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Industrial Design
metallic outlook



***Gianfranco Sangalli** graduated in architecture from the Istituto di Architettura di Venezia (IUAV) in 1975. He started a professional collaboration with his thesis advisor, Carlo Scarpa, immediately after his graduation.*

He soon opened his practice in Brescia, initially focused on renovation and restoration of historical building complexes. Parallely, he collaborated with large companies for designing chairs, furniture and exhibition stands and was presented at prominent European fairs.

He has worked on multifarious projects ranging from residential, commercial, public spaces, service industry, hospitals to town and country planning. He took part in the conception of several urban plans for municipalities in the Provinces of Brescia, Piacenza and Ferrara. He participated in several competitions and received numerous awards.



Text courtesy: Gianfranco Sangalli & Photographs courtesy: Massimo Crivellari

Building Fragments

collated with structural and aesthetical elements

The New Headquarters of Rubinetterie Bresciane Bonomi Brescia, Italy Gianfranco Sangalli



The new management and production site of **Rubinetterie Bresciane Bonomi in Brescia** was designed by **Ar. Gianfranco Sangalli**. A project covering 53,300 sq m is divided into volumes distinguished by extreme formal clarity and construction quality

In Gussago, in the province of Brescia, the new management and production site of Rubinetterie Bresciane Bonomi, leading company in the production of valves and the first green company in Lombardy, recently became operational. The industrial complex is located in the locality of Mandalossa, along the route of the old Padana Superiore SS11 highway and near the future slip road uniting Brescia with Bergamo and Milan (Bre-Be-Mi).

The design of the complex, by Gianfranco Sangalli, includes the construction of buildings used for manufacturing, covering a total of 53,300 sq m, is divided into the factory and the site used for offices and services. This new headquarters provides Rubinetterie Bresciane Bonomi with a work and production site in which to continue the business started as far back as 1901.

The project is located on an area of 117,500 sq m instilling 23,400 sq m of public spaces (20% of the total area), of which 16,600 sq m are given over to green areas, car parks and adjoining roads. The new facility is now comprised of a factory of around 30,000 sq m used for manufacturing and as a warehouse, and a building, with a gross floor area of around 4,200 sq m, equal to a covered floor space of around 1,300 sq m, used for related services and offices and with a remaining covered floor space of 22,000 sq m available for the future expansion of the company.

SPATIAL PLANNING

From a distribution perspective, this building is divided into two sections: The first, reserved for services, is located on the eastern side and has two floors above ground and a basement. On the ground floor,



the structure is characterised by micro-perforated fretted sheet metal



a play of light and shadow; depth vs shallow



heterogeneity of materials

divided by a corridor, are most of the changing rooms, services and rooms used as the infirmary on one side, and on the other the kitchen and the cafeteria, the latter being double-height.

Almost all the rooms on the ground floor are lit by strip windows of 60cm high, positioned between the floor slab of the first floor and the wall below clad with modular fibre-cement panels both to hide the functions performed inside from view and to reduce heat transmission to a minimum and allow the building to obtain a high energy classification. The same applies to the use of sheet-metal screening on the surfaces with the most windows.

On the south side they permit maximum exploitation of the sun's rays in the winter and their partial or total neutralisation in the other seasons. On the first floor there are accommodations for the caretakers with an independent entrance from the outside and a relaxation room for staff on one side, and on the other, the managers' cafeteria and an auditorium with annexed facilities. The basement is reserved for technical equipment rooms and can be entered from the road level via a ramp on the west side of the building.

The second section, the operational area, has three floors. On the ground floor, in addition to the reception, there are waiting rooms, a meeting room and services. Here too, for both formal appearance and energy containment reasons, the waiting rooms on the North and South sides have the same strip windows and execution methods found in the previous section. On the first floor are the operations, commercial and administrative offices together with the relative services. The top floor is reserved for the management.

The spaces, excluding the accessories and technical equipment or servo rooms, have been arranged with walls set up to allow for maximum flexibility.

A LIGHT METALLIC MESH UNIFORMLY COVERS THE LARGE FACTORIES

The entire complex is characterised by the use of metallic elements. The structure of the factories is made of steel in order to cover 40 m width with a single span and expands the sawtooth roof areas. This has made it possible to exploit the natural light on the vertical planes of the sawtooth roof and extend the presence of photovoltaic panels arranged on the inclined planes.

On the outside, a vast metallic texture made of micro-perforated fretted sheet metal runs along all the perimeter surfaces. This cladding exploits installation techniques and details that tend to accentuate the horizontal dimensions of the volumes, counteracted only by the vertical arrangement of the automated warehouse which is 17 m high. The production units accordingly define the architectural wings against which the office and services building stands out, positioned along the road axis of the Padana Superiore highway which borders the area.

THE STRUCTURAL FRAME, A PROMINENT FEATURE OF THE NEW HEADQUARTERS

The building housing the services and offices is adjacent to the factories it stands out against, then flexing until it lines up parallel with the highway.

