POLITECNICO DI TORINO
Master of Science in Sustainable Architecture
Honors Theses

GUIDELINES FOR THE REDEVELOPMENT OF SCHOOL BUILDINGS WITH HIGH INDOOR COMFORT: THE CASE OF THE SCHOOL "RICCARDO DAL PIAZ" IN TURIN.

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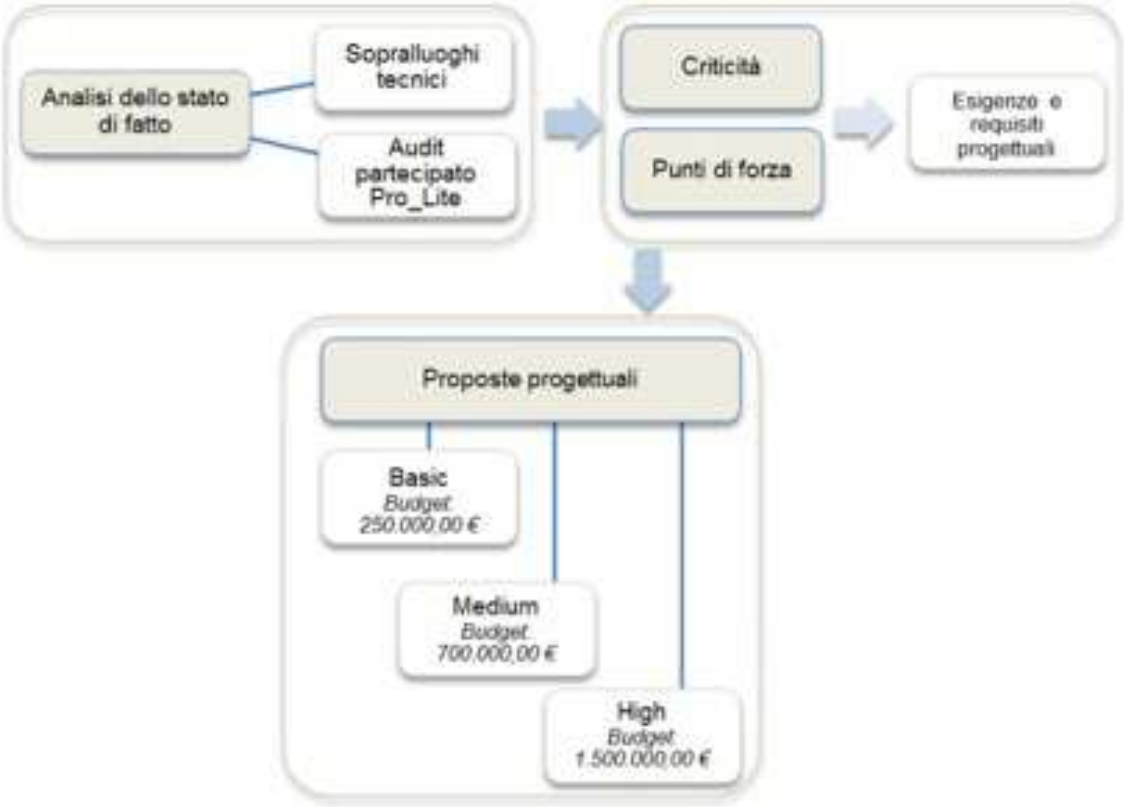
The greater sensitivity on issue of environmental guardianship, the necessity of reduction of the energetic consumptions and the inadequacy of the scholastic Italian buildings have spurred the Public Administration to seek solutions based on technical innovation, the participation and the sustainable development.
In this context, we can find the project *Pro_Lite*; an European initiative, introduced in the program *Torino Smart City*, which complements the innovative technological project aimed at sustainability with the project of comfort and psycho-perceptual comfort of scholastic user. My research has led to the identification of three design solutions meeting the latest regulations and international projects mentioned above in order to redevelop one of the three school buildings in Turin concerned by the European project: the primary school *Riccardo Dal Piaz*.

The three school buildings in Turin (1. Junior high school "Lorenzo il Magnifico", 2. Primary school "F. Parri", 3. Primary school "R. Dal Piaz")

The design process, which I attended from the early stages as a trainee at the Municipal Authority in charge of this initiative (the "Laboratory Sustainable City" in ITER), consists of:

- technical analysis carried out by professionals and technicians;
- participatory analysis involving students, faculty, staff and officer in charge through questionnaires for transposition of the critical matters;
- definition of requirements, which we tried to make up with the design workshop with the identification of available technologies that bring the desired improvements.

Taking a cue from the workshop I developed three design solutions, which respectively, with a maximum budget of 250 k€, 700 k€ and 1,500 k€, were able to provide a sufficient degree of fulfillment of the requirements in technology, energy and quality emerged from the path of participatory analysis in accordance with local regulations.



The design process

Completed and checked the proposals, it was recovered the entire process followed by drawing up of design guidelines that can be used in case of retrofit energy and functional public buildings.

The result was a methodological track composed by:

- Design procedures which re-propose the audit process of the project *Pro_Lite* (cards taken in technical inspections in schools, questionnaires to teachers and students), highlighting any gaps and possible improvements optionally changed;
- Technology boards, divided by macro-categories, bearing possible solutions applicable in a retrofit project. Obviously this collection cannot summarize all the technological solutions and the materials available, but gives some examples

that can be a good starting point for the development of a technological concrete project.

Example of tecnological boards

The proposed guidelines are to be considered as a tool aimed at both the public administration, designers and companies who intend to work on a real estate not more powerful in terms of energy and well-being perceived by the user.
Through this process you can control, even periodically, quality, technological and environmental performance of buildings and identify critical issues, efficiency of management to predict the time targeted interventions. One could formulate and formalize this survey methodology with computerized cards available online and directly connected with a portal for the processing of the data entered; the system would provide the Public Administration, or the entity that manages the building, real-time information on the state of satisfaction of the users and the need for any intervention.
Survey systems subsidiary could be included in a program of periodic check and, in the case of schools, integrated into the curriculum with moments of study related to sustainability, energy saving and management of a building sensitizing users to issues of re-use and recycling.

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