

Chapter 10

Scope for Future Work

10 Future work

Sustainability in metal cutting is an emerging field that can make the grinding process more economical, environmentally friendly, and socially viable. The research work related to grinding using sustainable techniques can be extended in the following directions:

- The sustainable grinding mediums as developed and used in the present work may be extended and used in the grindability study of other metal alloys, superalloys, and ceramics.
- The UVAG and UVAMQL grinding approach of “difficult-to-machine” materials with monolayer CBN wheel may be developed to reduce wheel loading and continuous wheel cleaning.
- The Computational fluid dynamics (CFD) model can be developed on UVAMQL mist parameters to analyse droplet size variation, droplet velocity, number of droplets, and heat transfer coefficient.
- Application of Hybrid nano-UVAMQL in grinding of different engineering materials may be performed. The synergetic effect of combining two different nanoparticles can improve the grindability by providing good lubrication and reduction in cutting zone temperature.
- It has been seen that mechanical property has a significant influence on the magnetic response of the material. The magnetic response is often measured in terms of the number of events per magnetizing cycle, peak position, peak width, remanence, core loss, width and height of MBN profile to quantify the material properties. Furthermore, a study on the effect of magnetic frequency on the MBN and HL signal with respect to

changes in mechanical properties may be done. It can also be utilized to establish a correlation between the two.