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: Horizontal CNC machining of 1018 cold-rolled steel in a job shop environment.

Problem: Insufficient material removal rates and poor tool life.

Situation: Milling of 75 parts per 8 hr shift; annual volume 12,000 parts per year for their customer, DE-STA-CO; milling cutter cost $72 plus 10 resharpenings at $33 each with an average of 31 parts machined per resharpening; water-based synthetic coolant.

Evaluation Process: The initial evaluation was conducted across two identical CNC machines using semi-synthetic, water-based cutting fluid in 80-gallon sumps. This side-by-side assessment demonstrated Tool-X’s ability to reduce spindle loads, improve the surface finish, extend tool life and increase material removal rates.

Solution: The addition of Tool-X to existing coolant allowed for increased feed rates and increased tool life by a factor of eight times while significantly reduced tooling costs.

Results: Production rates were increased from 75 parts / shift without Tool-X to 125 parts / shift. Tool life was increased from 31 to 250 parts per sharpening. $60,960 savings was realized on the production of 12,000 parts and production capacity was increased.

Outcome: After extensive testing and evaluation over several months the owner committed to using Tool-X on five of their key machines with plans to continue expanding its use.

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