

AUTOMATIC FIREFIGHTING
SYSTEMS IN
HISTORIC BUILDINGS





Peculiarities of HISTORIC-ARTISTIC BUILDINGS

In its broadest sense, heritage is the set of assets inherited from the past. Architectural heritage can therefore be defined as the set of built-up property of any nature to which every society attributes or recognizes a cultural value.

Historic buildings were originally built for purposes which, in many cases, were different from what they are currently used for.

The list of historic buildings is very diverse:

CATHEDRALS	PALACES
CHURCHES	MUSEUMS
MOSQUES	LIBRARIES
CASTLES	THEATRES
HOTEL BUILDINGS	HOSPITALS

Buildings which are considered historic and artistic heritage feature certain peculiarities which call for a very specific knowledge of each environment for the application of the necessary and “possible” security measures. These peculiarities mean that sometimes very imaginative solutions need to be applied, aimed at not damaging the aesthetic elements that must be preserved while at the same time ensuring basic security levels.

The following features stand out for their importance:

OCCUPIED AREAS

This is where the occupation can be very high (visitors, own staff, etc.), such as museums, cathedrals, etc. The protection of persons is the priority.

VERY VALUABLE ASSETS

Artistic content and the building itself are elements that must be preserved due to the historical, cultural and social value they represent.

ARCHITECTURAL IMPORTANCE

The fire safety strategy must limit the impact on the architectural and artistic design. It is important to strike a balance between respecting the aesthetic conditions and ensuring minimum safety standards.

There is no single safety programme that can be applied to all historical and artistic buildings. Many factors (use, surface area, ceiling height, building materials, presence of visitors, evacuation routes, etc.) make each one unique and deserving different treatment.

Other things to consider:

These are buildings which sometimes have open spaces, which impedes compartmentalization or sectorization. Compartmentalization is a key element in current fire protection theory. By using physical elements (walls, fire doors, etc.), different spaces are built to limit extent of damage in case of fire.

Historical and artistic buildings were built, for the most part, prior to the existence of fire protection regulations. They are therefore not designed with current safety concepts. It must be remembered that these are not buildings where it is feasible in most cases to carry out architectural renovations to improve evacuation conditions.

Sources of fire

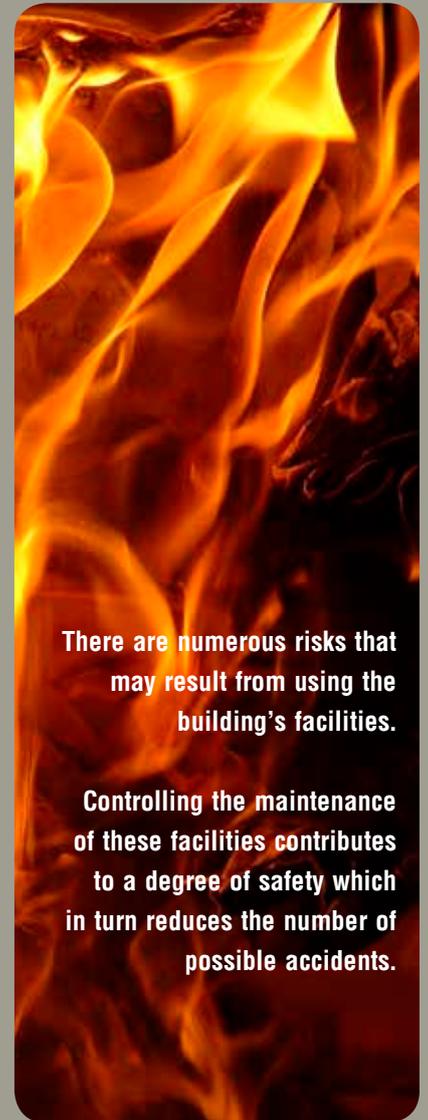
The fire load in this type of location is inherently high, given the high concentration of combustible items such as paper (books, documents, maps, etc.), cardboard and electrical components which may develop faults.

Ceilings, floors, paintings, items on shelves, etc., present an additional fire load.

Other possible fire sources may be human error, attacks or sabotage which are frequent in this type of installation.

Fire can be devastating, not only in terms of fire damage but also due to additional factors such as smoke, fumes and heat, which can considerably damage existing components and structures.

A further problem in this type of installation is that most of them have not been built for this purpose, hence the complexity of introducing certain types of protection, for example, in old buildings.



There are numerous risks that may result from using the building's facilities.

Controlling the maintenance of these facilities contributes to a degree of safety which in turn reduces the number of possible accidents.

