

TITLE OF DIPLOMA THESIS

Financial evaluation of energy upgrade of a public building

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ABSTRACT

The present Dissertation was conducted having as a goal to estimate the financial benefits that emerge from updating the energy efficiency class of a public construction. The case study of this analysis regards the 1st primary school of Panorama (Thessaloniki, Greece). In the context of this Dissertation the energy efficiency balance within Greece and Europe was assessed analysing and comparing their characteristics. This highlighted the importance as well as the multifaceted potential benefits resulting from developing people's perception on updating the energy efficiency class of public and private constructions. Furthermore, the current analysis addressed the existing energy efficiency characteristics of the case study along with the potentials for updating its energy class. In order to conduct this study, the Certificate of Energy Efficiency (CEF) was derived from the technical department of the Municipality of Pylaia - Chortiati. CEF includes the energy efficiency review that was conducted according to the relevant code that is provided by the Code of Energy Efficiency Class of constructions. As CEF was published on 07/04/2017, the calculation of the energy consumption was derived with the use of the version V. 1.29.1.19 of the TEE KENAK software. Interventions that were selected as optimal for the energy efficiency update of the construction obtained the initial findings for the energy consumption along with the evaluation of the economic benefit that would emerge from implementing them. Additionally, the analysis conducted financial evaluation of the interventions according to the Net Present Value (NPV) as well as of the Internal Rate of Return (IRR). Incorporating the latter, allowed for the calculation of the magnitude of the costs and benefits derived from implementing such investment while re-estimating the amount of time needed for paying off. Furthermore, the estimated results were cross-validated with the estimations that the software provided. Finally, the sensitivity of this investment was studied considering the invested financial capital, the cashflows as well as the suggested interventions.

KEYWORDS

Energy efficiency/upgrade, public buildings, financial evaluation.