K. D. K. COLLEGE OF ENGINEERING, NAGPUR

DEPARTMENT OF MECHANICAL ENGINEERING

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

Session 2013 - 2014

CERTIFICATE

This is certify that, the Project entitled **GENERATION AND COMPARISON OF VIBRATION SIGNATURE FOR FAULTY GEARS** is a bonafied work done under my guidance and is submitted by **Prashant W. Bagde** to RashtrasantTukadoji Maharaj Nagpur University, Nagpur for the partial fulfillment of requirement for the award of Post Graduation degree, **Master of Technology (M.Tech.)**in**Mechanical Engineering Design (MED)**.

S.R.Ikhar	**Prof.DrA.V.Vanalkar**	**Prof. Dr.C.C.Handa**
Asst. Professor	Professor	Head of Department
(Co-Guide)	(Guide)	(Mech. Dept)
Assistant Professor Deptt. of Mech. Engg. K.D.K. College of Engg., Nagpur	Professor Deptt. of Mech. Engg. K.D.K. College of Engg., Nagpur	Professor & Head Deptt. of Mech. Engg. K.D.K. College of Engg., Nagpur

Dr. D. P. Singh
Principal

Principal
K.D.K. Engg. College
NAGPUR.

ABSTRACT

Chapter 1 deals with the introduction of various gears, various gear faults and various methods for detection of gear fault

Chapter 2 Literature review is an assignment of previous task done by some author or collection of information or data from research paper published in journals.

Chapter 3 gives information related to vibration analysis, fault detection and diagnosis from vibration analysis, what are the causes of vibration and vibration monitoring.

Chapter 4 deals with the experimental setup in which we study the experimental objectives, operations to perform to make machine and about its costing.

Chapter 5 provides information related to gear signatures for various gear faults with the help of frequency spectrum.

Chapter 6 gives results based on the graphical representation of various vibration signatures for various gear faults in which two frequency spectrum superimpose with each other.

Chapter 7 gives conclusions for the project based on the various vibration signatures obtained in the process on the basis of frequency spectrum.

CONCLUSION

9.1 Conclusions obtained through analysis

i. On the basis of above observations and results, it can conclude that there is variation between superimposed frequency spectrum of good gear and various faulty gears and it depends on the gear mesh frequency.

ii. Amplitude variation in the frequency spectrum changes as accordance with the frequency.

iii. In the frequency spectrum, variation in amplitude is different for different faulty gears. The deviation in the amplitude of different faulty gears is mentioned below:

Tooth spacing

From the observations and results, it can conclude that, at the gear mesh frequency of 510 Hz, amplitude variation in the frequency spectrum is very high as compared to frequency spectrum of good gear. From the spectrum it is seen that, amplitude of vibration changes with the change in frequency. With the help of MATLAB software It can superimpose the two frequency spectrum, from which red coloured peak is at higher level as compared to blue colour. This point is called as ghost component, which indicates the fault. In this way there is comparison between good gear and tooth spacing gear is possible.