mum distortion required by the glass-steel combination. This deck features a main structure consisting of two box-shaped beams, running parallel to the long sides of the glazed area. These elements are multi-linked on their ends and by means of supports, following the design of the arched openings in the pre-existing building.
On the internal side, the glass beams are connected to these elements through supporting shoes. The elements' hollow section contains air ducts and cable troughs, fully integrating the structural and the engineering components. In order to enable the installation of the structure within the narrow courtyard area, the steel frame has been designed and developed one element at a time, then assembled in situ and inaugurated in the night.

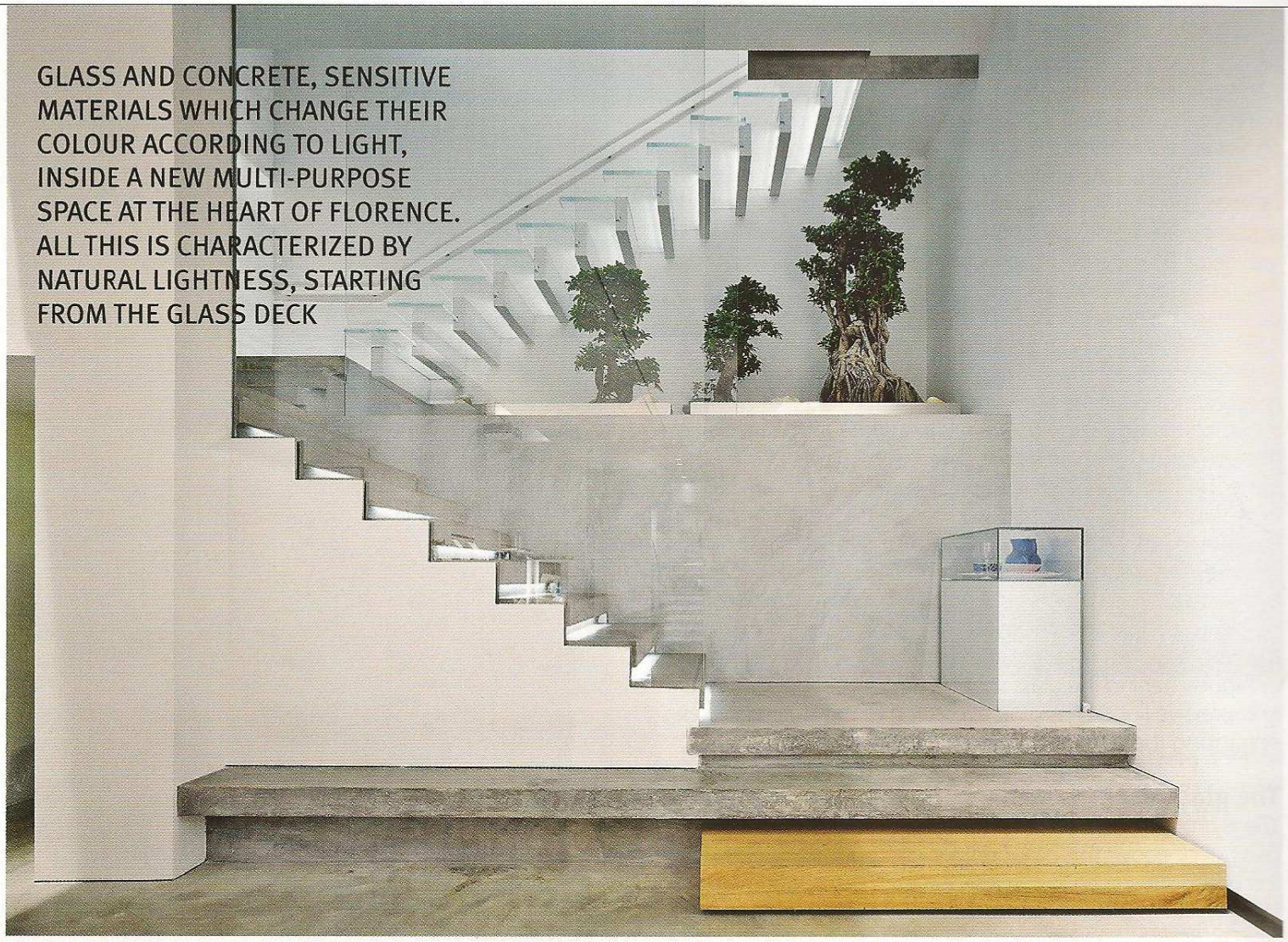
Total size of the steel structure: 18.30 m
Maximum width of the supports: 8.50 m
Number of structure elements: 6

