

Engine manufacturer gains total control over boring process through Rigibore's ActiveEdge technology

Project Overview

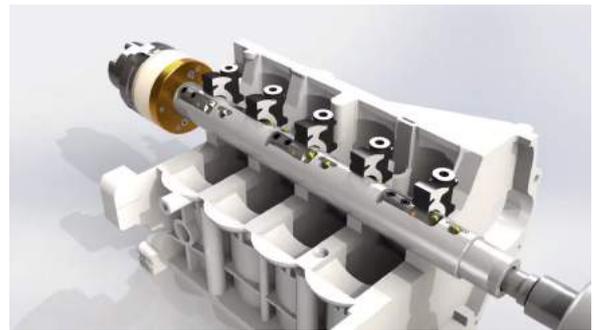
- **INDUSTRY:** Automotive
- **LOCATION:** Europe
- **COMPONENT:** Crankshaft Bearing Journal
- **MATERIAL:** Bi-Metal
- **BORE SIZE:** $\varnothing 52.965 \pm 0.015$

This industry leading manufacturers process involved two line bars running on a multi-spindle CNC machine. Cutting edge adjustments were made manually, involving considerable downtime.

Precision machining of engine blocks were essential, as the accuracy and concentricity of bores on finished components directly impact engine efficiency and emissions.



Rigibore's **ActiveEdge Line boring** tools were selected for trial, testing unique benefits in the machining of precision crank bores.



The Challenge

Tool Downtime

Adjustment of two line boring tools (10 cutting edges in total) were made manually by the operator in the machine spindle.

Parts were ran, measured with a bore gauge and checked for size. Often several cartridges needed further tweaking to obtain the desired tolerance.

Part Quality

The "trial and error" process of making complex adjustments put pressure on skilled labour for accurate tool setting.

Cutting edge adjustments as tool wear occurred in-process were often sacrificed to prevent additional downtime, compromising finish part quality.

Health & Safety

Making adjustment inside the working environment was not only difficult, but also risked operator safety through collisions with chips, swarf or coolant.

Rigibore's Solution

Line Boring Tool

Rigibore designed a precision line boring tool, with five precision ActiveEdge finish cartridges.

Rigibore improved process speeds through simultaneous manufacturing capabilities.

Advantage Through Automation (Zenith Solution)

ActiveEdge line boring tools were integrated with in-process measurement, adjusting the tool's cutting edge automatically as part of **Rigibore's Zenith Solution**.



Each ActiveEdge cartridge is **independently adjustable**, based on data provided by in-process measurement as the tool wears.



This closed-loop boring cycle allowed micron accurate cutting edge adjustments **without any operator intervention**.

Results

During the 24 hour trial period, Rigibore's capabilities demonstrated the potential to dramatically reduce downtime and eradicate the risk of part scrap through automated bore sizing.

Productivity

Prior to Rigibore tooling, on average, five manual size adjustments were made in 24 hours, resulting in approximately **60 minutes of lost production time**.

With Rigibore's Zenith this was reduced to just 10 minutes. This time saving capability was equivalent to an **additional 66 parts in the 24 hour trial**.

Part Quality

The finished bores had a mean diameter of 52.965mm, across the 24 hour period all of the crankshaft bores were within tolerance that allowed for the overall tolerance to be reduced.

The closed-loop boring solution ran without any operator intervention, removing the risk of oversized bores from manual error.

24,000

Estimated additional parts produced per year with Zenith.

100%

Risk of scrap through oversize bores eliminated, with 100% part accuracy.