

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
BELGAUM-590 014



A  
PROJECT REPORT  
ON

**“A STUDY ON THE IMPACT OF VIBRATION OF MACHINE  
TOOLS ON THE QUALITY OF END PRODUCT”**

(Sponsored By K.S.C.S.T)

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**2012-13**

# ABSTRACT

The challenge of modern machining industries is mainly focused on the achievement of high quality and economy of machining in terms of cost saving and increase of the performance of the product with reduced environmental impact. Machineries in general deteriorate with time. If not properly maintained the organization which uses them is affected in some way resulting in huge losses in terms of output, increased operating cost, poor customer service, safety consequences and deteriorating product quality.

Quality can be defined as the absence of defects or the reduction of variation. Machine tool affects the quality when it can no longer hold manufacturing tolerances. Machine tool vibration is one of the several causes which affect the product quality.

Surface roughness, an indicator of quality is one of the most specified customer requirements in a machining process. For efficient use of machine tools, optimum cutting parameters (speed, feed and depth of cut) are required. In this work, machining process was carried out on mild steel and cast iron material in universal milling machine and vibration level was captured using vibXpert-II at machine shop of JNNCE. Surface roughness was measured using Surfcom 130A tester at Perfect Alloy Components (PAC), Shimoga.

The objectives of our work is

- To assess the vibration level of the machine tool using vibration signals.
- To assess the quality of the end product.

Surface roughness would be measured directly by surface roughness measuring instruments. Experimental results are expected to show that parameters like spindle speed, feed rate and depth of cut and also the vibration that could affect surface roughness ( $R_a$ ) under different combinations of cutting parameters. Vibration signals are used to establish the relationship between the surface roughness and the cutting input parameters (spindle speed, feed and depth of cut).