Unlike in the volumes that house the factories, here the expanded metal mesh, detached from the wall structure and supported by a frame made of steel rings, mainly runs in horizontal bands and is repeatedly

interrupted to make room for the main openings. A ventilated fibre-cement wall protects the lowest part of the volume.

In the cafeteria area, the cladding has been almost entirely eliminated as if there had been a sort of erosion of the primary mass, highlighting the presence of the front patio and emphasising the large windows. At the end of the building where the entrance area is located, the removal of material from the building increases further leaving only the structural frame on view.

ENERGY EFFICIENCY

The buildings' heights are maintained low for visual connectivity with the surrounding hills to the North (Colle della Santissima and Colle della Stella). To comply with the environmental and hydrogeological regulations, the complex design is worked in agreement with the Superintendence for Architectural and Environmental Heritage of the Provinces of Brescia, Cremona and Mantova.

The aesthetic choices for the factory have been directed to the formalisation of a performing envelope for the building; to the air tightness of the building; to the adoption of low temperature heating systems based on heat pumps condensed with water at a constant temperature throughout the year; to home automation for lighting control; to power factor correction systems for electrical installations.

The panels that constitute the envelope of the factory have an inner polyurethane insulation, 10cm thick. These "sandwich" like panels insulate the building very effectively and made it possible for the building to be rated as an energy class "A" (an equivalent of a LEED platinum).

The building also features a shed roof facing North, infusing natural light into the interiors during the day, reducing to a minimum the heat





playfulness in spatial volumes

determined by transparent elements facing the other cardinal points which, in the specific case, are still shielded by a second "skin" distanced from the panels and made of corrugated perforated aluminum sheet.

The office building is heated with radiant floor. The thermal energy is generated by a series of heat pumps using ground water. Similarly, in summers the water table releases the cooling energy to the floor, thus allowing a suitable temperature to work also in the hot summer days.

The building's energy consumption amounts to about 5.5 kWh/mca. The factory is equipped with a photovoltaic system by 0.99 MW peak. The heating is supplied with cooled heat pumps with ground water.

MATERIAL CHOICES

The highest chromatic and materic homogeneity are adapted both for the interior and the exterior of the building.

Exteriors (the factory and the office building):

It is designed by micro-perforated fretted sheet metal for the factory and expanded metal mesh for the office building, highlighting the distinct purpose of the buildings – a sort of "brain" and "body" dichotomy for the factory (where things are produced) and the office building (where things are designed, planned and managed).

Interiors:

It's is worked with chromatic differences based on various functions. Wood is used as a noble finishing for managerial offices and for all representative spaces. It is also employed in the auditorium so as to better respond to acoustic requirements. In auditorium, especially, the soundproof panels are made of MDF blades that are then veneered.



surfaces and colours are in tune with the acoustical requirements



tinge of blue accentuating the spatial layout

Their high performances respond to the theory of Helmholtz resonators and to the dissipation of sound through porosity. The panels employed in the auditorium combine high soundproof performance and high levels of safety and healthiness.

The colour hues of the other spaces are in white with touch of blue, the brand colour for Rubinetterie Bresciane. Blue is used, for example, on the perimeter bands in the cafeteria or in the details of the reception desk and of the office furniture. Blue is also used on some other pieces of furniture, like the fabric of the armchairs and the front of the speakers' desk in the auditorium or the chairs in the cafeteria. ▲

fact file:

<i>client</i>	: Rubinetterie Bresciane, Gruppo Bonomi
<i>location</i>	: Municipality of Gussago, Province of Brescia, Italy
<i>site construction supervision</i>	: Studio Cominotti, Brescia, Italy
<i>artistic direction</i>	: Ar. Gianfranco Sangalli, Brescia, Italy

structural engineering

<i>concrete</i>	: Ing. Alessandro Cominotti, Brescia, Italy
<i>steel</i>	: Ing. Luca Paderno, Cossirano (Brescia), Italy
<i>mechanical and electrical engineering</i>	: Ing. Giovanni Ziletti, Brescia, Italy
<i>contractor</i>	: Impresa Arici F.lli Srl, Gussago (Brescia), Italy
<i>mechanical systems</i>	: Marco Lugli Impianti, Lumezzane (Brescia), Italy
<i>electrical systems</i>	: Elgen Srl, Paderno Franciacorta (Brescia), Italy
<i>steel carpentry</i>	: Pitra Sas, Cossirano (Brescia), Italy
<i>ventilated facades, exterior insulation and finishing system (EIFS)</i>	: Gips, Consorzio Costruzioni a Secco, Trento, Italy

doors and windows

Pitra Sas, Cossirano (Brescia), Italy
Realizzata con trafilati Metra Spa, Rodengo Saiano (Brescia), Italy

furniture

<i>equipment of operational rooms</i>	: Mascagni Spa, Casalecchio di Reno (Bologna), Italy
<i>equipment of managerial offices and lighting</i>	: Arredamenti Riva Spa, Brescia, Italy
program and dimensions	
<i>factory</i>	: 30,000 sq m
<i>offices and facilities</i>	: 4,200 sq m
schedule	
<i>project</i>	: 2010-2013
<i>end of construction</i>	: 2015