



POLITECNICO  
DI TORINO

# Honors thesis

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COURSE OF MASTER DEGREE IN ARCHITECTURE  
CONSTRUCTION CITY

*Abstract*

**Architectural and technological improvement of a school  
building: a new cultural centre at Liceo I. Newton of  
Chivasso**

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The objective of this work is to highlight how an intervention of technological improvement on existing building can determine positive aspects not only for the architectural component but also for economic and environmental issues. Most school buildings were built before the 1970s as a result of population growth. The lack of a specific legislation followed by poor design, the use of unsuitable materials and poor maintenance, have led to an alarming situation. Today, in fact, there are more and more cases of collapse in school complexes.

The need for urgent maintenance is 46,8%, as written in the 2018 Legambiente Report. This survey also shows that almost half of the schools have an energy class G and more than 80% of them do not use renewable energy sources.

At present it is unequivocal that, according to modern learning theories, didactic activities must be carried out in a different way from those of the past: in fact, it is necessary to provide premises for group activities and workshops that will be integrated with the concepts of the classic frontal lesson. But not only that! The use of the spaces is also made possible through social activities that make the school an attraction pole for cultural and sporting activities.

The case study is the "Liceo Scientifico Isaac Newton and the Istituto Magistrale Europa Unita" in Chivasso. It was built at the beginning of the twentieth century as a tannery and was later transformed into a school in the beginning of the 1980s according to the canons of the design and construction relating to that time.

The building reveals that the structural parts have a suitable degree of staticity according to the regulations and do not need to be adapted, while the energy certification (APE) has highlighted some critical issues. From this evaluation was born a design for the energy requalification in summary the subject of this thesis. In addition to this intervention, a new building has been planned for the large and unused internal courtyard with the aim of sharing the school for extracurricular use.

The requalification of the building can be carried out by the Metropolitan City of Turin, former named Province of Turin, using the funds allocated by the Piedmont Region.

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