Oil Field Reamers: Revolution Drill®

The customer produces oil field reamers designed to go down into oil wells and ream out the casing and material for the shaft to pass through. They are machining 4130 solid bar stock using a Weiler manual lathe using a semi-synthetic coolant at 300 PSI *(20.684 bar)*. The material has an existing 1" *(25.4 mm)* diameter hole that is drilled with a 2.25" *(57.15 mm)* diameter twist drill. They hand feed the drill with the tailstock, which leads to inconsistent feed rate and poor chip control.

Looking for performance improvements, the customer contacted Allied for a solution. Allied recommended the Revolution Drill. The tool was inserted into a boring bar holder on a quick-change tool post. A dial indicator was used to make sure the drill was parallel to the work piece, followed by the use of the carriage to steadily feed the drill into the work piece.

The **Revolution Drill®** eliminated the need to hand feed the 2.25" *(57.15 mm)* diameter twist drill, gaining valuable time that was previously spent re-sharpening the tool after every part.

Product: Revolution Drill®
Objective: Improve preformance
Industry: Oil & gas/petrochemical
Part: Oil field reamers
Material: 4130 solid bar stock
Hole Ø: 2.25" *(57.15 mm)*
Hole Depth: 10.0" *(254 mm)*

Measure	Competitor Tooling	Revolution Drill®
RPM	120	800
Feed Rate	-	0.0032 IPR *(0.081 mm/rev)*
Penetration Rate	-	0.96 IPM *(24.384 mm/min)*
Cycle Time	25 min	9 min 36 sec
Tool Life	2 holes	5 holes

The Revolution Drill offered *61.68%* cost per hole savings over the competitor tooling.

- Revolution Drill®
  Holder: ***R38X45-150L***
  Inserts: ***OP-05T308-H***

150% tool life increase

The Revolution Drill® provided:

- ✓ Decreased cost per hole
- ✓ Decreased cycle time
- ✓ Increased tool life