



**SESSION B)**  
**“ENERGY RESTORATION AND RETROFITTING”**  
**RETHINKING RESTORATION PROJECTS BY MEANS OF A**  
**REVERSIBILITY/SUSTAINABILITY ASSESSMENT**

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*Premise* – One on big mistake in restoration and retrofit project are technical plant installation impact. In order to solve this kinds of problems in the course of the 80's and 90's of the 20th century - in Italy, the most fruitful timeframe for the debate on urban and monumental restoration – many valuable experimental interventions were made, which proved to be useful for the identification and finalization of methodological and operational strategies. Their exploitation and re-use requested however the set-up and retrofitting of installations key for the development of the recovery project. In view of the subsequent technological evolution, such interventions and adjustments have shown to be of particular impact. Furthermore the actual requirements needs, not only to replace obsolete installations but also to implement and upgrade the so-called *reversibility* criteria of such restoration interventions while integrating them with a new *sustainability* assessment and verification in terms of environmental, economic and energy sustainability.

*Objectives* – Identification, by means of SWOT Analysis methodology, of retrofitting solutions for technical installations (heating, cooling and HVAC) vis-à-vis their interface with the architectural asset and the inherent project characteristics of installation devices. The aim is to show the efficacy of the solutions applied for the integration of the installation sub-systems chosen to guarantee the best micro-climate conditions.”

*Methods* – Use of the “*as build*” [ex-post] verification vis-à-vis two sample cases of particular significance : 1) Turin, Recovery of the former Convento di S. Croce (16<sup>th</sup>-17<sup>th</sup> century) as university site – project by: A. Magnaghi *et alia*, 1980; 2) Turin, Preservative Restoration of the Chiesa e Coro di S. Pelagia, 17<sup>th</sup> century - project by: A. Magnaghi *et alia*]. In that respect, the following aspects are taken into consideration : a) the type characteristics of the installations made at the time of their deployment (1985) in comparison with the current installation solutions that could be potentially applied; b) the technological elements that led to the main project choices with verification of the geometric-functional parameters of the technological upgrade/retrofitting to *confirm/disconfirm the related application* ; c) *the peculiar and autonomous* features of the architectural intervention in the preservative restoration vis-à-vis the effects of the occurred historicizing of the intervention itself, i.e. the subsistence of qualifying elements that can co-exist with the different phases in the lifespan of the monumental building/unit.

*Conclusions* – The combined use of two analytical tools can lead towards a more balanced assessment of the restoration intervention and the technological-functional retrofitting of the preserved works of art/heritage.

**Keywords** - *Energetic Retrofitting, Conservation and Reversibility, Technological Installations.*