Aditya College of Engineering & Technology

Aditya Nagar, ADB Road, Surampalem – 533437
Department of Mechanical Engineering

Academic Year: 2020-2021

Project Title:	Crack initiation and propagation analysis on heavy vehicle propeller shaft by using wavelet transform	
Guide Name:	**Dr. P.GANGADHARA RAO**	
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Abstract	**PO's Mapping**	**PSO's Mapping**
Failure happenings in a propeller shafts are still challenge task for design engineers. Research is continuing to avoid failure in a propeller shafts. Different researchers applying different techniques to analyse failure due to crack initiation and propagation. The present work gives an overview cause of failure that is crack determination in shafts material using natural frequency and wavelet transformation method. The main aim of proposed study is to detect critical areas especially crack initiative zone before doing actual fabrication of components and avoid the breakage of it. In this technique, comparison between actual natural frequency (without crack) and frequency due to crack propagation is made using Euler Beam Theory. Effects of a breathing crack on the vibratory characteristics of a rotating propeller shaft are investigated. Here three types of load consideration have taken such as axial, bending and torsion loadings. Results of numerical Finite Element Method (FEM) are validated using MATLAB	PO1, O2, PO3, PO4, PO5, PO6, PO9, PO10 PO11, PO 12	PSO1, PSO2, PSO3

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PO1: Engineering Knowledge	**PO5:** Modern Tool usage	**PO9:** Individual & Team Work
PO2: Problem Analysis	**PO6:** Engineer & Society	**PO10:** Communication Skills
PO3: Design & Development of solutions	**PO7:** Environment & Sustainability	**PO11:** Project Management & Finance
PO4: Investigations on complex problems	**PO8:** Ethics	**PO12:** Life Long Learning
PSO1: Mechanical Engineers must be able to analyze, design and evaluate mechanical components and systems using cutting-edge software tools as required by the industries from time to time.	**PSO2:** The ability to work in manufacturing and other sectors' operations and maintenance plants	**PSO3:** As part of a team or individually, plan and manage activities in micro, small, medium and large enterprises

Relevance to PO's and PSO's

PO1	Applied the subject knowledge in calculation for design and systems
PO2	Studied and problem identified after thorough analysis
PO3	Nature of the crack and developed the solution
PO4	In the Calculation part of crack different analysis are considered
PO5	Applied the modern tool of wavelet transform in crack detection.
PO6	The shaft which is uses in automobile vehicles so these vehicles are used in the development of society
PO7	This project will not associate with pollution.
PO8	The project work is done with the guidance of teaching community, and from educational institute. No financial and no re copy of technology.
PO9	There is 5 members in this project group, all students are shared some part of work and remaining work done as team members. With coordination as well as with good communication and co-operation
PO 10	All the group members are presented seminar in the presence of project committee and project external examiner.
PO11	The project is completed in phase wise with step by step
PO12	There is a scope of new technology and new application tools so there is a large scope for future developments, so students should learn continuously.
PSO1	Design and Analysed the complete crack propagation using modern tool
PSO2	Manufacturing and maintenance of the automobile components.
PSO3	There is 5 members in this project group, all students are shared some part of work equally and remaining work done as team members. With coordination as a team membets.