



POLITECNICO
DI TORINO

Honors thesis

COURSE OF

Abstract

**Energy Audit for public administration: analysis of some
cases in Canelli (Italy)**

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This thesis concerns the energy audit done of the public facilities of the town of Canelli, a town located in the province of Asti. Specifically these are four school buildings, the town hall and a nursing home, for a total of 13,660 m² of useful heated area, equivalent to a heated volume of almost 47,000 m³.

In the data collection was vital active interaction with the local administration, which led to the knowledge of the actual consumption related to indoor climate and the relative economic spending. In addition, for each case study, it has drawn up a synthesis for urban context, climatic context, geographical context and physical technique.

After a first phase of data organization has gone to their elaboration, conducted through the Termolog calculation software, in parallel with careful consultation of past regulations currently in force and in terms of energy savings.

The second part focuses on the elaborate proposals for improvement aimed at reducing energy expenditure and economic consequence of the structures analyzed. The assessment took into account the cost / benefit ratio of the proposed jobs, depending on the needs and tight public administration's ability to be a stability pact which freezes funds otherwise destined for public works. For these reasons, after a confrontation with the local government, it was chosen for the evaluation of an intervention that could actually fit inside a real operational planning, as the current dynamics lead to run strictly necessary workings and having impact limited budget on the municipal budget.

From the results it emerged issues related to the casing and the adjustment of the winter air conditioning system, with the use of only the climate compensated probe. Excluding the outer walls, the more dispersing element is found to the last floor delimiting the heated volume.

From these indications improvement actions for the skilled have been established, with the intention of verifying situations achievable and manageable by the government. These are operations that have low costs, short construction times and a fast return on investment, even without access to incentives such as the "Conto Termico".

Five of the six cases have a cold attic, on which it is assumed the use of an insulating felt made of 12 cm thick rock wool, so that the thermal transmittance posts involvement is verified as if it were the dispersion towards the outside and not toward a non-heated room. Only in one case the intervention is more expensive since you have to take further steps to make the flat roof passable. Despite that the benefits lead to an economic return within ten years, without the use of incentives.

Taking an overall summary on the only intervention of insulation, the operation could potentially involve 20% of dispersing area of buildings.

The benefit from the two joint operations would then lead to an annual saving of 18% on the expense item for winter heating.

Given the difficult economic state of the municipalities and the direct comparison had during the writing of the thesis with the administration of the municipality of Canelli, the only interventions currently executable are those considered essential, the low cost and with limited economic return. These are characteristics that belong to the improvements considered and developed.

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