

enel x



**ARCHITECTURAL
LIGHTING**



ENEL X: NEW VALUE TO ART

Enel X is promoting a new **concept of "light"**, with the ultimate goal to preserve and enhance the plentiful beauty within our territories.

Architectural lighting interventions can bring a multitude of benefits to the whole Community. It enhances the full potential of historical heritage sites and it upgrades areas currently not adequately preserved, fueling the cultural and economic development of our territory.

A competent use of the light can act as a trigger for changes, giving a **new energy** to urban centers, supporting brand-new ways to **live the city** and all its spaces.

In order to reach this purpose, Enel X interventions support cities and Public Administrations in their changing path towards **sustainability goals**, with lighting projects, proposing state-of-the-art systems and devices in terms of **energy efficiency** measures.

Enel X experience

- **More than 30 years of experience** with architectural lighting projects.
- **More than 1.500** architectural lighting projects completed.
- **3.300 Municipality clients** around the World **are currently using Enel X** public lighting solutions with **more than 2.500.000 lighting points** managed.

LET THE BEAUTY SHINE ON

The Enel X portfolio of architectural lighting solutions is **wide and flexible** and can be adapted to multiple contexts and different needs.

What

The eye of Enel X lighting designers can focus on a wide range of architectural and artistic sites: from single monuments - such as small fountains - to entire historical centers through the creation of comprehensive "Lighting routes" enhancing urban spaces and defining historical and artistic itineraries. The panel of solutions is completely flexible upon the needs of the client.

Our projects can be design not only as **permanent** solutions, but also as **temporary**: dedicated to events, campaigns, festivities and celebrations.

For this reason, Enel X has developed **two different approaches**, which coexist in order to fit every customer need and the context specific characteristics:

- a **"niche solution"** approach: important and heritage preservation interventions, requiring multiple stakeholders involvement, a more time-consuming process and higher level of investment;
- a **"lean solution"** approach, launched to have accessible and fast offers on the market and bring high quality interventions with a quick and effective methodology, which uses selected lighting tools and can be applied to a set of specific architectural segments such as church facades, fountains, parks, etc.



How

Enel X flexible approach can support the single project **over the entire lifecycle**, from the idea definition analyzing possible financing options to the materials supply, installation, operations and maintenance of the new lighting solution.

Possible applications

Some possible applications for our architectural lighting projects embrace:

- › Monuments and historical buildings
- › Historical city centers
- › Archeological sites
- › Gardens and parks
- › Villages, castles and city walls
- › Squares
- › Porches
- › Modern Architecture
- › Fountains
- › Industrial Archeology
- › Internal lighting of museums and exhibitions
- › Bridges
- › Arches
- › Sculptures
- › Train stations/ports/airports
- › Shorelines
- › Theme parks
- › Natural sites
- › Religious and civil events
- › Markets and fairs
- › Other





PERMANENT LIGHTING INSTALLATION

The goal of this type of installations is to identify and characterize the cities and the locations with a **long-term** view, within an urban requalification process. For this reason, the choice of devices and lighting sources is carefully analyzed and the overall project is designed, hand-in-hand, with the client and competent bodies, in accordance with the laws, the aesthetic of the location and with a careful study of the surrounding context.



TEMPORARY LIGHTING INSTALLATIONS

Temporary projects are designed case-by-case based on the **specific "event"** to be illuminated and they often offer the chance to experiment new technologies and new project philosophies, creating scenographic effects.

For example, such interventions can be customized for:

- > **gala events** in prestigious buildings or big open spaces (e.g., dynamic lighting on the building facade through advance projection mapping technologies);
- > **events/exhibitions** related to fashion, concerts, theme, and sport celebrations;
- > **holiday and religious events**, local and national celebrations, anniversaries;
- > **awards, fairs, exhibitions;**
- > **internal lighting** for travelling exhibitions, museums, art fairs.



OPERATIONS & MAINTENANCE

Enel X has a long-term experience in optimizing energy consumption and taking care of the **operations and maintenance** of the lighting devices, offering plans of programmed O&M controlling both the status/ replacement of lamps and their right positioning or lighting impact.



OUR KEY PRINCIPLES

Every architectural lighting project is unique, and it has its own life, origin and development, being tailor-made around the needs of the citizens and of the competent bodies. However, all Enel X projects benefit from the precise project philosophy, gained over more than 30-years' experience and strongly based on some **key principles**.

