

H.T.I.

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

A SURVEY INTO THE VARIOUS
METHODS OF DESALINATION

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In partial fulfilment of the requirements for the award of Diploma of Technician Engineer in Mechanical Engineering of the Higher Technical Institute, Cyprus.

PROJECT SUPERVISOR : Mr. P. Tramountanellis

Lecturer in Mechanical Engineering, HTI

Type of project : Individual

JUNE 2010

ACKNOWLEDGEMENTS

I would like to thank Mr. Tramountanellis, lecturer in Mechanical Engineering, H.T.I., for his helpful guidance during the writing of this project.

I would also like to express my appreciation to all those who in any way helped me or gave me information relevant to this project.

SUMMARY

Water is one of the most abundant resources on earth, covering three-fourths of the planet's surface. However, about 97% of the earth's water is salt water in the oceans, and a tiny 3% is fresh water. This small percentage of the earth's water which supplies most of human and animal needs—exists in ground water lakes and rivers. The only nearly inexhaustible sources of water are the oceans which however, are of high salinity. It would be feasible to address the water-shortage problem with seawater desalination however the separation of salts from seawater requires large amounts of energy which, when produced from fossil fuels, can cause harm to the environment. Therefore, there is a need to employ environmentally-friendly energy sources in order to desalinate seawater. After a historical introduction into desalination this paper covers a large variety of systems used to convert seawater into fresh water suitable for human use.

Also an investigation of the basic types of contaminants found in water in water and how there treated. A detail report include the multistage flash, multiple effect boiling and vapour compression and membrane processes, which include reverse osmosis and electrodialysis.

The paper also includes a review of various systems that use solar energy source for desalination. And finally a concerned about the environmental impacts resulting from desalinating seawater and the effect especially on the marine environment.

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