

Performance Bio Extends Tool Life and Eliminates Cutting Oil Smoke!

MACHINERY MANUFACTURING (USA) FASTENERS

Castrol Performance Bio NC Plus*

No Smoke and 4X Tool Life Extension in Cold Heading



THE SITUATION

A large shop producing fasteners and anchors for the building, electronics, and automotive industries was using conventional cutting oils for their cold heading, Hydromat, screw machine, and threading operations.

The shop was experiencing the typical “smoke” found where cold heading and screw machine operations are prevalent. They also had only marginal tool life and were looking for overall improvements.

BEFORE

- Conventional neat cutting oils
- “Smoke” conditions prevalent
- Tool life was marginal
- Several fluids in use for cutting and maintenance

AFTER

- Plant-based fluid with very high flash point and lubricity
- **“Smoke” eliminated!**
- **4X tool life improvement** in cold heading and Hydromats
- Fluids greatly consolidated

THE SOLUTION

- Performance Bio NC Plus is formulated with a renewal, plant-based lubricant which provides much higher flash point (540°F) than conventional oils (typically 370°F maximum).
- These properties nearly eliminate the mist which is associated with the “smoky” environment typical of these types of neat oil shops.
- In addition, the NC Plus has higher lubricity compared to conventional oils, allowing it to achieve 4X tool life in cold heading and Hydromat machining.
- Because of its versatility, NC Plus is also used on the gear side of the cold headers and the hydraulics of the Hydromats leading to large consolidation of fluids in the shop and no cross contamination issues.

* Formerly known as NuCut Plus

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RECOMMENDATIONS

This customer conducts a wide range of operations, mainly on stainless steel but also on steel and aluminum. The most severe operation is cold heading of stainless fasteners and anchors made from 1/4" to 2.5" diameter bar stock. NC Plus extended the die life by 4X and is used successfully to lubricate the gears as well. The same fluid was also successful in the Hydromats (4X tool life; used as the hydraulic fluid), screw machines, and threading operations.

The use of NC Plus as a gear oil and hydraulic oil not only allowed for consolidation but eliminated the typical problem of cross contamination when maintenance lubricants leak into the cutting oil and diminish the cutting performance.

CONCLUSION

The customer was very impressed with the elimination of "smoke" in their facility, improving overall operator safety. They were also pleased to improve tool life dramatically and reduce the fire risk through the use of the high flash point fluid.



Typical "smoky" environment of a neat oil machine shop



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