

Performance Bio Improves Shop Conditions

AEROSPACE (USA)

Turbine & Turbocharger Components

Castrol Performance Bio[®] NC Lite*

Lower Consumption While Improving Shop Conditions



THE SITUATION

A manufacturer of turbomachinery components was using a mineral straight oil for machining of aluminum, titanium, stainless steel, and inconel. They were experiencing issues around high oil carry-off, long lead times, smoke, and residues built up in their machining centers.

Additionally, waste from the process was considered hazardous environmentally, and filterability of the fluid was limited due to its additive particle size.

BEFORE

- Mineral straight oil supplied by Company "H"
- High consumption and carry-off
- Residue build-up
- Smoke visible while milling

AFTER

- **Castrol NC Lite, plant-based cutting oil**
- Reduced consumption and carry-off
- Reduced nozzles supplying coolant from 4 to 2
- Residue eliminated
- No smoke due to high flash point

THE SOLUTION

- NC Lite is plant-based, eliminating costly hazardous material for disposal.
- Less carry-off on parts and easier cleaning have resulted in shorter wash times.
- Fluid is available in totes instead of drums, eliminating disposal issues with drums and improving housekeeping.
- Lead time was cut from 2-3 weeks to 2 days.
- NC Lite can be filtered down to 1 micron without stripping additives, resulting in a cleaner fluid, longer life, and less waste.
- In addition, the machines run much cleaner.

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RECOMMENDATIONS

NC Lite was chosen as a better alternative to straight mineral oil because of the inherent properties of the fluid. The high flash point resulted in elimination of smoke and mist from the shop. The viscosity was lowered while maintaining performance, reducing carry-off and total consumption.

The Mikron 5-axis milling machines utilize coated carbide (AlTiN) ball end mills and were observed to be running much cleaner after the switch, with no residue build-up. Inherent lubricity of the NC allowed operators to eliminate two of the four coolant nozzles with no reduction in tool life or increase in cycle time. Cleaning time for finished parts was cut in half, saving water and electricity.

CONCLUSION

Castrol Representatives surveyed the operations and selected a neat oil that would provide the most benefit for this customer. NC Lite was chosen for its high flash point and excellent overall performance. The smoke and misting issues experienced by the operators were eliminated, and the machines are much cleaner than with the previous fluid. Waste is not considered hazardous, and costly disposal was eliminated.

Castrol Performance Bio are endorsed by Mikron engineers and technicians and used in-house for run-offs and demonstrations.



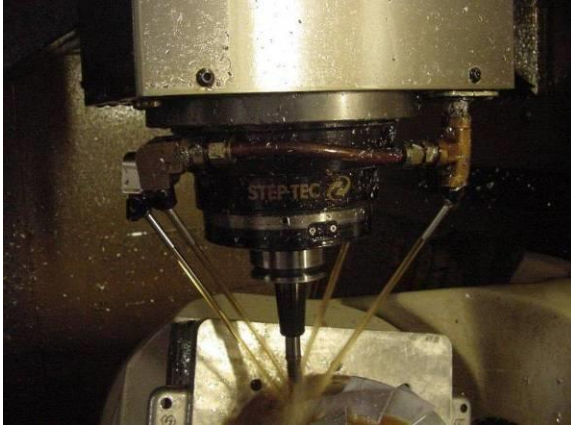
OTHER POTENTIAL APPLICATIONS

Castrol Performance Bio NC series fluids are part of Castrol's "environmentally responsible" offer. They are based on renewable plant-based lubricants with very high flash points, low VOCs, high lubricity, and high viscosity index. With multiple viscosities available, they can cover a wide range of neat cutting oil operations.

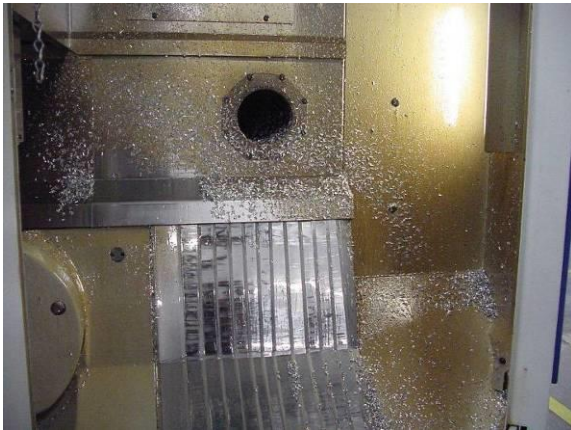
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Before

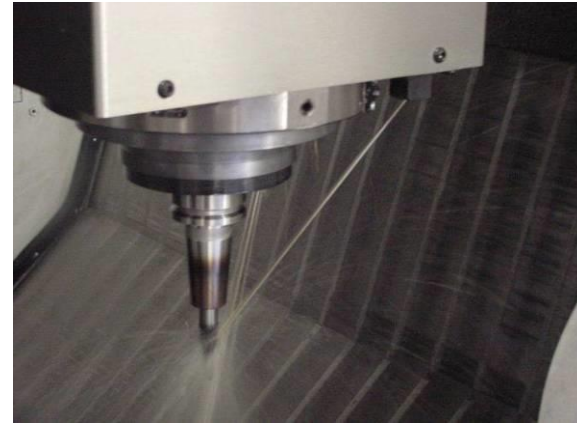


Application required 4 nozzles for cooling and chip evacuation

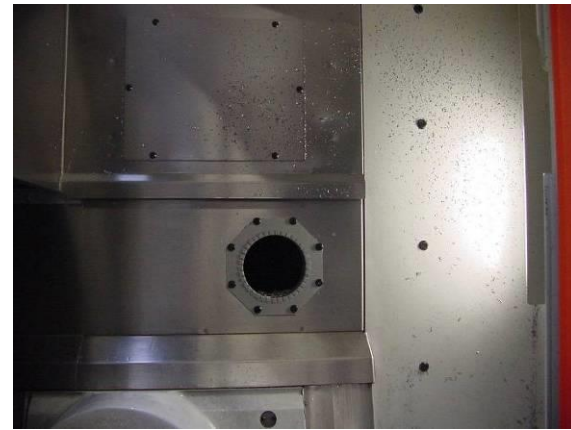


Brown residue in machines. Sticky conditions (note chips sticking).

After



Only 2 nozzles needed while running cooler and with excellent tool life



Residues and chip sticking eliminated. Machines very clean.