Technical systems

The technical systems in the building have been matched to the minimalist concept of the intervention, ensuring comfort as well as the most advanced functions, without disturbing the interface between the surfaces and the daylight which, from the large walkable deck, filters down to the lower rooms. All the courtyard's technical systems covered by the glass deck are completely incorporated into the steel structure, ensuring maximum climatic comfort as well as minimum energy and maintenance requirement, mainly thanks to a comprehensive network of high-performance linear diffusers and to the centralization of all apparatuses.
The heart of the air-conditioning system lies in the heat pump, cooled by means of an open-circuit geothermal probe, supplying hot and cold fluids to the air-treatment units located in the various rooms.
A state-of-the-art control system makes it possible to monitor and communicate with any section of the systems, from sound diffusion and lights control (also through default programs) to temperature and humidity control in all rooms, and the integration of the video surveillance and break-in detection system, using digital cameras provided with an IP address.

Luisaviaroma flagship store in Florence

Dressed in Glass



GLASS AND CONCRETE, SENSITIVE MATERIALS WHICH CHANGE THEIR COLOUR ACCORDING TO LIGHT, INSIDE A NEW MULTI-PURPOSE SPACE AT THE HEART OF FLORENCE. ALL THIS IS CHARACTERIZED BY NATURAL LIGHTNESS, STARTING FROM THE GLASS DECK

With this new project, Claudio Nardi has been able to re-invent, in a structure built at the end of the 19th century, a fashion store already opened in 1984, transforming it not only into a point of sale, but also into a meeting place to host events, exhibitions and fashion shows. From a neutral container of trends to a web interface: Luisaviaroma is a global leader in the field of online luxury shopping. It is a concept interpreted through a technological architectural language, i.e. through the creation of multiform and ever-changing spaces by means of new, highly scenographic materials and building methods. The new space, divided into three levels (the women's department on the ground floor, the men's department on the first floor and the kids' department on the underground floor), is a multi-purpose container characterized by a minimalist design, where glass is largely used and exploited in all its structural and aesthetic aspects. This appears clear from the 13x4.5 meters large glass deck which covers the hall, providing the walking surface for the new open environment on the first floor. The glass deck consists of 8 laminated glass beams (450x50x5 cm) supporting a number of walkable covering tempered glass sheets. These sheets contain a special film which, reducing their transparency, filters sun rays, while the lines screen-printed on them provide a non-slip function. Thick tempered glass is also used for protecting the several vertical connection elements (the

