



Project area

SECURITY AND AUTOMATION

Created for

VENERANDA AMBROSIANA LIBRARY
AND CARDINAL FEDERICO BORROMEO FOUNDATION

Requirements

INTEGRATED SECURITY SYSTEM FOR MUSEUM ROOM



BIBLIOTECA AMBROSIANA

CLIENT PROFILE

CLIENT:
AMBROSIANA LIBRARY

SECTOR:
LIBRARY

INTERNET SITE:
www.ambrosiana.eu

The **Cardinal Federico Borromeo Foundation** was founded on the 12th of June 2008 with the purpose of creating, promoting and spreading culture and art. In particular, to accomplish its civilization purposes, the Foundation collaborates with the **Veneranda Ambrosiana Library**, founded in 1609 in Milan by Cardinal Federico Borromeo, one of the first public reading libraries. Due to the elevated number and the priceless

value of the collected books and manuscripts, it is, no doubt, one of the first Italian and worldwide libraries, where one can admire spaces of great archaeological, artistic and architectural value.

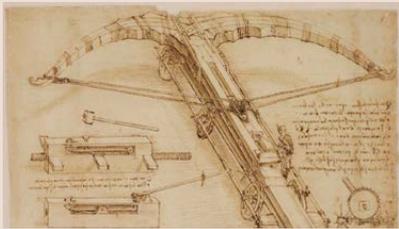
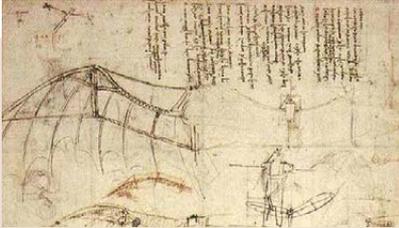
Moreover, the Foundation intends to also promote all the preservation and improvement works of the Veneranda real estate.

REQUIREMENTS

Veneranda and the Foundation by mutual consent with the Dominican monks of Santa Maria delle Grazie ("Holy Mary of Grace"), have decided to present to the public the 1.119 papers of the famous Atlantic Code of Leonardo da

Vinci in the monumental and striking **Bramante Sacristy**, nearby Santa Maria delle Grazie, church of Milan. As a consequence, a very delicate and special requirement has emerged, that of protecting this masterpiece of mankind

from difficult environmental conditions (thermal, chemical, physical and mechanical stress) concerning the coming into contact with the visitors and, especially from the risk of stealing, damaging and vandalism.



ACCOMPLISHED PROJECT

The real challenge that has to be faced to meet this requirement is furnishing a environmental security system, completely similar to a great vault, a sacristy from the 400's full of frames, circles, squares and fresco vault, where obviously, the attention level whether in the project phase or in the completion phase, was the highest in order to avoid damaging the original historical structure.

And everything in short time in order to observe the expositive schedule. In order to create a **zero environment impact** activity, architects, restorers and technological systems designers were involved. These have collaborated in unison to place sensors, video cameras and self-supporting technological structures without drilling the walls or wooden furniture.

The activity of making secure and safekeeping the system is mostly based on the next elements:

- **Environmental video surveillance;**
- **Perimeter protection;**
- **Protection of the exhibition cases**
- **Fire detection**

ENVIRONMENT VIDEO SURVEILLANCE

The environment that is entrances and exposition spaces, were subject to video control through various **infrared cameras**, connected to a digital video surveillance system. Thanks to an integrated security and monitoring platform, the system allows **network management of all control operations**, including the possibility to view immediately the re-

cordings, while the cameras continue to record.

Another strong point of the video surveillance **system was the system implementation with video analysis systems**, able to surpass the limits of the simple movement detection. These applications analyse in real time the captured images, continuously elaborating data about size, speed and direction

of the captured objects. Therefore, it is possible, for example, to place alarms programmed in accordance with the recording of persons/objects, responding to specific parameters preset by the user (size, path, mobility, etc.) or to follow certain suspicious persons, capturing new static objects (suspect bags etc.) or art object stealing.

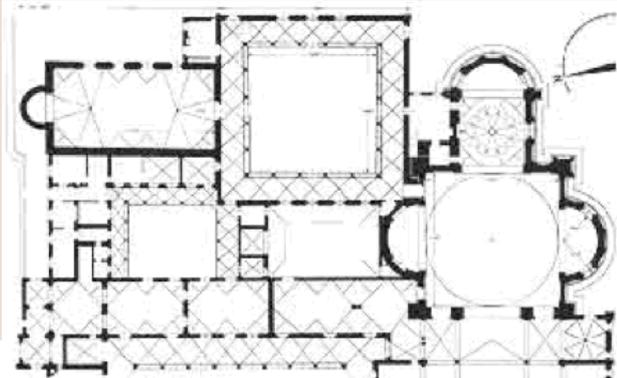
PERIMETER PROTECTION

Each access point to the exhibition hall has been equipped with **infrared sensors and barriers** that signal the access attempts outside the pre-established hours: each barrier achieves a real and virtual wall comprising of bidirectional multiple intervals. The technology with which these barriers are equipped makes them "intelligent" or

capable of simultaneously checking the radii of each interval and cancel unwanted alarms caused by the passing of insects or such. Due to the integrated surveillance system, **the user has therefore under control the status of the perimeter system.**

The exhibition hall is also equipped with **redundant and self-protected volumetric sensors**: combining different

types of technologies, the activated sensors signal the potential unwelcomed presence of objects/persons in the hall, being capable of gathering and cancelling unwanted alarms (insects, etc.); moreover, they are located so that if one of them is voluntarily damaged fraudulently, the neighbouring sensors are capable of signalling the violation by alerting the system.



PROTECTION OF THE EXHIBITION CASES
22 steel and armoured crystal cases are placed in the exhibition hall, arranged in two rows, custom made to contain relevant documents both in size and in historical value.

These are real safes, which have the purpose of allowing the audience to approach as much as possible the work of Leonardo while protecting them from fire, heat, humidity and UV rays. Each case is protected by various internal sensors

which prevent any attempt of burglary or vandalism.

Moreover, the two cases are protected by barriers with infrared sensors which are triggered even at the slightest attempt to approach them. As for the perimeter area, this technology allows the Customer a constant control of the security status, in order to avoid troublesome false alarms and it is completely non-invasive to the historical environment where it operates.

Essentially, therefore, in order to reach the displayed manuscripts and codes, different levels of security must be "exceeded": the entrances, exhibition area, and back area of the cases and the cases themselves. This testifies for the very high level of protection to which the valuable documents of Da Vinci are submitted: Therefore, Zucchetti fully meets the requirements imposed by the Cardinal Federico Borromeo Foundation and the Veneranda Ambrosiana Library.

PROJECT