

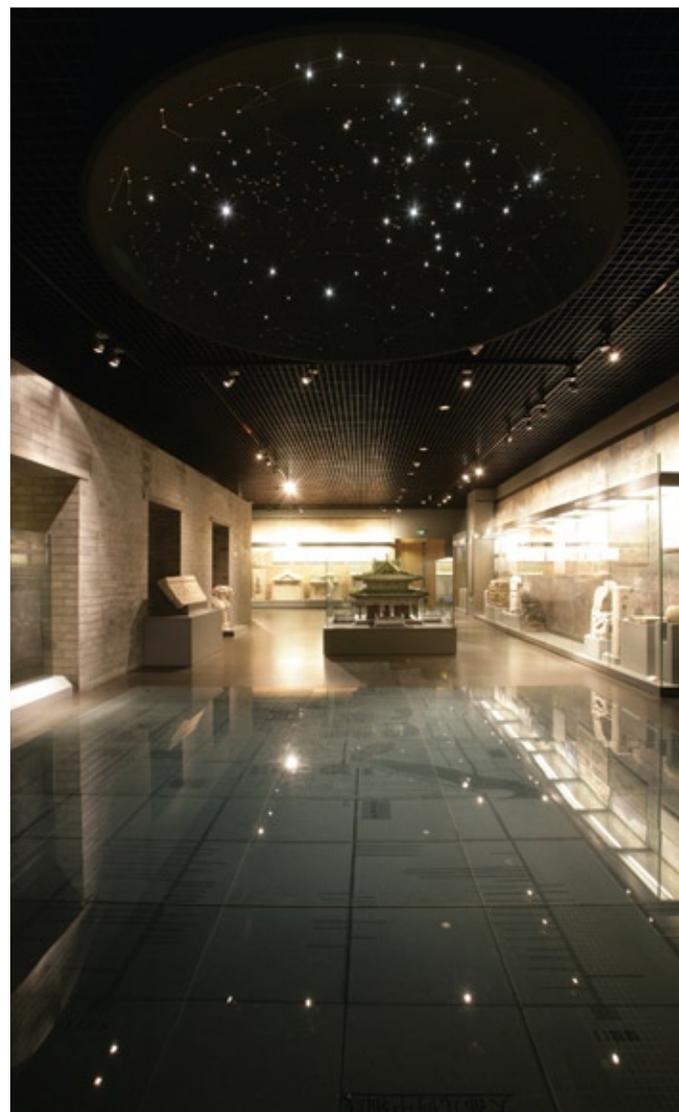
# case study | Capital Museum

Beijing, China



**The Challenge:** Highlight the museum's many unique and fascinating artifacts, while embracing its vision for environmental protection and energy savings.

Beijing's Capital Museum reopened to the public at its new address located in China's capital city in 2006. The museum is a magnificent, technologically advanced building that echoes Beijing's historic and cultural significance and its cosmopolitan aspirations. In order to bring optimal lighting effects to its exhibits, the Capital Museum chose the GRAFIK 6000™ lighting control system from Lutron with the patented RTISS™ (Real Time Illumination Stability System) technology to prevent light flickering.





The Capital Museum first opened its doors to the public in 1981; it subsequently moved to its present location in the west of Beijing in 2006. Now the museum is comprised of 14 exhibition halls with over 5,600 exhibits, all excavated in Beijing. It is a world-class museum highly praised for its grand architecture, rich collection and advanced technologies.

The Capital Museum's architect, Mr. Cui Kai, made use of traditional materials including stone, bronze,

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**Ms. Wang Rui**

Engineering Department, Capital Museum

timber and bricks, along with modern architectural elements like steel frames and glass walls to fuse classic and modern beauty. The museum consists of three buildings including a rectangular exhibition hall, an oval hall and a bar-shaped office building. Among the three buildings are an atrium and a bamboo garden, which make use of sunlight and rippling water to create a natural environment with a hue of culture.

Environmental protection and energy savings were factored into the architectural design. Its rooftop solar power panel is an example of this innovative approach; Capital Museum is the first museum in China to make use of solar energy. The museum is also furnished with energy-saving lighting fixtures, exhibition materials and display cabinets that meet national environmental protection standards.

To create an effective lighting design that is also energy efficient, Capital Museum deployed the GRAFIK 6000™ lighting control system throughout the museum. “The GRAFIK 6000 is perfect for future expansion due to its ability to work at different scales of complexity,” said Ms. Wang Rui of the museum's engineering department. The GRAFIK 6000, which connects multiple controllers to centrally or individually control 512 zones and 4,000 circuits, is especially suitable for the museum's various exhibition areas.

In a museum, lighting is the key to bringing out the best qualities of the artifacts. The Capital Museum needs different lighting effects that best fit the different scenes, exhibition halls, or exhibits being displayed, in order to put the installations in the



## Technology to illuminate history



best light and the visitors in the most appropriate ambience. For example, in the hall showing Buddhist statues, lights were projected from top to bottom giving the statues a solemn appearance and emphasizing the facial expressions on each Buddha. Fluorescent lights were also used to sketch the statues' contours.

Another critical area to consider was possible color fading on materials like pottery, paintings or jades as a result of prolonged exposure to light. The museum chose Lutron occupancy sensors, which detect human presence with infrared sensors, so the lights are only turned on when visitors are close to the exhibits and dimmed when they are away. This not only significantly reduces the possible damage of light exposure to the exhibits but also helps save energy.

"One challenge we encountered is that the standard of lighting design in China is not as high as that abroad. Therefore we needed a solution which allows each circuit to be dimmed independently to produce different lighting effects," explained Ms. Wang. "The easy-to-use preset function of Lutron lighting control system which can recall the appropriate lighting environment at the touch of a button can definitely meet the needs of our museum."

Another challenge is the occasional instability of local electricity voltage, which can cause the lights to flicker when dimmed. The Lutron patented RTISS™ technology solves the problem by filtering line noise from the electric current entering the dimming system, ensuring stable and high quality lighting effects.

"We benefit from the easy and centralized control of the Lutron GRAFIK 6000 system integrated with our audio visual facilities and building management system. The GRAFIK 6000 is also connected to

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the museum's security, video monitoring and fire protection systems," said Ms. Wang. Lighting in a particular zone or the whole museum will be turned on and flashing in case of intrusion, which can act as a deterrent and alert.

Ms. Wang added: "The Lutron system was chosen because of product quality, reliability and long history. Lutron's positioning is very much in line with the museum as "Being the best and advanced in technology". She was particularly impressed by the easy control, clear interface and reliable performance of Lutron solutions. "Lutron has been very helpful from installation to programming and maintenance, which made the whole process very smooth," said Ms. Wang.



**Project:**

Capital Museum, Beijing, China

**Lighting Design Consultant:**

Ralph Appelbaum Associates,  
BPI – Brandston Partners Inc.

**Architecture Design:**

China Architecture Design and Research Group

**Architect:**

Cui Kai

**Location Photography:**

Courtesy of Capital Museum, Beijing, China

In addition, Lutron dimming systems can save energy and extend lamp life. Dimming light level by 10% will double lamp life and reduce energy consumption by 10%. Lamp life can be extended 20 times by dimming half of the light level. In the long term, this can significantly reduce the depletion of resources and help protect the environment, which is in line with the green design of the museum.

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**Products used in this project**

GRAFIK 6000™ Lighting Control System