

Tool-X[®]

Tech Data Sheet 116
CNC 5 Axis Machining
Water-based MWF
302 Stainless Steel

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 manufacturer of sprinkler heads.

Application: 5-axis machining of 302 stainless steel using a Mazak CNC machine with water-based MWF.

Problem: Manufacturer had run out of capacity on this machine despite running two 10 hr shifts per day six days per week. The machine was running at 70% and tool life issues prevented running at higher feeds and speeds.

Evaluation Process: Data was collected for 2 weeks using the current water-based MWF. Sump was drained and cleaned, and replaced with Tool-X SS 500 MWF. Speeds and feeds were gradually increased and tool life was monitored.

Results: The Tool-X SS-500 MWF permitted feeds 57% faster than before; machine speeds were increased to 110%. Tool life (parts per insert) improved over 5x. Inserts were changed once per shift at the shift change as opposed to 3 times per shift, further increasing productivity. Customer was able to meet demand while running two shifts only 5 days per week..

Outcome: Customer changed to using a Tool-X SS-500 MWF for its machining 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, as much as 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 substantial 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.

CNC Machining of 302 s/s Parts

	Machine Speed	Machined Parts / hr	Inserts per Part
Before Tool-X	70%	10.4	34.8
After Tool-X	110%	17.5	175.0
Change (%)	57%	68%	403%

