

H.T.I.

MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DEVELOPMENT OF AN ON-BOARD HYDROGEN
GENERATION PROCESS FOR AN SI ENGINE
FUELED WITH H₂- ENRICHED GASOLINE

M/954

ZAMBAS PANTELIS

JUNE 2002

HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING COURSE

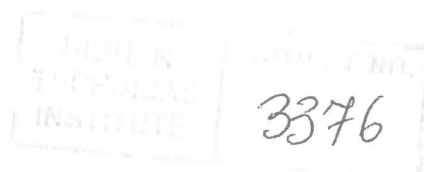
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ZAMBAS PANTELIS

Project report

Submitted to

The department of mechanical engineering

Of the higher technical institute

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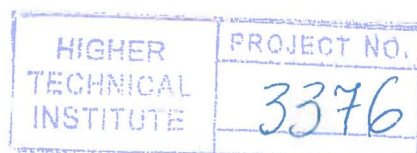
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SUMMARY

This project is a very small touch on the field called renewable energy. Particularly it deals with the production of hydrogen on a vehicle and its direct combustion so as to achieve better combustion, less harmful emissions and economy on the extinguishing fossil fuels. Useful information is included for the production, the progress and the uses of hydrogen.

INTRODUCTION

The objective of this project is the survey and manufacture of an on board hydrogen generation system so as to use all hydrogen produced instantly to obtain better combustion efficiency, a great deal of fuel economy and lower harmful emissions. Specifically in this project an effort will be done to produce hydrogen using the vehicle's electric power so as it can be mixed with the normal fuel and give the above desirable results.

The importance of this project is that it can show a very small piece from the pie called renewable energy. Until now the main source of power throughout the world comes from fossil fuels which are being exploited from a small number of countries, which had the luck to have fossil fuels on their ground. This became the cause of conflicts and wars between nations having terrible results for several times. Through the passing of time it can be seen that fossil fuels tend to finish and have made an enormous disaster to our environment, which is irreversible. Thus the need of a new kind of power is growing day by day. This seems to be hydrogen.

Hydrogen is estimated to make up more than 90% of all the atoms or three quarters of the mass of the universe. This element is found in the stars, and plays an important part in powering the universe through both the proton-proton reaction and carbon-nitrogen cycle-stellar hydrogen fusion processes that release massive amounts of energy by combining hydrogen to form helium. In simple words this means that hydrogen is a source of energy, which cannot be eliminated! However, the most important about hydrogen is that it is not related with hydrocarbons. Its combustion creates only water vapor and some other insignificant byproducts (more information in hydrogen description) which do not contain any at all danger for the environment or human health.

The final conclusion, which can be derived from the above, is that hydrogen will be the new source of energy, which will solve the power problem for good OF COURSE THIS WILL ONLY HAPPEN WHEN FOSSIL FUELS FINISH UNTIL THE LAST DROP and humans will stop judging everything for their best interest!