

Tool-X[®]

Tech Data Sheet 101
Swiss Screw Machine

What is Tool-X? A nanofluid additive for metalworking fluids that contains trillions of carbon-based nano-onions in solution. When used in conjunction with metalworking fluids, fluid saturated nano-onions flow between a tool and workpiece to change the characteristics of the metal working action. The result is reduced vibration, reduced machine loading and increased heat transfer away from the metal-to-metal work zone.

Application: Bechler Swiss Screw Machines cutting 410 Stainless Steel with an existing oil as the metalworking fluid.

Problem: Insufficient cycle time and tool life.

Situation: Metal-cutting operations included turn, chamfer and cutoff.

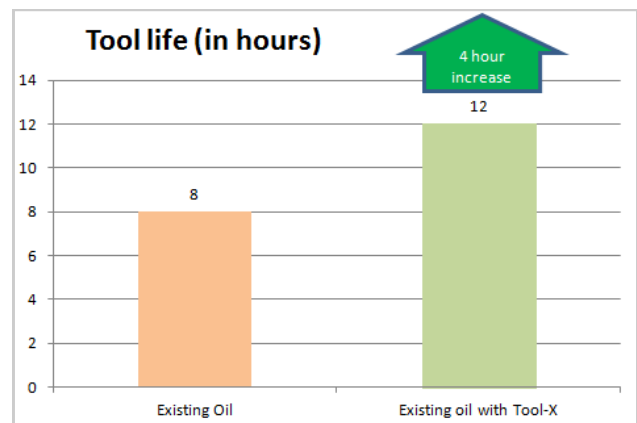
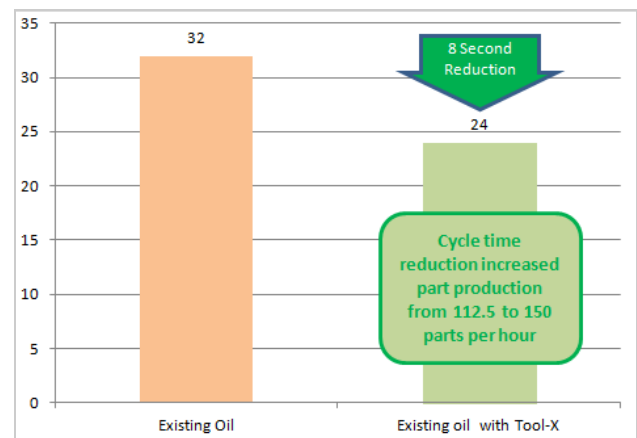
Evaluation Process: Two formulations of cutting fluids were evaluated over a three-week period: 1) an existing oil; 2) existing oil with Tool-X nanofluid additive. Existing speeds and feeds were applied using new tools to create a baseline. Oil was replaced, and new tools were used for the evaluations. Initial focus of evaluation was tool life. Upon completion of tool life evaluations, material removal rates (speeds and feeds) were increased to assess potential for cycle time improvements.

Solution: The existing oil with Tool-X nanofluid additive was used to outperform the existing oil and achieve the desired objectives.

Results: The Tool-X nanofluid additive enhanced performance; reducing overall cycle time by eight seconds (25%) and increasing parts produced by 37.5 per hour (33%).

Outcome: Customer changed to using the existing oil with Tool-X nanofluid additive on all Bechler Swiss Screw Machines.

What is the role of metalworking fluids in machining? For many manufacturing applications, metalworking fluids are necessary but insufficient. The role of these fluids is to create an environment where tools can be proficiently used to change the shape of materials as efficiently and effectively as possible. To achieve this objective, metalworking fluids must counteract common failure modes by reducing heat, adhesion, pressure and wear while providing lubricity under extreme temperatures and pressures associated with metalworking, TOOL-X nanofluid technology enables metalworking fluids in such a manner as to meet these objectives and attain new levels of performance. To learn more, visit www.TOOL-X.net.



Visit www.TOOL-X.net to learn more.