CERTIFICATE

This is to certify that report entitled **"EXPERIMENTAL ANALYSIS OF TURNING PARAMETERS ON EN 31 TOOL STEEL"** by Mr. **DEEPAK KUMAR SAINY**, is the requirement of the partial fulfillment for the award of Degree of **Master of Technology (M. Tech.)** in **Production Engineering** at **Delhi Technological University**. This work was completed under our supervision and guidance. He has completed his work with utmost sincerity and diligence. The work embodied in this project has not been submitted for the award of any other degree to the best of my knowledge.

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ABSTRACT

Today CNC machines have play a vital role in the manufacturing industry. In this competitive scenario to manufacture good quality product with mass production and flexibility in the product can possible with CNC turning machine. For good quality of product the tuning parameters such as cutting speed, feed and depth of cut are selected in such a way, that the product machined surface roughness should be better.

In the present work, the experiments have been conducted on EN-31 tool steel using CNC turning machine and the machining parameters such as cutting speed, feed and depth of cut have been optimized for the response such as material removal rate (MRR), Surface roughness (Ra) and maximum temperature at interface of cutting tool and work-piece surface. Statistical analysis has been done using response surface methodology (RSM) to optimize the material removal rate (MRR), Surface roughness (Ra) and maximum temperature at the interface. The objective of using response surface methodology (RSM) is not only to investigate the response over the entire factor space, but also to locate the region of interest where the response reaches its optimum or near optimal values. The design of experiments have been done by considering three controllable input variables namely cutting speed, feed and depth of cut and the response such as material removal rate (MRR), Surface roughness (Ra) and maximum temperature at interface of cutting tool and work-piece surface have been optimized.

Keywords: CNC, turning parameters, EN-31, RSM, DOE, MRR, Surface Roughness, Maximum Temperature,

CONTENT

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