

Automotive manufacturer unlocks productive machining through Smartbore's "one-shot" solution

Project Overview

- **INDUSTRY:** Automotive
- **COMPANY:** General Products Corp
- **COMPONENT:** Die Cast Axle Housing
- **MATERIAL:** Aluminium
- **TOLERANCE:** $\pm 12\mu\text{m}$ (0.0005")

Rigibore's special tooling expertise was enlisted for precision machining of a Transfer Case component supplied to a range of industry leading end users.

Prior to the introduction of Smartbore, the component was machined using a brazed, fixed-pocket PCD boring tool. Whilst this solution delivered adequate wear-resistance operating at high speeds, there were a number of performance concerns.

The Challenge



Production Downtime

PCD tools produced inconsistent finish as they became dull, meaning they had to be returned to the manufacturer for reconditioning.

Recondition times mirror that of new tools, **10-14 weeks**, meaning issues meeting key production targets.



Performance Issues

Reconditioned tools displayed numerous performance inconsistencies. Size, taper and run out differences caused issues with surface finish.

Machinists could not run tools with confidence due to variability in performances.



Tooling Cost

Not only was the process of reconditioning PCD tools time consuming, but also extremely expensive to recondition at 60% to 80% of the tools original cost.

" There was no guarantee that a fixed-pocket boring tool was going to cut correctly, when dealing with tolerances of a few microns, General Products needed an accurate and repeatable tooling solution "



Kevin Burnet, Haggard & Stocking
Associates Inc. Distributorship.

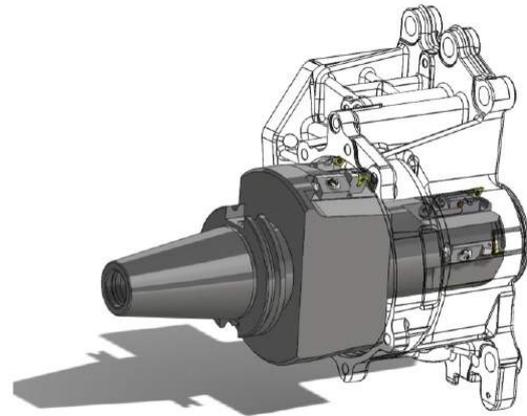
Rigibore's Solution

Rigibore applied its patented Smartbore technology. This digital boring system meets fine tolerance limits, setting precision finishing cartridges whilst providing a real time positional update via the Smartbore digital adjuster LCD screen.

One Shot Tooling - Smartbore special tooling design allows roughing and finishing operations run simultaneously, in just "one shot".

PCD Inserts - Rigibore tooling applied PCD inserts, possessing the same wear resistance as the previous solution, whilst removing lengthy downtime for reconditioning.

Simplicity In Adjustment - Application of Smartbore technology allowed fine tolerances to be met accuracy and rapidly by operators of all skill and experience levels.



CAT50 Smartbore special combination boring tool designed with the rough and finish insert on the same tool.

“ After 12 months of use, Rigibore’s tooling-package offering on-time delivery, easy of setup, onsite reporting, bore size consistency, fine bore finish, short cycle time and total finish-bore cost exceeded expectations “

Dennis Amstutz, Manufacturing Engineer at General Products

Results

Productivity

Having the roughing insert and the finishing insert in the same tool allowed General Products to optimise productivity and minimise tooling cost.

Adjustments to the tools cutting edges were made without removing the tool from the machine, by way on the Smartbore digital adjuster.

Rigibore’s tooling package removed the issues surrounding reconditioning, allowing production to deliver on critical lead times.

Speeds and Feeds

Brazed PCD Tools - 1,100 rpm, a 680 sfm (207.3 m/min) cutting speed and a feed rate of 16.81 ipm (500 mm/min)

Smartbore Tools - 6,000 rpm, a 2,713 sfm (1,317 m/min) cutting speed and a feed rate of 23.62 ipm (600mm/min)

Part Quality

Smartbore certified part quality through digital adjustments, allowing operators of all skill/experience levels to adjust the tool’s cutting edge accurately.

12%

Cycle time reduction through application of Rigibore’s Smartbore Tooling.

65,000

Parts produced with Smartbore PCD tooling before insert change was required.