Abstract

Production rates play important role in the turnover of any industry. In order to increase the production rates, industrial processes are need to be speedup by speeding input parameters such as cutting speeds, feed rates etc. But with the higher speeds and feeds the heat generation also increases between tool-chip, tool and work piece interfaces, which reduce the tool life, product quality and machining properties. The function of a MWF comes here to optimize the machining parameters. But the use of coolant fluids has become a problem in
terms of human health, environmental pollution and also adds up the cost factors such as disposal of toxic lubricants. The various techniques used to cool down and to lubricate the machining processes are reckoned to be inefficient. To eliminate the problem of such inefficient usage of cutting fluids, some new approaches are introduced i.e.: near dry machining (NDM) and cryogenic machining. In present research, machining properties of different operations was analyzed under cryogenic machining techniques. The machining is done on EN31 STEEL. This cryogenic technique is applied to investigate the effects of parameters on the machining properties. It can thus be concluded that the surface finish improves due to reduction of cutting zone temperature with the cryogenic machining. The material removal rate is increased with cryogenic machining because of maintained tool tip.

References

- Adler, D., et al. 2006, Examining the role of cutting fluids in machining and efforts to address associated environmental/health concerns. Machining Science and technology, 10(1). p. 23-58.

Index Terms

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