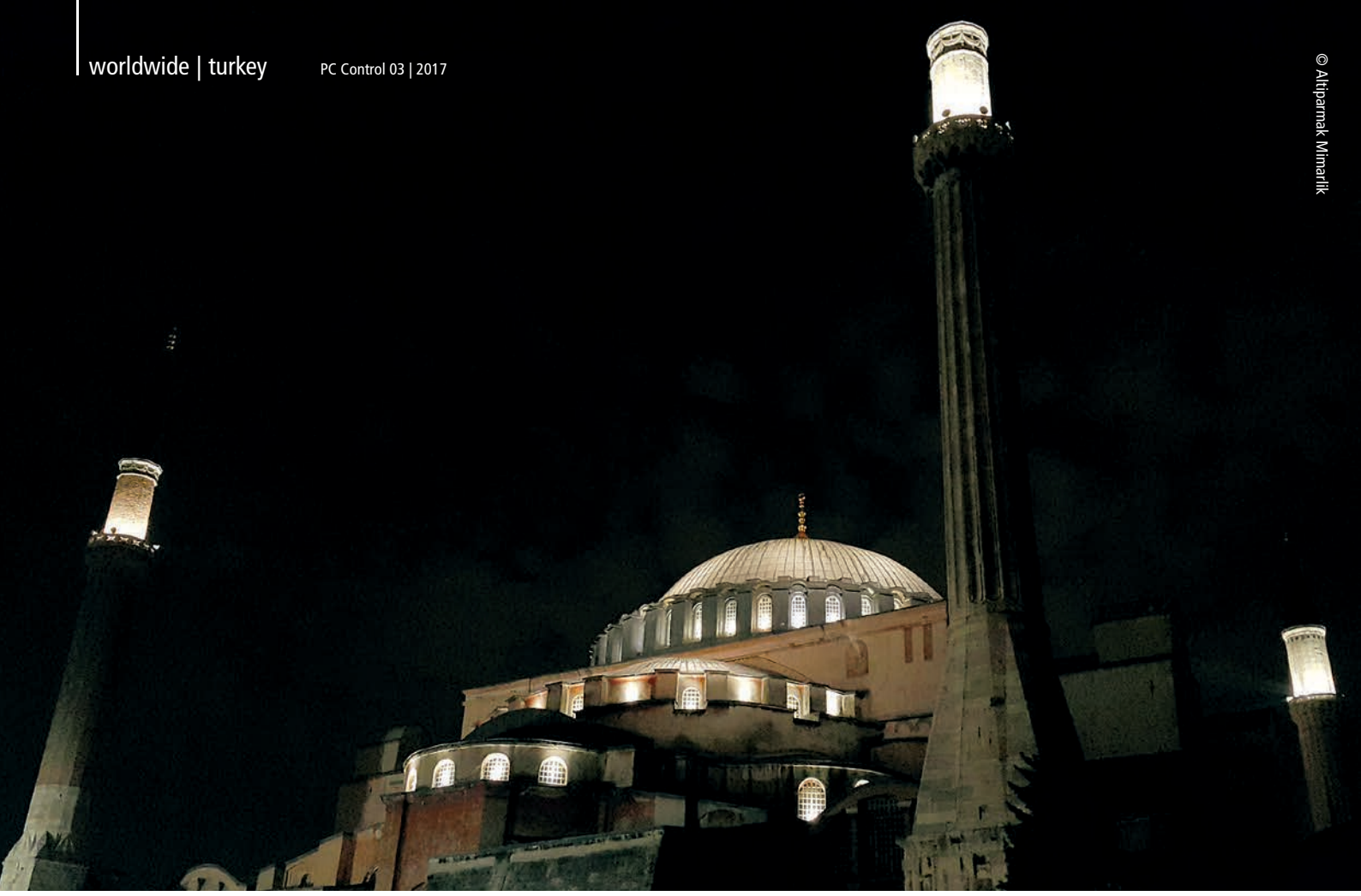

Hagia Sophia at night: To make this landmark just as visible from afar at night, systems integrator Nova Aydinlatma designed a modern illumination concept based on Beckhoff building automation technology.

Beckhoff building automation platform integrates DALI and DMX communication

Intelligent illumination concept helps Istanbul's Hagia Sophia shine at night

With its massive dome, the Hagia Sophia dominates Istanbul's cityscape like no other edifice. Built in the year 532, it stood as for centuries as the city's largest Christian church until it was converted into a mosque after the Ottoman conquest of Constantinople. Today, the Hagia Sophia has another new life as a museum. To make this landmark just as visible at night from afar, systems integrator Altiparmak Mimarlik designed a modern illumination concept based on Beckhoff building automation technology. This system features an innovative user interface that can be accessed remotely from anywhere via a tablet.

Altiparmak Mimarlik

Altiparmak Architecture was founded in 2006 as an architecture engineering branch. The company is active in the field of project production, restoration projects, interior architecture, zoning and zoning consultancy, construction and restoration applications. Especially in the restoration and conservation work of historical buildings, current technologies are combined with traditional methods and history is preserved in the light of science and tradition.

Dynamic illumination using 300 DMX wall washer lights has been installed on the large dome of Istanbul's Hagia Sophia.

As is common with historical buildings, one of the project's major requirements involved protecting the building from any kind of structural modifications. Altiparmak Mimarlik installed more than 300 wall washer-style light fixtures on the roof of the Hagia Sophia along with eight floodlights and a total of eight control cabinets. The central control platform is a CX5010 Embedded PC that communicates via EtherCAT with I/O couplers spread over four locations, and with two CX8090 series Embedded PCs using the ADS protocol. Two additional terminal stations with two BC9050 Ethernet Bus Terminal Controllers are connected to the master controller wirelessly via the Modbus TCP protocol.

The approximately 300 installed wall washer lights communicate through EL6851 DMX master terminals, ensuring that all lights can be switched on simultaneously with minimal delay. The color and the dimming level can be individually controlled for each wall washer, in accordance with the desired lighting effects. The dome of the Hagia Sophia is illuminated by eight floodlights mounted on the minarets' galleries. They are controlled via KL6811 Bus Terminals based on the DALI protocol to ensure that they deliver the right amount of light at the right time.

Since the user interface runs on a tablet, illumination at the Hagia Sophia can be conveniently operated from anywhere with Internet access. The start page of the user interface offers three different lighting scenarios. The scenarios change periodically to make the façade lighting appear dynamic. Additional scenarios can be added in accordance with requests from museum management. For operation via tablet and remote access to the control system, a VPN infrastructure is used, minimizing the need for time-consuming on-site service during software updates and troubleshooting.

The new LED-based design from Altiparmak Mimarlik has reduced power consumption of the lighting system by approximately 66 percent. Another significant energy saving feature was the linking of controls to a timer that turns the wall washer lights on at sundown and off at sunrise, and dims the light output over the course of the night as the daylight hours approach.

Further information:
www.altiparmakmimarlik.com.tr/en
www.beckhoff.com.tr