

## Master Thesis Brief Description

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<b>Thesis Title</b>	<b>Use of a ground source heat pump for the production of lithium-ion batteries</b>
<b>Programme of Studies</b>	MSc in Sustainable Energy Systems
<b>Course</b>	SES 515 Capstone Project I
<b>Area of Study</b>	Sustainable Energy Technologies
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<b>Supervisory Committee</b>	Dr. George Karagiorgis, Assoc. Professor, Frederick University Dr. Constantinos Hadjiyiannis, Teaching Staff, Frederick University
<b>Semester</b>	Fall Semester 2017
<b>Short Description</b>	The purpose of this study is to investigate the use of a ground source heat pump for the production of lithium-ion batteries. In terms of this study, the types of batteries that currently dominate our daily routine, the types of recycling, and the recycling and derivation lines are listed. Analysis of the key energy consumption points for the above is mentioned. The essay also analyzes the theoretical background of renewable energy sources that can be used in industrial plants like the above types and examples of the application of renewable energy sources to reduce energy footprint, pollutants and basically, energy savings in factories. Research methodologies in an economics framework, to compare and study results so that we will be able to distinguish the positive and negative effects of such an intervention in the specific industry are deeply analyzed. Comparative results are presented and analyzed in the context of the above survey. Detailed description of the results of studies and measurements of energy consumption are discussed, before and after the use of Renewable Energy Systems. Study components of financial investment are mentioned, and conclusions in matters like, if we are able to convert such a unit (battery plant) into an energy-efficient or even better make it a green unit of production with the lowest possible cost.