

VISVESVARAYA TECHNOLOGICAL UNIVERSITY



**PROJECT REPORT
ON**

“CFD Analysis of Turbocharger Turbine”

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For the Award of the degree of**

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ABSTRACT

Turbocharging technique is widely employed in internal combustion engines to improve the performance and to reduce the exhaust emissions. Flow analysis through the turbocharger has been a guiding method to optimize the turbocharger design. The turbocharger turbine is analyzed at steady states. A natural gas engine for producer gas operation was adopted. The Producer gas fuelled Engines are the upcoming Technology and more friendly to the environment compared to diesel and petrol Engines. There are some issues related to power de-rating from the engine related to the fuel properties. The main cause for the power de-rating is due to the relatively lower heating value of stoichiometric mixture of producer gas and air. This loss in power can be recovered to a much large proportion by Turbo-charging. Matching of the correct turbocharger to an engine is of great importance and is vital for successful operation of a Turbocharged engine. It is important to have a Turbine Map for matching the Turbocharger with an engine. The characteristics of the Turbocharger's Turbine from the original manufacturers were not available. In this work an attempt is made to establish the Performance Characteristics and hence the turbine map for a stripped out Holset Turbocharger Turbine to match with a producer gas fuelled engine.