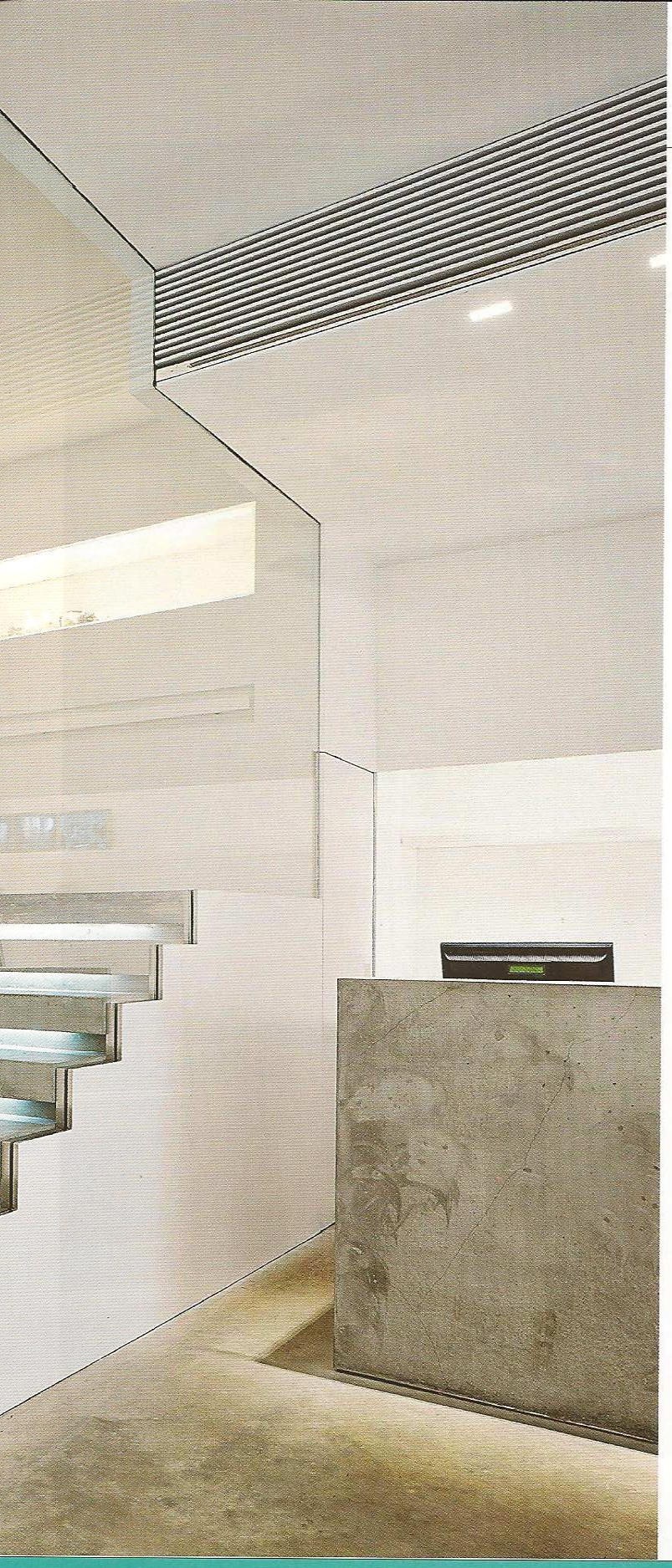
two stairs located at the entrance and at the rear of the store, the lift leading to the first floor terrace), made of concrete and backlit in order to obtain a "floating" effect. The relationship with the street is marked by two full-height glazings: the one delimits the entrance, allowing a glimpse of the cash desk and the stairs leading to the upper floor, while the other, by means of a range of tilting panels, creates impressive views on the indoor space, allowing it to be opened completely to the city. The industrial concrete floor covering and the glass, enamelled or corian panels, such as the display pillar extending through the several floors, form the envelope of a space designed to be a re-arrangeable multipurpose container, thanks to the large use of pivoting or sliding panels and free-standing, teflon-coated tubular metal display units. The same fixed furniture elements play more roles: extruded concrete blocks supporting the shelves can become benches; the showcases with backlit glass shelves can turn into display units. An airy space enlivened by thousand monitors which, by means of a complex wiring system hidden in the wall, can be located anywhere, enabling also a touch-screen access to the web-site. Thin rows of LEDs, recessed in the white ceiling or hidden behind the glass shelves, emit a cold but theatrically impressive light, changing according to the store activities, enhancing their expressive potential.

The glass deck

The eight glass beams used for the bearing structure of the glass deck above the ground floor are toughened and reinforced by means of a stainless steel dish, according to the Vtrs patent, in order to ensure users' safety and physical integrity also in case a bearing element fails. Based on the force-displacement curve (from the Brescia University certification), the toughened and reinforced glass beam features a structural behaviour typical of tough materials. The Vtrs toughened

The Project

Building contractor:
Immobiliare 2000, Figline Valdarno (Florence)
Architectural design by:
Claudio Nardi and Annalisa Tronci, Florence
Static glazing design by:
Michel Palumbo, Vetrostrutturale, Brescia
Steel structure design by:
David Piazzini, Marco Severi, Florence
Technical system design by:
Gabriele Anatrini, Executive Energy, Florence
Glass manufacturer and supplier:
Isolglas, Vestone (Brescia)



beams shock resistance ensures their ability to safely support structural loads even in the case that all the sheets composing the beam would break. The safety and load bearing properties of the glass elements are assured by the technical and engineering solutions implemented not only for the "glass" component, but also for the connections fixing the beam to the structure. The S275 brackets are designed as multipurpose elements, suitably supporting dynamic external loads, reducing the concentration of stress inside the glass, in the support area, by means of a level self-adjustment system, enabling the replacement of a damaged beam without involving the covering sheets.

The courtyard's covering structure

The covering deck of the rectangular courtyard (19x6 meters) of the building, represents one of the most complex interventions in this renovation project. A solution has been implemented in order to match architectural needs to functional, structural and engineering characteristics. The limitations imposed by the existing structures and by the absence of internal pillars have led to the creation of a steelwork structure ensuring the transfer of static loads to the walls while at the same time providing the sturdiness and the mini-

Covering Structure Features

Total length: 11.6 m
Total width: 4.6 m
Covering sheets: 9
Toughened and reinforced glass beams (Vtrs patent): 8
Static load: 2.3 kN/m
Dynamic load (compact crowd): 5.2 kN/m