



CASE STUDY. GEN2 T-A[®] / Opening Drill[®] PROJECT PROFILE: AR450 Steel Mining

The end-user is manufacturing wear plates made from AR450 steel, using a Mori Seiki MV 65 vertical machining center with flood coolant.

+ CHALLENGE:

Previously the customer was using three tools to produce the form, a 13/16 through hole with a 2" counterbore: A YG-1 spade blade for the 13/16 inch diameter, a 1.5 Inch diameter Indexable Ingersoll drill, and a 2.0 inch diameter Indexable Ingersoll drill to finish the counterbore.

The YG-1 drill ran at the following parameters: 1000 RPM, 0.0015 IPR (0, 04 mm/rev), which resulted in 1.5 IPM (38, 1 mm/min). The tool drilled the 0.8125" (20.64 mm) diameter pilot hole to a depth of 1.25" (31.8 mm). The tool had a drilling cycle time of 50 seconds and a tool life of 5 holes, or only 6.25 total drilled inches. The 1.5 Inch diameter Indexable Ingersoll drill ran at 764 RPM, 0.004 IPR (0, 10 mm/rev), which resulted in 3.06 IPM (77, 6 mm/min). The tool drilled to a depth of 0.50" (12, 7 mm). The tool had a drilling cycle time of 9.8 seconds and an inconsistent tool life of 2-7 holes.

The 2.0 Inch diameter Indexable Ingersoll drill ran at 477 RPM, 0.004 IPR (0, 10 mm/rev), which resulted in 1.91 IPM (48, 5 mm/min). The tool drilled to a depth of 0.50" (12, 7 mm). The tool had a drilling cycle time of 15.7 seconds and an inconsistent tool life of 2-7 holes.

Allied was called into the customer's shop and offered the opportunity to provide a solution to the terrible tool life and costly machine time they were experiencing.

+ OUR SOLUTION:

Allied recommended two tools to replace the costly three tools. First, they went with a GEN2 T-A insert item 4C11H-0026 operating at a speed of 515 RPM, .0035 IPR (0,09 mm/rev), which resulted in 1.80 IPM (45,7 mm/min). The GEN2 T-A had a cycle time of 41.6 seconds and a tool life of 180 holes or 225 inches drilled. Then the Opening Drill, using inserts # OP-05T308-H was run at 800 RPM, 0.004 IPR(0,10 mm/rev), which resulted in 3.2 IPM (81,3 mm/min).

+ PROJECT DATA:

The Opening Drill had a cycle time of 9.4 seconds and a tool life of 135 holes, 67.5 inches drilled. The total machining cycle time for Allied was 51 seconds versus the competitors 75.5 seconds. As a result of this improvement, the overall cost per hole was reduced from \$34.19 to \$7.90, for a combined savings of 80%!



TOOL PERFORMANCE CONSISTENCY