# LINE BORING CASE STUDY

## Project Overview

**Component: Crankshaft bearing journal**

**Industry: Automotive** **Location: Germany**

**Material: bi-metal** **Bore Size: Ø 52.935 +/- 0.015**

**The manufacturer's process involved two line bars running on a multi-spindle CNC machine. Cutting edge adjustments were made manually resulting in considerable downtime. Accuracy and concentricity of the bores were key as these directly impact engine efficiency and emmissions.**

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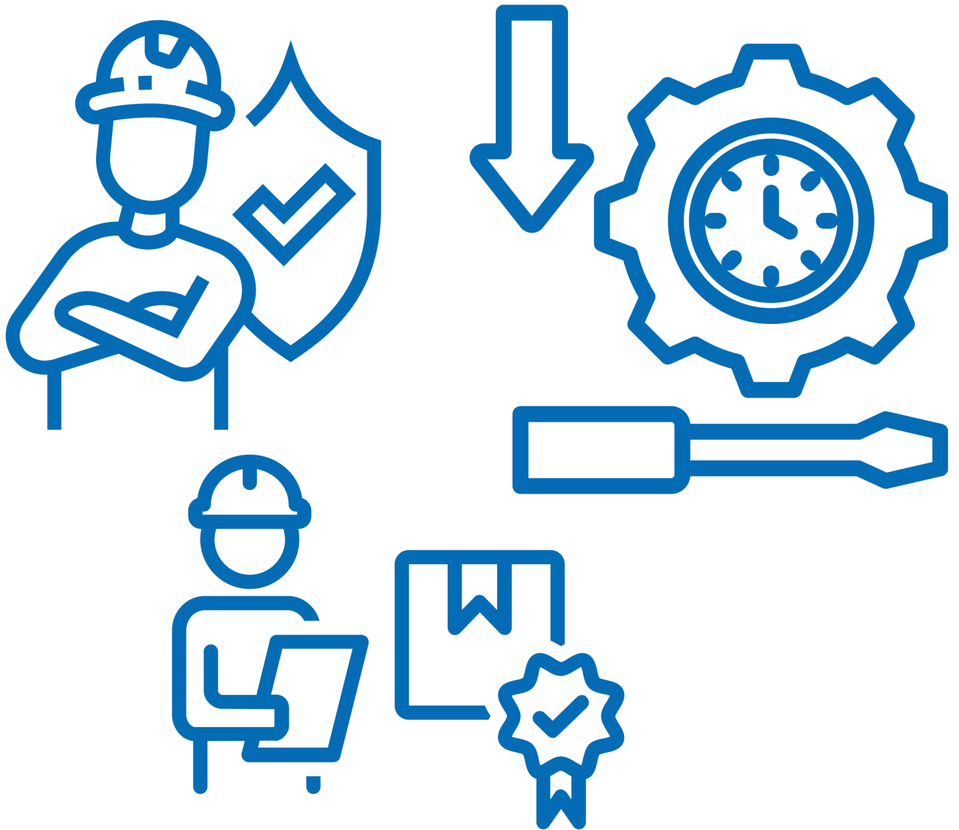
## CHALLENGE

**The challenge was to reduce downtime, ensure consistent part quality and improving the machine operators' safety.**



**Tool Downtime:** Adjustment of two line boring bars (10 cutting edges) were made manually in the machine spindle. Parts were run, measured with a bore gauge and checked for size. The cutting edges need further tweaking to obtain the target tolerance.

**Part Quality:** The 'trial & error' process of making complex adjustments put pressure on skilled operators to accurately set the tools. As tool wear occured during the process, cutting edge adjustments were often sacrificed to prevent additional downtime, potentially compromising finished part quality.

**Health & Safety:** Making adjustments inside the machine was difficult. It also risked operator safety by exposing them to chips, swarf, and coolant.

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SOLUTION

**Rigibore designed a line boring tool with five ActiveEdge automatically adjustable cartridges.**

**The ActiveEdge boring tools were integrated with the in-process measurement and the machine tool, automatically calculating the adjustment amount required and making the adjustment with no manual intervention**

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**RESULTS:** During the 24 hour trial period, the ActiveEdge tooling successfully delivered the promised outcomes.

**Productivity:** On average, five manual size adjustments were made in a 24 hour period, resulting in approximately 60 minutes of lost production using the original tooling set-up.

This was reduced to 10 minutes using ActiveEdge. The time saved was equivalent to an additional 66 parts in the 24 hour period.

**Part Quality:** The finished bores had a mean diameter of 52.965mm and across the 24 hour period all of the crankshaft bores were within tolerance which led to the overall tolerance being reduced.

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

**Health & Safety:** Operators did not need to enter the machine envelope other than to change an insert, keeping them safe and happy !

**24,000** Estimated additional parts per year using ActiveEdge

**100%** 100% part accuracy. Risk of scrapped parts eliminated