

**Mohammed Kadhim Allawi. Effect of Magnetic Field on Fuel Consumption and Exhaust Emissions in Internal Combustion Engine. University of Technology .Mechanical Engineering Department. M.sc. Supervisor: Asst. Prof. Dr. Adil Mahmood Salih. 2012.**

### **Abstract**

The combustion efficiency in most internal combustion engines do not exceed (90%) so that part of the fuel does not burn and comes out with the exhaust gases, leading to increase flowing fuel consumption and increasing emissions in the atmosphere. Therefore, several attempts have been made to increase the combustion efficiency and reduce emissions. The phenomenon is clear at the maximum load. In this work a new technology to reduce the fuel consumption by using magnetic field, to ensure the complete combustion. This leads to obtain a maximum thermal efficiency and reduction of emissions by subjecting the fuel to force magnetic flux of the magnet installed at the entrance of the of fuel manifold, leading to more efficient combustion. From the experimental results,a reduction in the fuel consumption (L/h) in compression ignition engine (C.I. engine) was obtained up to (3%), brake specific fuel consumption (bsfc) up to (2.877%) and brake thermal efficiency raised by about (3%). The exhaust gas emissions showed a reduction nearly by (13.8 %) of CO, (7.8 %) of CO<sub>2</sub> and (10.8%) of HC, and reduced fuel consumption (L/h) in spark ignition engine (S.I. engine) up to (5.3%). The exhaust gas emissions also showed a reduction nearly by (7.038 %) of CO, (0.314 %) of CO<sub>2</sub> and (10.126%) of HC.

**Keywords: Effect of Magnetic Field, Fuel Consumption, Exhaust Emissions.**