Newsletter

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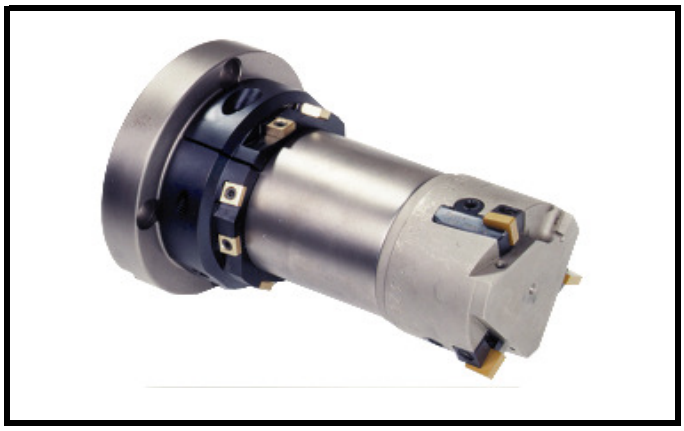

Rough cylinder boring on engine blocks can be one of the highest cost per stations on a block transfer line.

Many transfer lines use either coated carbide or silicon nitride inserts in this application. Some use "quick change" tooling systems while others still use dedicated tooling bolted to the spindles. Almost all applications are in Cast Iron, whether it is a Cast Iron block or an Aluminum block with a Cast Iron sleeve.

Master Tool's standard practice for rough cylinder boring is to use CBN inserts in fixed position (non-adjustable) cartridges that track within .001 (.025 mm). This tooling system also has an adapter bolted to the spindle with a quick change nose piece using only one screw to change tools.

Recently, we had an opportunity to test our system against a competitive system at an automotive engine plant in Ontario, Canada. They were using a solid tool with a HSK-100B quick change system built into the spindle. The cutting head used four (4) SNG543 inserts in a Silicon Nitride material with adjustable cartridges.

They were using a solid tool with a HSK-125B quick change system built into the spindle. The cutting head used four (4) SNG543 inserts in a Silicon Nitride material with adjustable cartridges. They were running at 1400 SFM with a chip load of .008 per insert. The depth of cut varied up to .250. With this setup their tool life was 800 parts per corner. The cost of a silicon nitride insert is not very high and with eight (8) cutting edges, the tool cost per piece was relatively low. However, at only 800 parts per corner and a very heavy tool, tool change time was high, resulting in a high total cost per piece.

Master Tool built adapters using the HSK-100B shank to mount and stay in the spindle with a quick change nose piece. Our design had fixed (non-adjustable) cartridges - so no preset adjustment was necessary. The nose piece utilized four (4) SNC422 inserts with a CBN top layer providing four (4) cutting edges.

The end result was an increase in tool life to 4000 pieces (500%) with a dramatic reduction in tool change time. Insert cost per piece was increased by 4 times (because of the increase cost of CBN and only one half as many cutting edges). However, total cost per piece was decreased by over eight (8) times by the increased tool life and increased machine uptime.