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High-performance machining fluids deliver increased efficiency for aerospace, heavy equipment industries

5ME's CYCLO COOL 900 series synthetic metal-cutting fluids offer low-cost option to semi-synthetics and soluble oils. Additive-free, recyclable, high-heat formulas developed for aerospace perform well in mining equipment application.

FEBRUARY 2014 – 5ME's CYCLO COOL[®] 900 series synthetic metal machining fluids utilize a unique, near-neutral pH formula developed to meet heavy-duty, high-heat machining requirements at a lower cost than semi-synthetics and soluble oils. The additive-free, low-foaming fluids are specially formulated for machining titanium, Inconel[®], beryllium copper, hardened steels, stainless steels, and other exotic alloys. The cationic-based synthetic coolants contain specialized boundary lubricants that penetrate the cut zone heat barrier, even at lower fluid pressures (300 to 400 psi), to absorb heat from the tool and the part, minimizing tool-tip work hardening and premature wear. Free of biocides/fungicides and aggressive pH adjusters, they provide increased sump life and environmental friendliness when replacing high-maintenance, chlorinated, semi-synthetics and soluble oils in all metal removal operations. "These high-performance, low-cost traits are driving efficiency improvements in the aerospace and heavy equipment industries," said Pete Tecos, Executive VP Marketing and Product Strategy for 5ME.

CYCLO COOL 900 series fluids are designed for high-pressure, low foaming, through-tool delivery systems at 2000 psi, as well as flood coolant for chip flushing. The lubrication package in CYCLO COOL 900 varies to cover a wide range of applications from light-duty, high-speed (10,000 to 15,000 rpm) aluminum milling to heavy-duty drilling and tapping of hardened steel and hard-to-machine metals. The three formulations, CYCLO COOL 900, 910, and 920 are engineered to match the intensity of the application.

CYCLO COOL improves difficult tapping process

5ME recently completed a facility-wide, multimillion-dollar turnkey project consisting of onsite CNC programming, application support, fixturing concepts, and tooling packages for machining large steel frames for above ground mining equipment. The project involved implementation of CYCLO COOL 920 throughout the facility. "The most critical application was a proprietary, specialized tapping process to lock bolts into a massive steel frame," said Tecos. "This tapping process is critical to efficient production and, if not completed correctly, the entire frame must be scrapped."

CYCLO COOL 920 not only met and exceeded the tight-finish tapping requirement, but it is also credited with increasing tap life to 1000 hits per tap, compared to the same process using a premium, heavy-duty soluble oil. CYCLO COOL 920 also met the plant's corporate health and safety requirements, which include minimal-to-zero VOC levels, recyclability, and elimination of questionable raw materials and aggressive biocides/sump additives. "The near neutral pH synthetic formulation provides a clean, oil-free work area and is extremely operator and machine friendly," added Tecos.

5ME provides tooling and coolants, application engineering, asset monitoring software, and cryogenic machining systems for any brand machine tool. For more information about 5ME, contact Pete Tecos at 586.202.3285 or pete.tecos@5ME.com.

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CONTACT:

Pete Tecos, Executive VP Marketing and Product Strategy
5ME
586.202.3285
pete.tecos@5ME.com

Jeff Drum (Agency)
Kemble & Drum Communications
513.871.4042
jdrum@kembledrum.com

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