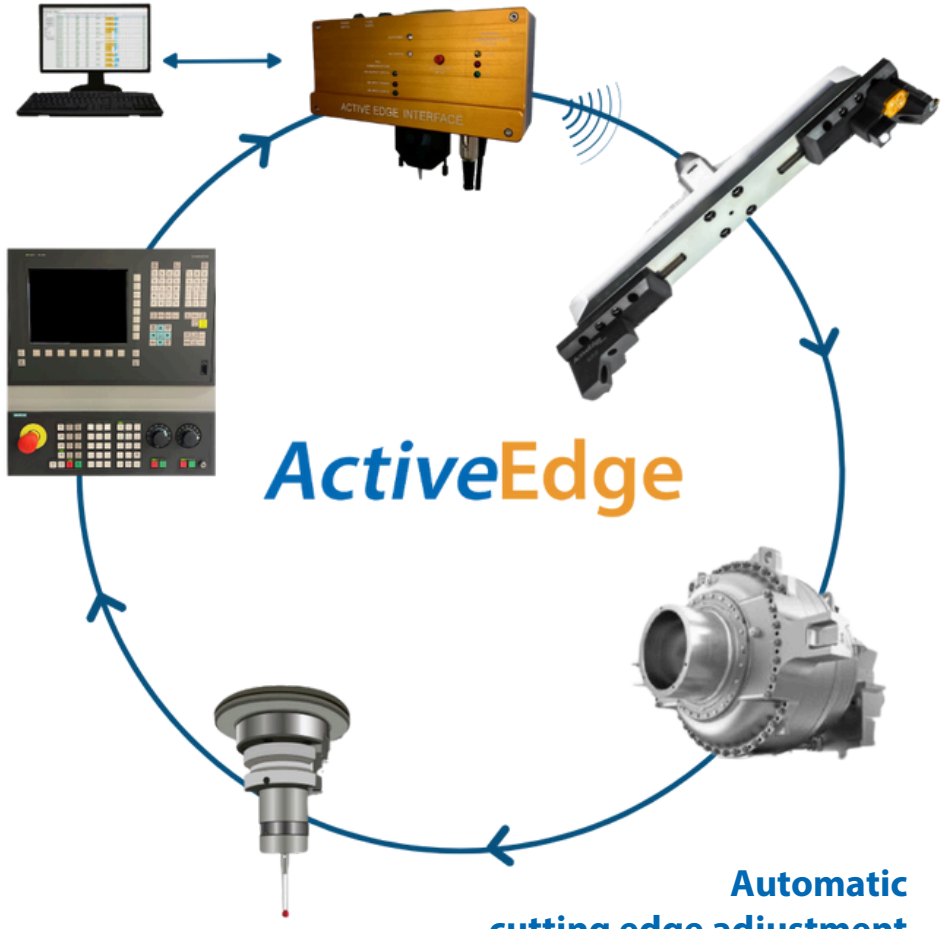
This ActiveEdge solution allowed the manufacturer to implement a 'two-stage finish cut' by automatically backing off the cutting edge to machine a pre-finish bore. This is measured & the value is stored in the machine control and used to adjust to nominal for the finish bore.

RESULTS: ActiveEdge delivered the promised outcomes on all fronts - productivity, part quality & safety.

Productivity: The ability to automatically adjust the cutting edge in the machine significantly reduced cycle time. In order to maximise spindle up time, ActiveEdge tools can be adjusted in the machine carousel.

Part Quality: Rigibore's 'two-cut finish' solution provided verification of a micron accurate bore removing uncertainty from the operation. Consistently staying within the pre-determined tolerance band removed all scrap from the operation.

Safety: As the adjustments are made automatically the machine operators no longer needed to enter the machine to adjust the cutting edge greatly improving their safety at work.



Automatic cutting edge adjustment using in-process measurement

Increased Productivity

Micron-accurate

Hands-free

Return on Investment