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TITLE OF DIPLOMA THESIS:

Solutions evaluation for the optimization of energy and water management of swimming pool. Application to the municipal swimming pool of Toumba

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ABSTRACT

The continuous improvement of living standards and the continuous development of technology have as consequence the increase of consumption of energy and water. This situation seems to be changing over the last years and it is obvious that any waste must stop, since the negative results have already been visible. This is why European Union (E.U.) has issued a list of directives for the member states of Europe towards conservation of natural resources. Another factor that supports this mentality is the economic crisis, since energy and water saving results in saving money. In the present study, some ways for energy and water saving in a swimming pool are analyzed and compared. Research is focused on the heating energy, where more savings can be achieved. There are also some recommendations, concerning the general improvement of a swimming pool and its surroundings. In particular, improvement of energy and water management of the municipal swimming pool of Toumba, Thessaloniki is studied. The goal is to reduce the operation expenses of the pool and if possible to increase the incomes, so that it can be economically viable throughout the year. Finally, thanks to RETScreen software, several suggestions are evaluated in order to note which investments are reasonable to follow for the pool. For the evaluation a Cost – Benefit Analysis was carried out, using the Net Present Value criterion, the Internal Rate of Return criterion and the Benefit – Cost ratio. In conclusion, a SWOT analysis is done and a policy is suggested, which should be followed from now on by the administration of the swimming pool of Toumba.

KEYWORDS

Swimming pool, Energy saving, Water saving, Investment evaluation, Cost – benefit analysis