

MAGNETICALLY ASSISTED DE- BURRING OF SMALL AND THIN COMPONENTS

SANDEEP SINGH
(1312158)

ABSTRACT

The final finishing operation plays a vital role in the manufacturing cycle of a product as these operations involve significant effort and expenditure. In the present thesis, a non- traditional finishing method has been developed for de- burring of thin and small ferrous components. The practical problem faced by the workers in the existing manual finishing and de- burring methods necessitates the development of an improved method. In fact the small and thin components get damaged and distorted if conventional method like barrel/ vibratory finishing technique are used. In this research work, an experimental setup has been developed by using the principle of magnetic abrasive finishing. In the developed setup the de- burring of components can be performed with the help of a media consisting of sand and gravels. As the relative rotation to the components is given by rotating magnets, this method is suitable only for ferrous components. For investigation the effect of prominent process parameters on the extend of de- burring, an experiment was designed and conducted by using a well known DOE approach i.e. Box- Benhnken Design. Three input parameters (de- burring time, gravel size and magnet- work piece gap) were chosen. The performance of the process was measured in the terms of burr height, which is removed with a given set of input parameters. Two representative components (taken from local industry) were selected as work pieces for conducting experimental work. The result indicated that in a short time (2- 3 minutes) complete removal of burr from the given components has been achieved.