# Loupasakis Integrated Solutions ( LIS )

## Basil & Elise Goulandris Foundation

**(Full technical description)**

A special category is the Basil & Elise Goulandris Foundation. The automation work carried out aimed at specialized ways of dealing, directly related to the very high demands of this project. Based on this, the use of the KNX technology was a one-way street, so that some of the most known risks of museum exhibits, such as environmental wear factors such as light, temperature changes, humidity, etc. Thus, the control Lighting, both the general and the exhibits, and the shading, passes to the systems of automatic control, giving the baton to the beautiful world of sensory, taking as a basic parameter, the external brightness and thus the incoming Natural light.
The programming "tools" used were theclosed loop controlTECHNIQUE of the artificial general lighting, through a KNX sensory roof with appropriate backyard settings, so as to achieve the maximum possible contribution of natural lighting without overcovering – exceeds the safety limits. The continuity concerns the downward course of the skiadion and the dimmed down or up smooth Svetsi /lighting of the respective lighting teams.
The control of the illumination of the exhibits, it is part of special lighting scenarios with many different intensities-quotas depending on the exhibit, the current alteration due to seniority, the theme, the color palette, etc., while these scenarios are at the discretion of the user to terminate them, modify them and save them, to invoke them through appropriate manipulations by the management media, e.g.
switches, Tablets, smartphones and KNX touch Panels. At the same time, and for the sake of ensuring the smooth operation of the halls, a special application was created for terminals with IOS, Android and Windows software, for the manual control of the whole lighting (manual operation at a predetermined level of general illumination).
In communal areas, such as W/C, corridors etc., lighting control continues TO be implemented through a KNX sensory presence/motion, this time in the name of energy

saving, while FOR the administrative spaces via KNX Push Buttons, which according to their programming control and motorized shades of the respective spaces.
Additional information on lighting control is the need to use SPECIFIC
KNX Dali Gatewayequipment, since the drivers of all luminaires are compatible with this protocol. Each of the Dali Gateways is connected by cable, with an appropriate number of luminaires with integrated Dali Driver, as opposed to the control of "conventional" luminaires used Actuators – KNX lighting outputs, varying depending on the case, in 2, 4 and 8 channel actuators/outputs.
Of particular interest, the use of special lighting scenarios was presented in the large area of the amphitheatre, in the 3 º basement of the museum, as appropriate illuminating characters of the space were chosen, through the
different RGBW lighting fixtures, for each case, (use of room for speeches, presentations, performances, etc.), in contrast to the illumination of the museum's exterior lighting, where requiredtime controlalongside External brightness sensors, while for special spaces such as museum shop, Bar–Café, library and space for children's activities, the audit was implemented outside the local controls through events (event control).
In addition to lighting control, as mentioned above, THE KNX is integrated into the control of shading, which includes shutters and blinds. For this purpose, and depending on their quantity per level, motor actuators of 4 or 8 outputs were used. This technology also covers the need to measure current per shading relay output, in order for the user to know whether the mechanical movement of the forming/Skioles has been successfully completed on condition of course, That there is no mechanical damage to their mechanisms. In depth, for the control of forming/skiadion, external brightness sensors were used, appropriately positioned on the facades of the building, so that if one of the 3 measurements of the sensor is exceeded the permissible safety limits, the downward movement of the forming/skioles is ordered.
Finally, with regard to the shading system, especially for the floors of the listed building, due to larger exposures and thus greater sensitivity to external brightness, greater emphasis was placed on the level of design and topology of the KNX. The safe mode required to place 2 external sensors per level in a 1 + 1 reserve device, while on floors 3

and 4, 3 total sensors were installed, one on the side of the road with a 1 + 0 and 2 reserve device for the square side in 1 + 1 Backup order.

In conclusion, regarding the control of the mechanical parts of the museum, which has undertaken an extensive management network of BMS, the cooperation with the KNX is carried out

via Ethernet using knxnet/IP routers capabilities Routing and Tunneling Services in order to visualize the faults, the proper operation of the equipment and the mandated general orders. The user – maintainer, among others, provides the knowledge of very important information about the "health" of the Dali Gateways, the Dali drivers per Dali Gateway, but also the ability to do reset / acknowledge of possible errors.