

C816111 : MAJOR MECHANICAL ENGINEERING

KEY WORD: SIMULATION / TURBOCHARGED DIESEL ENGINE

KHITISAK KHAIPHO : A STUDY ON PERFORMANCE AND MATHEMATICAL MODEL OF A SMALL TURBOCHARGED DIESEL ENGINE. THESIS ADVISOR: ASSOC. PROF. PHULPORN SAENGBANGPLA, 158 pp. ISBN 974-639-496-7

The objectives of this research are to study and to develop Filling and Emptying program developed by University of Manchester Institute of Science and Technology that is mathematical model of turbocharged diesel engine applied for small turbocharged diesel engine to evaluate the engine performance. The testing is comprised of two parts. In the first part, the engine was tested on engine dynamometer by varying loads and speeds to measure performances and smoke opacity. Then, the results were employed in the calculation of smoke correlation by using multiple regression method. In the second part, the turbocharger testing was operated in order to prepare the results as partial input data for the program.

The results of the performance and smoke opacity from simulation program and the experimental data are that :

At full loads, the comparisons indicated that the COD, Coefficient of Determination, of air fuel ratio is 0.809, specific fuel consumption is 0.861, break power is 0.832, break mean effective pressure is 0.774 and fuel consumption is 0.912.

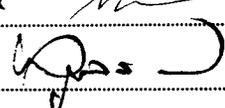
Comparing the COD of smoke opacity at full loads is 0.817 for the performance from experiment data and 0.735 for performance from simulation program data.

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