

Master Thesis Brief Description

Thesis Title	Design of a Geothermal Heat Pump Installation
Programme of Studies	BSc in Mechanical Engineering, Frederick University
Course	AMET 400 Senior Project
Area of Study	Sustainable Energy Technologies – Biomass assessment
Student's Name	Efstratios Kyritsis
Students Reg. Number	13137
Supervisor	Dr.-Ing. Paris A. Fokaides, Asst. Professor, Mechanical Engineering Department
Supervisory Committee	Dr Chris Christodoulou, Professor, Mechanical Engineering Department Dr. George Karagiorgis, Assoc. Professor, Mechanical Engineering Department
Semester	Spring Semester 2019
Short Description	<p>This thesis is focused on the use of geothermal energy for heating purposes. The main scope was to investigate and propose a suitable design of a ground source heat pump system, for a housing complex located at Kos island. The housing complex had a total area of 2345,55 m². The attempt of designing a suitable system to heat up such that housing complex is at least optimistic. The total area of that housing complex makes the attempt for designing a proper system, non-profitable. As a consequence, from the cases that will be examined, the most realistic and economical one will be chosen. All the needed information concerning the housing complex, such as the building components U values (thermoconductivity), are presented. Heat losses are calculated with the use of certain equations. The next step will be the design of different installation of a ground source heat exchanger. The design was conducted with the use of the GLD Program of... company . Piping length, method of installation efficiency of the system and total energy demands are calculated with the use of that program. Finally the most realistic solution is proposed as the method of installation.</p>