H.T.I.

MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN AND DEVELOPMENT OF STAND-ALONE WIND ELECTROLYSIS SYSTEM FOR HYDROGEN GENERATION

M/940

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Design and Development of stand-alone wind electrolysis system for hydrogen generation.

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Acknowledgements

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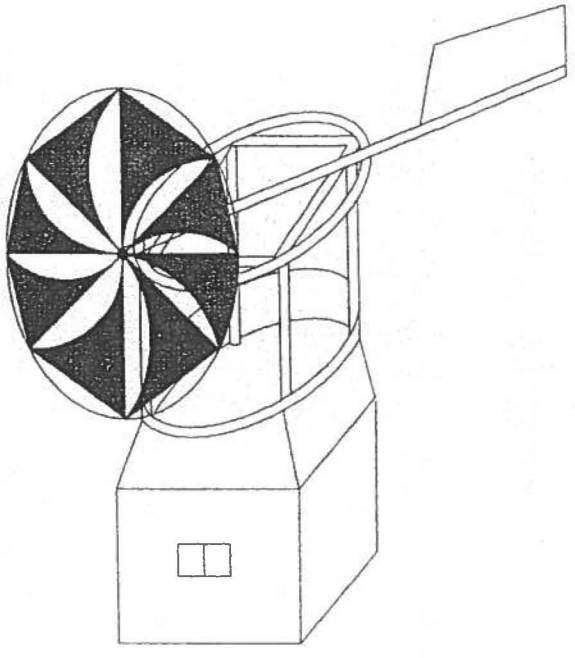
I am grateful to my family for their support during the years I was studying in H.T.I. Also, I would like to thanks my friend Haris Volos, who helped me very much at the breakdown of the voltage with an especially electric circuit.

Dedication

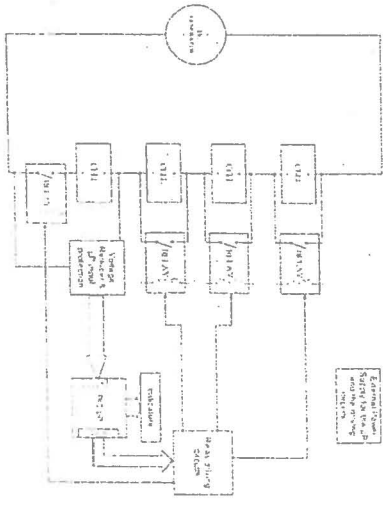
Above all , I would like to thank Mrs Dora Yiannoudi, who helped me the text of grammar, format and style.

Christos Karayiannis

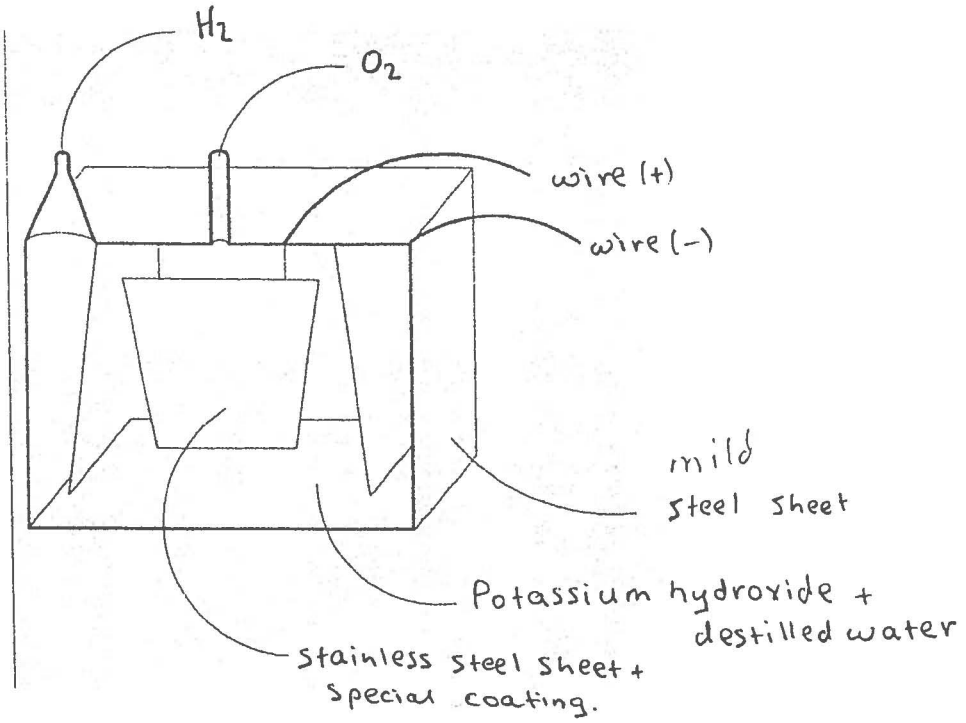
Design and development of stand-alone wind electrolysis system for hydrogen generator.



(a) Windmill with unregulated alternator.



(b) Electric circuit.



(c) Electrolysis cell.

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Introduction

In now days the price of the diesel and the leakage of the natural resources, make the scientists to try and find some alternating solutions in order to produce certain energies , which will come from nature.

So, when we heard for first time about renewable energies, we were been very interested about and with this project we will have the chance to touch one of the chapters of renewable energies, and also to occupy with and to be more familiar with this idea.

At first, we took a windmill in order to take advantage of aeolic energy and with the help of an unregulated alternator, which we selected, we tried to have "infinity" D.C. voltage , and so much hydrogen too(which will be produce an electrolysis cell).

The selection of the suitable windmill for Cyprus standards was difficult, because we couldn't take windmill's statistics of other countries. The major problem with it, was that the wind flow in Cyprus is very very little comparing with other countries' wind flow.

But also, the electrolysis cell needed very little input voltage, and we have to a circuit for this. The design of the suitable voltage breakdown circuit was difficult, because the input voltage was variable and we have to do a special design of the circuit. The selection of the suitable electrolysis cell was also difficult and after days of search we decided to use the "Hoffman method".

With these data, we tried to achieve our task, which until it's difficultness we meet it with success.