

Tool-X[®]

Tech Data Sheet 114
CNC Reaming
Water-based MWF

What is Tool-X? A new line of metalworking fluids that contain a new additive - trillions of carbon-based nano-onions in solution. These nano-onions improve the lubrication along the cutting edge, preventing build-ups and improving heat transfer. The result is longer-lasting tools that cut truer, with more precision, with less force required, than with conventional metal working fluids.

Customer: A large Tier 2 supplier manufactures engine parts for a large tractor manufacturer.

Application: Reaming cylinder heads in steel using a water-based coolant.

Problem: Insufficient tool life.

Evaluation Process: Two formulations of cutting fluids were evaluated over a three-week period: 1) an existing water-based MWF; 2) Tool-X SS-500 MWF. Existing speeds and feeds were applied using new tools to create a baseline. MWF was drained, cleaned, and replaced, and new tools were used for the evaluations. Initial focus of evaluation was tool life, quality measures, and surface finish.

Results: The Tool-X nanofluid additive enhanced tool life by over 6X what it was before. Surface finish measures remained within the strict requirements of the customer and were generally improved.

Outcome: Customer changed to using the Tool-X SS-500 water-based MWF for its reaming operations.

Tool-X improves machining processes. The role of metalworking fluids is to permit tools 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 the extreme temperatures and pressures associated with metalworking. Tool-X nanofluid technology enables our metalworking fluids to attain new levels of performance.

Tool-X Benefits: With Tool-X, surface finish is improved (lower Ra, fewer and smaller distortions). Feeds and speeds can be increased, often by 25% or more. Tool life is extended. Problems caused by excess heat (white film layers, long chip sizes, metallurgical damage) can be avoided. Reworks, tool sharpenings, and deburring steps can be reduced or eliminated.

With Tool-X, it's all about the numbers. Tool-X metalworking fluids cost more than conventional fluids, roughly twice as much. But the savings that are possible, through extended tool life, increased productivity, and parts with better surface finish and better dimensional accuracy, can provide users with substantially greater returns on investment. Let us demonstrate how Tool-X can improve productivity and reduce expenses in your facility.

See www.tool-x.net for more information.

Reaming Data	
	Parts per Tool
Before Tool-X	7
After Tool-X	48
Change (%)	586%



