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<b>Thesis Title</b>	<i>Experimental and theoretical evaluation of green roofs systems on a building</i>
<b>Supervisor</b>	M.-N. Assimakopoulos, Assistant Professor
<b>Summary</b>	<p>The aim of this study is to experimentally investigate the thermal behavior and theoretically analyze the energy efficiency of a Green Roof System (GRS) installed in the 1028,71m<sup>2</sup> roof of a supermarket in the area of Chalandri. The GRS is an extensive green roof of 700m<sup>2</sup> and it is consisted of 3500 mediterranean aromatic plants of 7 different kinds, while the rest surface is covered with conventional concrete floor. During the experimental procedure, measurements were taken of the outdoor and indoor air temperature and relative humidity, as well as of the surface temperatures of the ceiling, the conventional concrete floor and the different kinds of plants. The concrete floor was 9,9-21,9°C warmer than the planted area, with an inversion was taken place at the first hours of the day, where the concrete was 0,7°C cooler. As far as the simulations are concerned, the energy consumption, the indoor air temperatures and the surfaces temperatures have been assessed using the EnergyPlus 8.4, simulated for two cases: with and without GRS. For the whole year the cooling load was reduced by 27,17% for the first floor and 18,73% for the whole building. For the whole year the heating load was reduced by 17,96% for the first floor and 11,42% for the whole building. The reduction of the indoor air temperature of the first floor was 0,63-1,05°C on summer season, while the increase was 0,30-0,67°C on winter season, thanks to GRS.</p>
<b>Key words</b>	green roof, green roof system, urban heat island
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