

THE INSTALLATION

The installation work on site has been entrusted to the company Brunello with consolidated experience in the complex installations, the company Brunello, reach to install, under tight deadlines, the different sheets of polycarbonate that, for project needs were variable in length up to 15 meters and in the domed skylights also the width was variable for each section with different thickness and colour.



THE FIVE DIAMOND-SHAPED DOMES AND THE 22 PYRAMIDS

The translucent, polycarbonate sheets used, are "striped covers". This requirement was to obtain the efficiency in performance, of construction and therefore, economical convenience.

The solution was reached working with Marco Lazzaro, a fabrication company from Venice, who, in association with Dott.Gallina, supplied the aluminium systems necessary for fixing and sealing the polycarbonate sheets.

The solution chosen was to connect the upper translucent surface with the steelwork below using short tubular legs, so the two structures are close enough to give the desired effect.

The solution used is a complete and tested "roof system". An exclusive system including aluminium profiles, with special joint and adjustable brackets, specifically designed by the company Marco Lazzaro. This system has allowed us to use the sheets with different thicknesses and different thermal expansions in full lengths up to 15m, avoiding the risk of water infiltration. It also allows us to obtain a regular surface with the maximum width and bend radiuses.



The technology of translucent daylighting

CENTRO SICILIA A CASE HISTORY

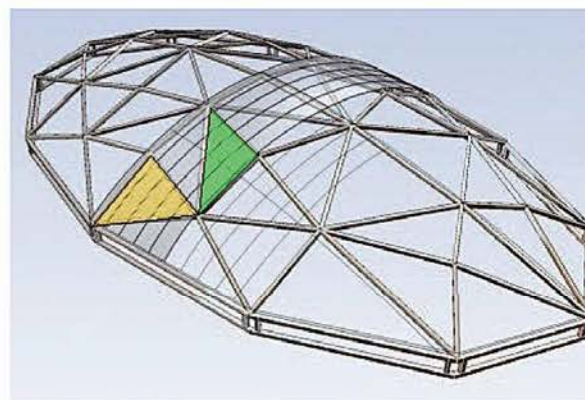
Recently opened in Sicily is the region's largest mall "Centro Sicilia". This single level structure is an excellent example of functional architectural that incorporates the principles of "green and sustainable" design.

Located in Sicily, where the temperatures are very high year-round, skylights of this size would normally allow for tremendous internal heat build-up resulting in extraordinary air conditioning costs.

What is unique about this project is that skylights were designed to cover the entire roof structure for the purpose of bringing in natural light but at the same time creating a comfortable internal atmosphere without the usual heat build typically associated with skylights.



dott.gallina



Project data: City of Catania - Sicily, Italy
Customer: Coalbu Srl - Cagliari
Project: Design International Srl - Milan
Planning - Ingegneria e Pianificazione Bologna
Contractor: Laprometec Srl - Catania
Executive designer: SAP Engineering studio - Catania
Surface: 12,000 sm
Product used: polycarbonate sheets with IR Treatment



DOTT.GALLINA
Strada Carignano, 104
10040 LA LOGGIA (TO)



S.A.P. STUDIO ENGINEERING
Via Morosoli, 15/b
95124 CATANIA



LAPROMETEC
Strada Comunale Cardillo
95045 Misterbianco (CT)

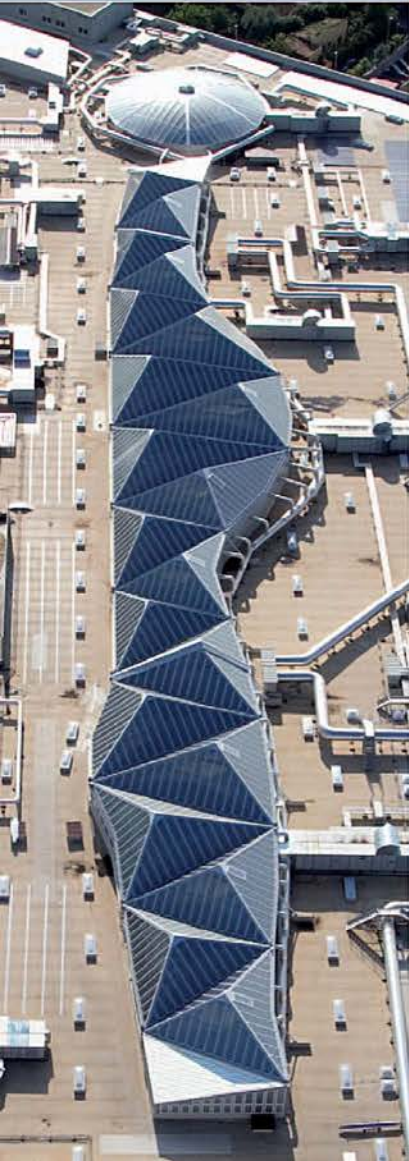


LAZZARO MARCO
Via delle Industrie 2, 30030
ROBEGANO DI SALZANO (VE)

C.M. BRUNELLO
Via Brigata Julia 9
35020 Pernumia (PD)

THE CONSTRUCTION OF THE SKYLIGHTS WAS ASSIGNED TO A GROUP OF COMPANIES:

dott.Gallina Srl - polycarbonate sheet supply
 SAP Engineering studio - executive designer
 Laprometec Srl - steel fabrication
 Marco Lazzaro Srl - system assembly
 Brunello Srl - installation

