

PBNC Ultra Lite EP Significantly Improves Tool Life

MACHINERY MANUFACTURING (USA)

SWISS AUTOMATIC LATHES

Performance Bio[®] NC Ultra Lite EP

Tool Life Improvement of over 70%



THE SITUATION

A New England company manufactures small parts from copper alloy and stainless steel using over 40 Swiss automatic lathes (primarily Citizen and Star machines). They wanted to improve throughput, reduce tool usage, and improve longevity of the neat cutting oil.

They reclaim the oil carried out on chips with a chip pucker, filtering the used oil down to 1 micron. The previous oil darkened quickly from use.

BEFORE

- Non-EP plant-based oil in use remained in good condition, but darkened quickly
- Tool life of 12,500 pieces per tool on copper alloys

AFTER

- PBNC Ultra Lite EP plant-based EP oil remains light colored after a year in use.
- Increased speeds & feeds by about 25%
- Tool life increased to 21,600 pieces per tool on copper alloys (73% increase) and over 50% on some stainless parts

THE SOLUTION

- Castrol Technology developed an EP version of PBNC Ultra Lite with chemistry selected to avoid copper staining yet permit good performance on ferrous alloys.
- A Citizen automatic lathe producing copper alloy parts was selected as the initial test machine.
- After good performance on the initial machine, testing was expanded to others producing both copper and 300 series stainless parts.
- Tooling cost per part has dropped on some stainless workpieces by over 50%.

- Test machine produced a single part with high production rates
- Experienced operator performed the data collection
- Samples were collected and oil condition monitored
- Reclaimed oil was also evaluated and remained in good condition

PBNC Ultra Lite EP Significantly Improves Tool Life

RECOMMENDATIONS

In addition to the tool life savings, Performance Bio NC Ultra Lite EP keeps the shop environment clear, producing virtually no smoke or mist like mineral oils. Compared to other plant-based oils, it does not varnish in the system or oxidize rapidly, allowing for recovery and reuse to save the customer money.

CONCLUSION

Performance Bio NC Ultra Lite EP offers a marked performance upgrade over regular plant-based oils, showing over 70% increased tool life on copper alloys and 50% on some stainless parts with this customer. In addition, this oil can have a wider variety of success in more challenging applications and materials.

PBNC Ultra Lite EP is formulated for long service life and will maintain its properties in extended use in well designed reclamation programs.



OTHER POTENTIAL APPLICATIONS

Performance Bio NC Ultra Lite EP is compatible with non-ferrous materials yet has the performance to succeed with more challenging materials, including alloy steels and stainless. The viscosity is light enough for gundrilling and vertical broaching operations.

Castrol, the Castrol logo, and Performance Bio are trademarks of Castrol Limited, used under licence.

