



Aditya College of Engineering & Technology

Aditya Nagar, ADB Road, Surampalem– 533437

Department of Mechanical Engineering

Academic Year: 2020-2021

Project Title:	Performance Analysis of VCR Engine for Various Piston Designs and Configurations	
Guide Name:	A.SWATHI	
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Different compression ratios are utilized for the analysis. The values of different temperatures and pressures obtained from the test rig are imported to an analysis software and the simulations are carried out.		
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Abstract	PO's Mapping	PSO's Mapping
A piston is an extremely crucial member of any engine. This indispensable part provides the mechanical motion to the crankshaft after an efficient conversion of heat energy into periodic reciprocations. These reciprocations of the piston are manifested to obtain the required power. Improving the efficiency and other losses has been the centre of research for many decades now. The prime motive of this project centers around the study of various static, dynamic as well as key performance parameters of a Variable Compression Ratio (VCR) engine by integrating different design, configurations, material of construction and other auxiliaries. The test is initially performed on a VCR apparatus.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12	PSO1, PSO2, PSO3

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



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Relevance to PO's and PSO's

PO1	Calculation for design and systems using subject knowledge
PO2	Experimental values were taken on vcr engine
PO3	Modelled the piston in catia software
PO4	Different materials were taken for the different types of piston
PO5	Ansys workbench tools are used for design and simulation.
PO6	Design and development of piston
PO9	Collabrating experimental values with simulated values and doing fabrication
PO11	Business plan contains the work flow and cost control
PSO1	Design and development of piston which was analysed in ansys
PSO2	Less stessed piston is used in engines
PSO3	Entreprenerd skills attained

