

Case note

Automation of the Giulio Cesare Hall in the Campidoglio Palace in Rome

Safety ensured, comfort improved



Project location and overview

Rome City Council conducts its activities in the Giulio Cesare Hall, which is equipped with 84 touch-screen devices for electronic voting, with access via a magnetic card, the same system used in the Italian Lower House of Parliament. With the addition of seatings for the Councillors, the Mayor, the President of the Council and around 400 places for the public.

The Presidency of Rome City Council has fixed the following strategic objectives in relation to the project:

- The set up of specific lighting scenarios to automatically manage some pre-selected hall circumstances.
- The automation of various processes, such as the opening of windows and the movement of massive swinging lamps in steel and crystal.
- The centralised control and monitoring of all the functions.



Description of the work

Centralised automation and security

Nearly 90 years from the last restoration, the Giulio Cesare Hall is undergoing radical work in restoration, either about architecture and about technology. All the functions created (automation of swinging lamps winches and windows motors, lighting scenarios, dead man's safety systems, malfunctions alarms) can be managed from an ABB SMARTtouch 6136/100c-500 touch-screen, located behind the President of the Council seat.

All functions can be modified by the staff, using a password with different access levels according to the user profile.

Technological solutions

The system uses a touch-screen and ABB i-bus KNX® actuators, in order to benefit from the high flexibility of the KNX communication standard and to render any further possible personalisations smoother. The most significant applications are detailed below.

Power supply activation. The wooden furnishings in the hall are at high fire risk. With safety in mind, it is therefore very important that the plugs for the Councillor's voting devices can be deactivated automatically and through touch-screen, as the manual deactivation switches are difficult to reach. In this way possible overloads and/or short-circuits are avoided when the hall is vacant.

Safe management of the swinging lamps. The four swinging lamps in steel and crystal, each weighing around 250 Kg are attached to a vault 15 metres high. The careful movement of the swinging lamps is managed by an automated system of tackles which minimises vibrations and swaying. The two ABB SA/S 4.6.1 output actuators implement different safety systems. The first one, which is automatic, operates from 15 metres to 2.5 metres, whereby power is deactivated before the swinging lamp reaches the limit of human height. The second, using a software access code, is instead operated in dead man mode or, in other words following continued manual pressure on a switch.

Optimal management of halide lamps. The four metal-halide lamps provide excellent colour rendering and the best energy efficiency for large areas. Automation ensures optimal management, preventing inconveniences caused by the long restart time associated with these lamps. In fact, in the case of lamps being switched off by mistake, this intrinsic slowness prevents immediate reactivation causing prolonged periods of darkness, which are particularly embarrassing in public places.

In order to eliminate awkward interruptions, due to human error and to avoid oversights, the 12 channel ABB 16A SA/AS 12.16.5 KNX output actuator and lighting controls have been automated in function of the lighting scenarios as precisely defined by the City Council, according to how the hall is being used, whether it be for Council meetings, official ceremonies, exhibitions, cleaning, night-time and holidays.

Automatic opening of windows. The three valuable period windows in the hall are located at a height of 10 metres, they are heavy, fragile and potentially dangerous and there is a risk that fragments or pieces of broken glass could fall on the people stationed below. The personalized automation of this process, thanks to the ABB SA/S 8.6.1 KNX bus actuators, has been of great advantage. For example, the opening and closing functions are no longer managed by staff, who in the past had to access the windows from outside, by narrow and awkward ledges.

The actuators also control the variable speed motors, with a safety function (forced shut-down) which deactivates the motor when it exceeds a predetermined thrust value in case of obstacles, in this way avoiding strain and superficial tensions. The setting of the starting and ending values (open/close) is necessary to prevent the windows impacting the frames.

The windows can be opened partially, in accordance with the temperature values outside and inside the hall and also with the number of people present, thus combining energy saving and a high standard of carefully defined environmental comfort by eliminating all manual operations.



The high windows and the imposing swinging lamps are centrally managed and automated

Benefits obtained

- Energy saving is achieved thanks to automated on/off function cycles, which prevent lighting being left on after events, holidays or when the area is sufficiently lit by natural light.
- Manual operations are drastically reduced, increasing the staff safety and efficiency.
- Management and protection of the delicate and massive swinging lamps in steel and crystal using strict safety criteria.
- Improvement in environmental comfort is achieved thanks to automated window management according to temperature variations in the hall.
- The system can be modified to cater for future possible requirements such as:
 - Automated lighting of the square facing the Campidoglio Palace and all of the Capitoline Hill
 - Remote control of all functions in the hall, using ABB Winswitch software
 - Energy-smart heating/air conditioning system management
 - Remote system monitoring: lighting outside and inside the hall, windows, air-conditioning and heating

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