

Master Thesis Brief Description

Thesis Title	Conversion of a 100 building community to a Zero Energy Community
Programme of Studies	MSc in Sustainable Energy Systems
Course	SES 515 Capstone Project I
Area of Study	Sustainable Energy Technologies
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Supervisory Committee	Dr. Agis Papadopoulos, Professor, Aristotle University Thessaloniki Dr. George Karagiorgis, Assoc. Professor, Frederick University
Semester	Fall Semester 2015
Short Description	<p>The greenhouse effect has been a major contributor in the evolution of European Union legislation in terms of energy technology systems and the use of more efficient and less polluting systems to the residential sector. The significance of the residential building sector in the energy consumption is well known. The European Directive 2009/28/EC is promoting the use of renewable energy in every sector, making the residential building sector a strong candidate for this paper.</p> <p>The subject of this project was the feasibility of converting a small existing community of 100 houses to a near Zero Energy Building community. To achieve that, analysis of the energy performance of an existing household was made, assuming for the sake of the simplicity of this study that each of the 100 houses is identical in terms of the energy performance and consumption with the household analyzed. After the analysis, possible renewable energy systems were proposed for each of the energy specific needs of the household. These possible scenarios will be assigned with weighting factors depending on the simplicity of installation, efficiency and feasibility in real life, providing a complete picture of the level of energy efficiency and dependency upon the conventional energy grid of the proposed community.</p>