

Tool-X[®]

Tech Data Sheet 108
Thread Rolling
Oil-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 multinational manufacturer of high-strength fasteners for aerospace and other performance applications.

Application: A thread rolling operation on a low volume production line manufacturing high-strength steel fasteners using oil-based MWF.

Problem: Insufficient tool life and requirements for cost reduction.

Evaluation Process: Two identical machines ran side by side for nine months. One machine used their existing cutting oil; the other ran with Tool-X 700 Series cutting oil. The data has been annualized for analysis purposes to reflect an operation that runs 10 hours for 300 days per year.

Results: The Tool-X nanofluid additive enhanced performance and productivity; tool costs were reduced by two thirds. A pro forma calculation was made to assess productivity savings at 20% higher feeds and speeds.

Outcome: Customer changed to using Tool-X SS-700 oil-based MWF for its thread rolling 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.

Thread Rolling Tool and Cutting Oil Costs Per Part

	Parts per 10hr Shift per Day per Machine	Annual Production of Part per Machine	Annual Tool Cost	Annual Cutting Oil Cost	Labor and Machine Time Costs Allocated	Total Annual Evaluated Costs	Annual Evaluated Cost Per Part	Total Savings
Before Tool-X	1,150	345,000	214,368	8,840	552,042	775,250	2.25	
After Tool-X	1,150	345,000	73,920	14,200	552,042	640,162	1.86	135,088
Change (%)			-65.52%				-17.43%	

Pro Forma Analysis with 20% Increase in Speeds and Feeds with Tool-X

	Parts per 10hr Shift per Day per Machine	Annual Production of Part per Machine	Annual Tool Cost	Annual Cutting Oil Cost	Labor and Machine Time Costs Allocated	Total Annual Evaluated Costs	Annual Evaluated Cost Per Part	Total Savings
Before Tool-X	1,150	345,000	214,368	8,840	552,042	775,250	2.25	
After Tool-X	1,380	414,000	88,704	17,040	552,042	657,786	1.59	272,514
Change (%)			-65.52%				-29.29%	