- **Usage and experimentation of cutting-edge technologies:** use of top-notch devices and solutions for the optimization, light control, digitalization, customization of the new lighting system.
- **Energy efficiency:** all Enel X projects aim at obtaining the maximum energy efficiency savings, avoiding useless lighting dispersion and following the strictest norms in terms of light pollution.
- **Valorization and artistic mastery:** experience, technical knowledge and a team of fully dedicated architectural lighting experts, as well as a specific artistic eye that privileges "soft" approaches enhancing the monument's implicit beauty and avoiding invasive interventions.

Enel X methodology

The quality of Enel X projects starts from the very first phase of **project idea definition**, with the following steps:

- **accurate historical analysis** of the monument and of the surrounding context;
- evaluation of the **territory and urban setting**;
- **census** of **ante-operam** situation (e.g., lighting devices, energy consumption, etc.), collecting a complete data set of info and materials;
- analysis and definition of the **elements to be revalorized**, preparing rendering and virtual simulations;
- constant **involvement of competent bodies**;
- **cost optimization** study.

Enel X accurate methodological approach goes on with a **careful planning**, in order to orchestrate the intervention in the smoothest, most reliable and highest quality approach.



ENEL X: YOUR BEST PARTNER FOR ARCHITECTURAL LIGHTING

Our winning elements

- › **Deep knowledge** of the territory and of the overall context.
- › **Flexibility** of the solutions panel.
- › **Quality** of the design recognized at international level.
- › **Cutting-edge** lighting systems and devices, with **innovative system** for the lighting control obtaining the highest **energy savings**.
- › **End-to-end approach**: from project idea definition to installation and operations and maintenance.
- › **Fast delivery time** and lean methodologies.
- › **Team** composed by lighting designers, engineers, energy managers, architects, restoration experts, art historians, having **competences and skills** internationally recognized.



SANTA MARIA MAGGIORE, ROME

The project aimed at **improving the use of the space** in its whole set of **functions**, ranging from being a liturgical setting to one of the most popular cultural and tourist attractions in Rome.

Enel X intervention resulted in a valorization of the symbolic, liturgical and religious value of the Church, together with an overall appreciation of the historical complex. The project philosophy focused on a concept of "light" meant to recreate a homogenized and uniform atmosphere, enhancing the colors of the different materials composing the architectural space, using LED lamps with high color rendering and warm temperature and resulting in a remarkable energy saving (80%), with a dramatic improvement of energy efficiency.

