

NBI S.p.A.: Improving the viewing of Mario Sironi's fresco and reducing energy consumption at the Sapienza University, Rome

Bologna, 23 November 2017 - The Facility Management and Energy Department at **NBI S.p.A.** (fully owned by the Astaldi Group) has completed the new lighting system in the Rectorate's building Great Hall at the Sapienza University, Rome.

Throughout the five-months-long work which caused only minor disruption to daily academic activities – while following rigorous safety measures – NBI S.p.A. had to operate within a multi-purpose hall where many and various events were held (conferences, special guest addresses, institutional meetings, concerts).

The Great Hall is a huge 900 sq m auditorium with a 3,000-person capacity, about 37 metres long, nearly 26 metres wide and 14 metres high. A stage is surrounded by stalls, loggias and galleries. The Great Hall is known for its unique architecture and for Mario Sironi's work, *L'Italia fra le arti e le scienze* (Italy Between Art and Science), painted in 1935 to celebrate the campus inauguration. The fresco spans over 90 square metres.

In collaboration with the Works Management office, the **NBI S.p.A. project** focused on **upgrading the existing lighting system by introducing the latest technologies**, on **reducing energy consumption**, and on **improving the viewing of Sironi's fresco** – recently unveiled after a two-year restoration work – and of the unique spatial and architectonic features of the auditorium. All this formed a special lighting solution that offered high visual comfort for visitors while protecting pre-existing elements through the use of LEDs, which do not produce UV radiation and are low heat emitters.

The NBI S.p.A. project in the Rectorate's building Great Hall resulted in a reduction of energy consumption from 10,000 W to 4,200 W.

NBI project specifications

- NBI dismantled and replaced the pre-existing lighting system with a new one that complies with current regulations.
- System elements were placed around the auditorium walls and hidden above the top mouldings of the VIP balconies.
- The placement of new-technology lighting fixtures called for the use of electric rails rendered smart by the use of bus cables that are controlled by dedicated control units equipped with Digital Addressable Lighting Interfaces (DALI).
- Light fixtures aiming and lighting scenarios had been discussed and agreed upon with the Works Management office. There are 20 different scenarios.
- The electric rail that feeds the group of LEDs lighting Sironi's fresco was installed using adjustable brackets, designed and built for this specific purpose by NBI.
- Taking this special measure was necessary in order to hide and at the same time improve the lighting of the famous fresco.
- Light fixtures were coated with custom brown aluminium plating, designed and produced by NBI.
- The installed system is not visible, as NBI designed and produced a clear aluminium casing that matches the wall colour.
- The lighting system required a dedicated control panel (developed, designed and built by NBI) to house all the components that control the lighting elements remotely (lighting fixtures, curtain motors, lighting scenarios). Everything is powered by an existing electric cabinet, set in the technical rooms, through a step-up transformer which also increases voltage from the original 220V to the current 380V.

- The cable used throughout the system with varying diameters runs for some 4,000 metres. The cables used, fed by different power supplies, power the lighting fixtures, system control and management, safety lights and curtain motor.
- There are 3 lighting system types in the Great Hall, designed by the architect Marcello Piacentini in 1935, with special effects of illuminance. These lighting fixtures are considered historical heritage. Choosing to implement new technologies required the development of improved ways to increase the efficiency of both power consumption and system illuminance, by eliminating the old illuminance defects while keeping unchanged the historical overall effect. The lighting fixtures are divided into:
 - a. Applique green glass lamp shades (distributed around the auditorium walls) illuminated by fluorescent tubes. NBI, in agreement with the Works Management office, developed and produced LED bulbs for these lamps.
 - b. Hanging ceiling lamps with "tobacco"-style light effects (pendant canopy), illuminated by halide bulbs. NBI, in agreement with the Works Management office, developed and produced a LED illumination system for these fixtures, while keeping also the old lamps operational in order to leave unchanged the historical illuminance which could be switched on whenever necessary.
 - c. Balcony LED strip lights.

NBI SPA – THE ASTALDI GROUP

NBI S.p. A is an **Astaldi Group** company specialising in **plant engineering and construction, facility management, energy services, energy requalification, and energy generation from renewable sources**. It offers integrated and EPC solutions for complex systems and advanced technological plants – from designing through construction, testing and commissioning to providing assistance and maintenance service – in such sectors as healthcare, infrastructure, office buildings and shopping centres, industry, tourism-hotels, and artistic-cultural heritage. Of particular note is NBI's presence in Turkey and South America, respectively through NBI Elektrik Elektromekanik and NBI S.p.A. Agencia en Chile.

For additional information

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