

Emergency lighting and safety signs system in the historically or artistically valuable building: normative comparison and applications of project

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The use by the public of a historically or artistically valuable building, since the necessity arises of adapting it to needs and ways of use that are completely or partly different from the original ones, requires to make some changes and have recourse to construction technologies that most of the times are superimposed and do not fit with the features of the pre-existent building, thus compromising its valorisation as a whole.

Therefore the need rises for an accurate analysis of the pre-existent building, in order to minimise the transformation operations, and for a check of the physical and functional compatibility of the foreseen technological solutions with the existing structure.

In particular, one of the most critical aspect concerns the compliance with the regulations in force relevant to safety against fire and the presence of emergency lights and safety signs, necessary for an efficient and safe evacuation system in case of danger.

The implementation of such safety measures requires an “overlapping” (both structural and formal) of components, such as cables, raceways, lighting installations, signs, electrical boards, pull boxes, etc., which, in most cases, generate a remarkable visual interference, above all where furniture and decorations on walls and ceilings are present.

The recent introduction in Italy of the concept of “variant with equivalent safety” put the lighting engineer in a position to assure an acceptable safety degree also by means of integrated technological solutions, compatible with the existing building.

Starting from these preliminary remarks, the doctoral thesis developed into a specific study aimed at identifying innovative solutions, alternative to those traditionally adopted.

The thesis is divided into successive phases:

- A critical analysis of both the national regulations and the regulations in force in other European countries, relevant to emergency lighting and safety signs, with particular reference to historically or artistically valuable buildings;
- An analysis and comparison of examples of solutions adopted in both Italy and Europe;
- A market analysis of illuminations solutions and existing signs;
- Proposals of integrated and compatible solutions for lighting and signs.

In particular, the different approach in terms of laws and standards among the European countries considered (Italy, France, Great Britain and Belgium) was taken into account. Such difference of approach has repercussions on the various technological solutions adopted. The comparison was made on the basis of an evaluation report accompanied by photos, which contains the features of the safety lighting system and of the emergency signs for each of the buildings selected, and points out the problems of “invasiveness” and visual impact.

In order to get an overview of the solutions regarding lighting and signs, currently available on the market in both Italy and the other European countries, a report was conceived where all the technical features (included those relevant to lighting engineering) of the devices present on the market were gathered, and where the potentiality of the alternative technologies that may be applied to this field was briefly described (e.g. LED, electro luminescent lamps, optical fibres, multi-purpose columns, pedestals for supporting sign).

On the basis of the analysis carried out, the thesis proposes the application to a case study of a series of alternative and/or innovative solutions concerning lighting and signs, for each of which advantages and disadvantages were identified with respect to a traditional solution, in terms of invasiveness, visual impact, functional performances, costs and management.

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