

Tool-X

Tech Data Sheet 103
CNC Machining w/45
Tool Auto-Change

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.

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.

Application: CNC machining of five-foot long, cast iron engine heads for off-road agricultural vehicles

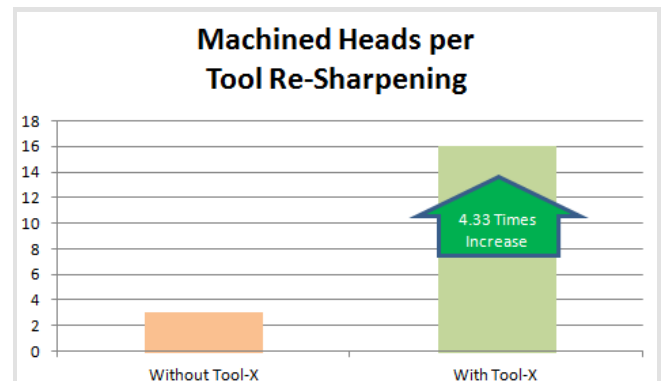
Problem: Inability of new machine to hold the required Ra 3 surface finish; primary issue was with one of 45 tools in an auto-change system

Situation: New \$750,000 capital investment in CNC milling machine for tractor "engine head" production, machine, tools and cutting fluids as originally purchased were found to 'not be capable' - OEM would NOT release for production

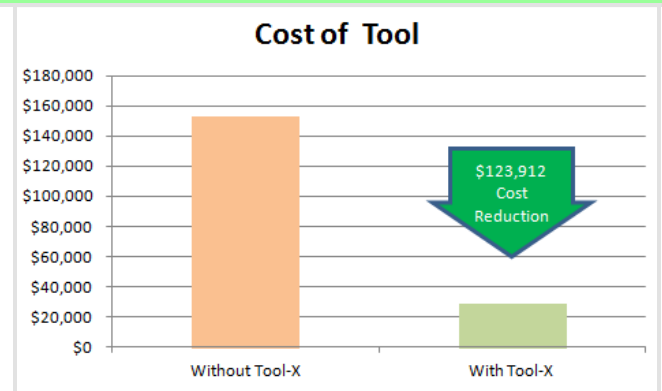
Evaluation Process: During this evaluation the entire focus was on meeting the required Ra finish specification; Tool-X was added to the existing coolant and the issue was resolved; further testing was conducted with TiCN coated cutter and Tool-X which resulted in the customer quote at the right

Solution: Addition of Tool-X nanofluid coolant resolved quality problem and tool life was extended resulting in \$123,000 savings for one tool; projected savings across the remaining 44 tools valued at \$6,700 per set was estimated to bring the total savings to \$696,000 over the next 12 months

Outcome: OEM release was received and production was initiated



"We put in a TiCN coated reamer with the Tool-X and saw Ra numbers unlike anything we have ever seen. We started at 0.7 Ra on the first piece. We just pulled off our last piece (42 pieces later) and we are still holding at 1.2 Ra. This is unbelievable, our tool life more than quadrupled with that tool!"



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