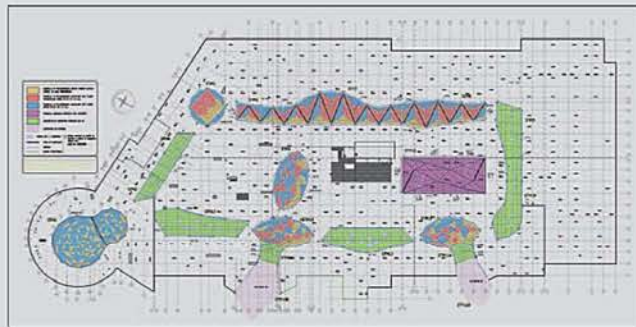


THE TEAM

The team of companies involved, worked together to design the structures, select materials and do the structural calculations necessary for the installation of this roof system; All with a specific mandate. That mandate, to design and install translucent skylight systems with high thermal insulation values, high light transmission, special color effect, and to be completed expeditiously.

THE PROJECT

The project includes two types of skylights: Cupolas (domed) of various sizes and shapes, faceted like irregular diamonds and triangular-based pyramids of various heights, placed side by side and tilted in space. There were 27 different structures, all with welded joints and each requiring different cut shapes.



THE SKYLIGHT

Dott.Gallina was chosen to supply the polycarbonate translucent sheets because we were able to meet the needs of the designers with our "new" generation of product and our high level of service.

The **PoliCarb**® and **PoliComp**® polycarbonate sheets are installed on different skylights and galleries to maximize translucency and performance with solar radiation controls.

With the assistance of dott. Gallina's technical support team, the architects have been able to achieve the following:

- greater efficiencies using natural lighting,
- improved comfort,
- reduction in costs for artificial lighting,
- reduction in cooling costs (estimated to be near 20%),
- fast and safe installation,
- warranty against water infiltration.

IR - AN ADVANCED TECHNOLOGY

The polycarbonate sheets selected were extruded with an advanced technology using IR treatment. The control of the temperature and the management of heat are essential elements in maintaining a desired level of comfort within buildings. They are also critical elements for controlling costs and maximizing energy savings.

The purpose of the IR layer is to absorb the part of the light relative to the infra-red rays (from 780 to 1400nm), effectively blocking the solar heat, while letting the solar light through. The result is a reduction of the internal transmission of heat and a reduction of the cost for cooling the area. In fact, all the products from the IR line can contribute to reducing heat build up by up to 25% while increasing light transmission by up to 60% when compared to other window or roof products. With the new IR technology is possible to obtain an excellent comfort, using natural light, without the unpleasant "greenhouse" effect below the transparent surfaces. Our new IR® technology now makes it possible to improve the comfort level inside using natural light without the unpleasant "greenhouse" effects typically associated with translucent daylighting.

The designers, challenged with the orientation of some of the skylights (specifically the southern exposure), have designed

multiwall sheets 32mm in thickness and grey in color to increase the thermal insulation without renouncing the indisputable benefit of natural daylight. The architect also designed a dual glazed application (two sheets assembled with air pocket between) "double glazing" (two sheets assembled with air camera between) the PoliComp® sheet has been used with IR treatment using the PoliComp® solid sheet with IR treatment. Lastly, the capabilities of Dott.Gallina were essential to meeting the challenges of the project including maintaining chromatic effects, supplying hundreds of different widths, lengths, shapes, utilizing two different materials (solid and multiwall; both with different expansion values) to produce skylights that will not leak.

THE "INVISIBLE RULE"

The final design of the skylight was a challenge of speed, innovation, and technical and economic feasibility. SAP Studios Srl, an engineering firm in Catania and Laprometec Srl, one of the largest steelwork companies in Southern Italy came together. Laprometec, with their professionalism and the latest generation of equipment, were able to manage the entire steel structure in record time. The capacity and the attitude of the Laprometec, was crucial to reach the structural requirements, and the tight timing table. The pre-assembly of the skylights and installation of the steel structures were operating on a 24/7 schedule simultaneously.

SAP Studio Srl, after acquiring the basic design of the skylight (designed by Design International of Milan and planning of Bologna), the project requirements appeared irreconcilable given the short time required and the modern technology of the polycarbonate sheets.

The challenge was to redefine the design of the structural steel work to install the polycarbonate solid and multiwall sheets, with varying colours and types along the same pitch. For the dome and pyramids structures, the problem to solve was; how to respect the spirit of the architectural design, given the variety and irregularity of the forms, without unacceptably compromising the time and cost of design.

The solution was found in a mathematical formula, an equation. By writing a software program, given only a few parameters, they were able to generate the entire structural scheme of the pyramids, its beams and nodes.

The designers were able to complete the CAD drawings, in dramatically shorter time than would have been possible without the adoption of a precise mathematical rule, an "invisible rule".



COMFORT UNDER THE SKYLIGHT

It is difficult to measure and explain the feeling that you get walking under these big skylights. Passing from a shady area to an illuminated area you would expect heat and not a pleasant sensation. In this case the sensation was very comfortable without the expected heat.