

Industrial Research Project Title	A Study of Hydrogen Usage as a Combined Fuel with Gasohol in an Internal Combustion Engine
Industrial Research Project Credits	6
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Program	Master of Engineering
Field of Study	Manufacturing Systems Engineering
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B.E.	2555

Abstract

This industrial research project aimed to study the use of hydrogen as a mixed fuel with natural gas in an internal combustion engine. This is because the fuel is still on high demand while its shortage is evident. Hydrogen has high heat capacity and when combusted releases no carbon dioxide. In this study, hydrogen was produced by electrolysis and directly used as a mixed fuel. This project was divided into two parts: study of the production of hydrogen by electrolytic process and study of gas consumption when using hydrogen as the mixed fuel. From the results, it was found that the amount of electricity had a linear effect on the hydrogen production rate. The concentration of the solution insignificantly affected the gas production rate. Therefore, electrolytic solution of 1 mol/dm^3 was chosen in further studies. The study of mixed fuel consumption rate was carried out by adjusting the duty cycle to control the discharging volume. By reducing the duty cycle, the fuel consumption rate could be reduced when comparing with the normal case without reduced duty cycle. The rate of fuel consumption corresponded to the amount of electricity consumption in the production of hydrogen by the electrolyzer at which 20 A of electricity could maximally reduce the fuel consumption; this was followed by, the use of a 10 A and 0 A.

Keywords : Internal Combustion Engine/ Gasohol / Electrolyzer / Hydrogen