Ante-operam

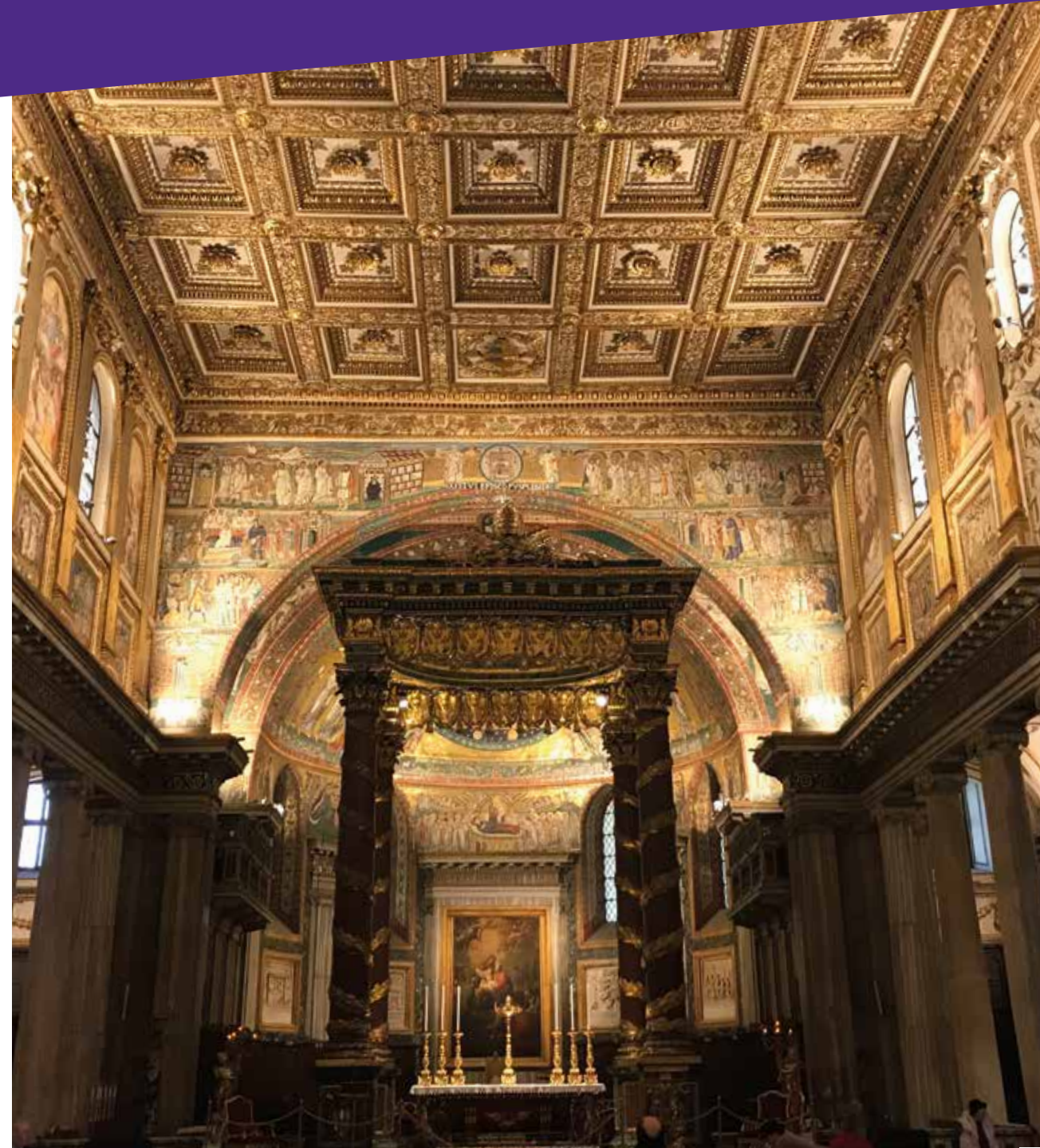
- > High installed power: **153kW**.
- > Copious lamps: **805**.
- > Low lamp's average life: **3000 hours**.
- > High average power: **190W**.
- > **Lights too highlighted.**
- > Lighting system **not possible to be dimmed**.
- > **Projectors in very visible spots.**
- > **Very high maintenance costs.**

Obtained energy savings

- > **80%**

Post-operam

- > Low installed power: **30kW**.
- > Lower number of lamps: **711**.
- > Much longer lamp's average life: **50.000 hours**.
- > Lower average power: **40W**.
- > **Appropriate level of lighting.**
- > Lighting system with **dimming options** for different lighting scenarios.
- > **Projectors not visible.**
- > **Low maintenance costs.**



USE CASES

PANTHEON, ROME

Lighting is a crucial element for the **monument's valorization and right perception**. The project used light sources with high color rendering, warm color temperature and very high energy efficiency, perfect to enhance the volumes of the coffered ceiling in the dome, of the marble shades and of the statues in the lateral chapels. The overall lighting system has been designed so that it can provide a **flexible use of the light** creating different lighting atmospheres depending on the specific needs.

The positioning and the size of the projectors has been defined in order to reduce the visual impact, creating for this specific case a mechanical system which makes the projectors move forward only when they are being used, further reducing the visual impact of the lighting system overall.



Ante-operam

- No. of total devices: **277**.
- Total power: **33,5 KW**.
- Typology of projectors: **discharge headlamps**.



