Control at the Kremlin

Effective energy management helps preserve Russia's historical monuments

Ivan the Great Bell Tower, The Kremlin, Moscow

The Challenge

To renovate the Kremlin's climate control system for its multiple sites, ensuring stable and reliable climate control for the preservation of cultural and historical monuments.

The Solution

CitectFacilities building automation system, offering reliable and integrated centralized control of the air-conditioning and lighting systems throughout the Kremlin's various buildings.

The Benefits

The Kremlin has minimized costs through better energy management, reduced the maintenance load on operators and helped the museum ensure the conservation of important Russian historical treasures.

The Kremlin is the heart of Russia's political life and the center of its culture and history. Located in Moscow, the site has been inhabited since the second millennium BC, with the first recorded stone structures dating back to the 1300's.

The Kremlin grounds include four palaces, four cathedrals, and the surrounding Kremlin Wall with Kremlin Towers. On the Kremlin's Cathedral Square rises one of the masterpieces of the 16th century: the Ivan the Great Bell Tower, which is said to mark the exact center of Moscow and resembles a burning candle. It stands at 81 meters (266 ft) high.

During the 1990s, the aim was not only to preserve the existing cultural and historical monuments in the Kremlin, but also to restore what had been lost over the years. At the same time, work had commenced to turn the Kremlin into a presidential residence fit for the head of state; since 1991, it has been the residence of the Russian president.

The Challenge

Into the 21st century, the focus has shifted toward energy efficiencies, with the renovation of the climate control system for several buildings within the Kremlin compound.

The project included the implementation of a facility control system for the heating and air-conditioning of the Kremlin's multiple sites, including the Uspenskaya church bell tower, Ivan the Great Church and the museum office.

A reliable control system was paramount to ensuring the conservation of Russia's valuable architectural and cultural art monuments.

The Solution

A valued integration partner based in Russia was responsible for implementing CitectFacilities, a complete building automation solution, to replace the Kremlin's various local control systems. The automation solution offers a single, high quality facilities management system

CitectFacilities

Case Study

Open architecture and reliability

with centralized visibility and control over the Kremlin's multiple sites.

Open architecture, easy configuration tools and powerful integration features resulted in a quick development and deployment of the new system.

The integration of CitectFacilities involved the renovation of the air conditioning system, as well as the installation and integrating of new heating equipment. Consolidation with the sensors and PLCs followed and, after programming the PLCs and operator HMI control, the new system was launched.

The new automation system includes operator stations in a control room located in the main Blagoveschenskaya cathedral building. The system integrates with local control systems, based on Schneider Electric equipment connected over fiber optic cables. Schneider Electric's Premium PLCs control all the field I/O devices, collecting data from these devices and from the MAGELIS XBT terminal panel, and providing connectivity to the HMI.

The terminal panel is used to regulate the climate control and to change the settings manually from the equipment room, if necessary. The PLC program runs a master task which executes three independent algorithms (air-conditioning operations, heating system operations and manual operations maintenance), as well as 10 PID processes. The main part of the user interface represents a graphic image or a scheme, in addition to a data grid or trend display.

The integrated air conditioning control system provides control of pumps and the ventilator installations. 'Winter' and 'Summer' modes allow accurate temperature control within set limits, meeting the Kremlin's temperature goals for its various buildings.

The Benefits

The implementation of CitectFacilities has resulted in a reliable, user-friendly climate control system providing site visualization to a central operating station within the Kremlin.

Operating costs have been reduced while tenant services have been improved through the integration of climate, lighting and other systems. More effective energy management and a reduction in the maintenance load on operators has minimized costs.

Ultimately, the building automation solution helps the museum ensure the conservation of its valuable historical architectural and art treasures.

"This system was chosen due to its open architecture and reliability. It was important for us to install a system with the ability to expand at a later stage, and CitectFacilities provides the opportunity for integrating other monitoring and control systems."

**Igor Sergeev,
Chief Engineer
Kremlin Museum**

Statistics	
Server	Schneider Electric OFS Server
PLCs	Schneider Electric PL7 Pro V4.3
Number of Tags (Total):	165
Number of Digital Alarms:	102
Number of Trend Tags:	96
Number of Graphic Pages:	9
Number of Display Nodes:	1
Number of I/O, Trend and Alarm Servers:	1
Number of I/O Devices:	3
Average Response Times as measured by Citect Observed time to call up a graphic page (with all data displayed):	< 1 sec.
I/O Server CPU Usage:	1%

For more on automation solutions visit www.citect.com

CitectFacilities