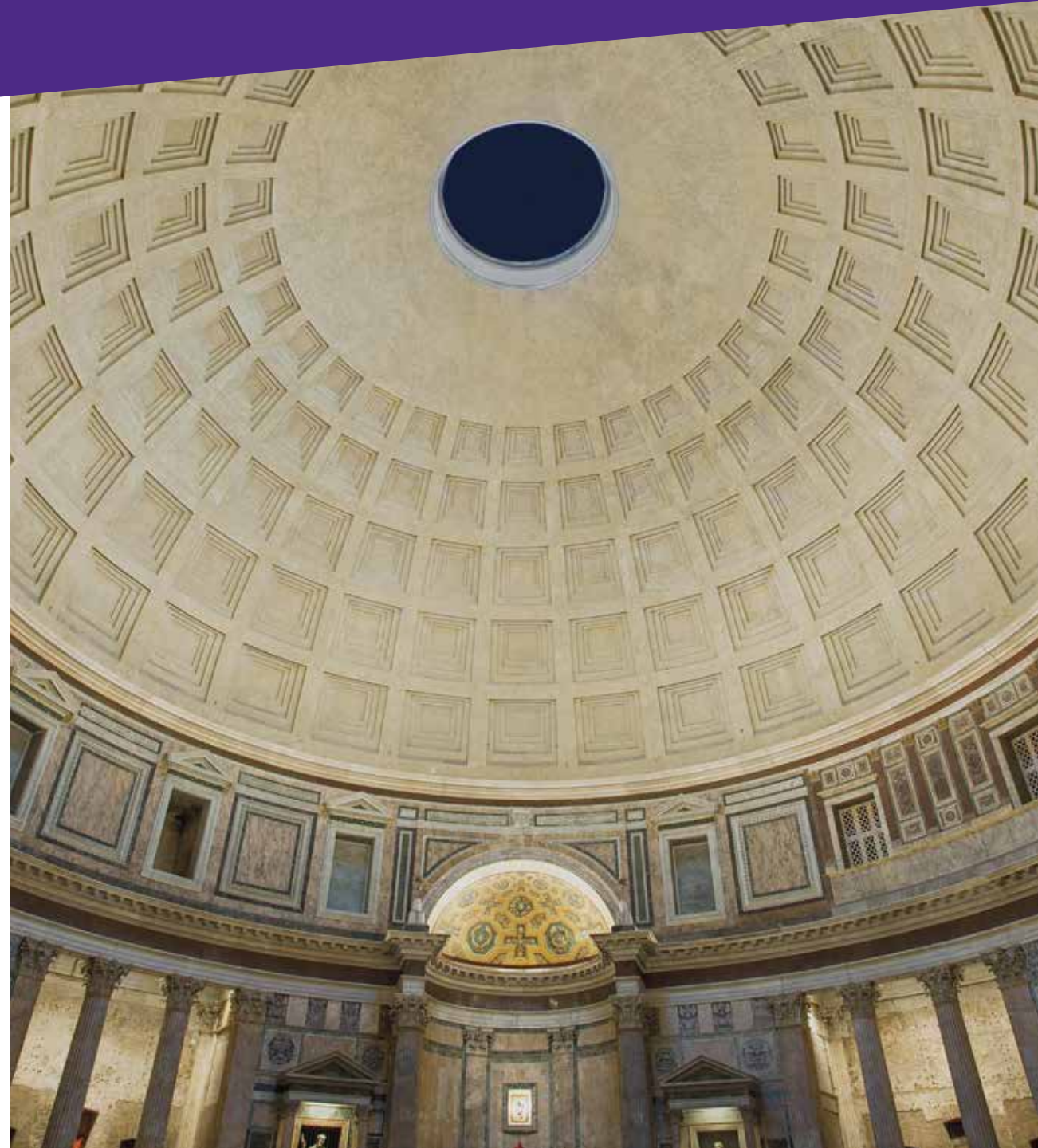
Post-operam

- No. of total devices: **294**.
- Total power: **12,3 KW**.
- Typology of projectors: **LED projectors**.



Obtained energy savings

- **49%**



REAL ALCAZAR, SEVILLA

This intervention aimed at enhancing the **architectural beauty** and the historical value of specific areas of the architectural ensemble during the hours of darkness, enabling and enhancing the opportunities of enjoyment by the visitors.

For this purpose, one of the main characteristics of Enel X project is the usage of very technologically advanced devices, able to adapt to different uses and needs, such as events or big shows.

The main areas of focus for the project have been the facade of Palacio del Rey Don Pedro and the Patio De Las Doncellas. The project philosophy though has been the same one over all the ambiances, researching the most minimized visual impact of the lighting devices, thanks to their specific typology and a well-studied positioning.

The selection of state-of-the-art lighting devices, with long average life, made the project achieve substantial energy savings vs. the previous system installed.



Post-operam

- No. of total devices: **126**.
- Total power: **4,39 KW**.
- Typology of projectors: **LED projectors**.



Obtained energy savings

- **45%**



enel x

For further information visit the section dedicated to City on our website www.enelx.com