Security Measures

Connected with the singularities of these hazards, and in order to implement the appropriate security measures to protect both the building and its assets, the following aspects should be taken into account:

OCCUPANCY LEVEL OF THE BUILDING AND DISTRIBUTION BY AREAS.

BUILDING EVACUATION TIME IN THE MOST UNFAVORABLE SITUATION.

BUILDING CONDITION IN RELATION TO ITS SURROUNDINGS.

HEIGHT AND NUMBER OF FLOORS AND SIZE OF ROOMS.

TYPE OF MATERIAL, REACTION TO FIRE AND NATURAL SMOKE EVACUATION MEANS.

TYPE OF COLLECTIONS OR CONTENTS OF THE BUILDING.

OWN STAFF TO ESTABLISH SELF-PROTECTION EQUIPMENT.

FIREFIGHTERS' RESPONSE TIME.

Passive protection measures

COMPARTMENTALIZATION:

This is the most effective method to minimize damages. However, in many cases the separation of spaces entails serious difficulties. Technical rooms (not accessible to the public) should be designated in any case as independent sectors. For other areas, whenever feasible, compartmentalization systems can be set up based on normally concealed moveable elements (firewall doors or gates) which can be closed automatically in an emergency (controlled by the fire detection system).

STRUCTURAL ELEMENTS:

In this type of building wood is used very heavily for structural elements, which implies increased risk, since wood loses its bearing capacity when affected by widespread fire. This situation also limits the intervention possibilities for the fire services, since the stability of the building is not assured for a reasonable time.

Active protection measures

DETECTION AND ALARM SYSTEM:

Detection systems, combined with immediate action, can significantly reduce the likelihood of fire.

In certain areas, where aesthetic considerations are an important determinant, installing air-aspirating detection systems can be very useful, since suction points can be conveniently concealed between architectural elements.

HIGH-TECH EQUIPMENT

WATER MIST SYSTEMS:

With this system, fires are controlled at an early stage without additional risk to property and personnel.

It is a technology used for many applications and is compatible with electrical and combustible equipment and therefore suitable for high-risk areas, not just public spaces.

THE PROTECTION OF THE ENTIRE BUILDING STRUCTURE IS GUARANTEED.

PORTABLE EXTINGUISHERS:

They are essential in any building, but in the case of buildings housing artworks, it is especially important for staff responsible for their use (first responders, security team, etc.) to have the right skills to ensure the use of the appropriate fire extinguisher in each case depending on fire type and characteristics.

HOSE STATIONS:

These should be used with caution to avoid damage to the cultural assets, so responsible personnel must be well trained and have completed extinguishing drills.

As in any other building, inspections must be carried out on a regular basis, and by a reputable company:

- *Electrical installation.*
- *Heating*
- *Boilers*
- *Air conditioning equipment*
- *Telecommunication facilities*

Statistics reveal that the percentage of fire casualties is very high during the assembly and dismantling of exhibitions in historic buildings.

This is due to various circumstances, such as those highlighted below:

- *Use of highly flammable materials (cardboard, paper, wood, etc.).*
- *Assembly and dismantling operations where various professionals work with space and time constraints.*

SIEX WATER MIST SYSTEM solution



Areas to be protected by the SIEX™ WATER MIST SYSTEM

LOBBIES, CORRIDORS

KITCHENS

RESTAURANTS AND SERVICE AREAS

AUDITORIUMS AND CONFERENCE
ROOMS

RECREATIONAL AREAS

TECHNICAL ROOMS

WAREHOUSES

CAR PARKS

CLUBS

HOTELS

HOSPITALS

OFFICES

LAUNDRY

LIBRARIES

ETC.

The water mist optimizes the extinguishing efficiency of this agent as compared to conventional solutions by atomizing water into tiny droplets.

The SIEX™ WATER MIST SYSTEM, as an active protection system, is fast becoming one of the most developed and useful technologies in the firefighting industry.

This system plays a central role in today's fire protection. And only the water mist systems that have been tested and approved are acceptable for use in fire protection. SIEX has the approvals required for public spaces.



Water mist extinguishing systems are those in which water resources are optimized by dividing the volume of water discharged into tiny droplets, leading to a very high cooling capacity for a given amount of water.

Such systems require less water, up to 85% less than traditional sprinkler systems, which results in the installation of smaller diameter pipes and smaller space requirements. The flexibility of this equipment makes it easy to adapt to modern new buildings, as well as the refurbishing of existing ones.



BENEFITS

Here are some of the many advantages provided by water mist extinguishing systems:

- Efficient and reliable fire protection systems.
- **Much lower water requirement.**
- Much smaller pipe sizes.



*Sprinklers
system*

*SIEX WATER MIST
system*

- Application versatility.
- Economy of use and maintenance.
- Environmentally friendly extinguishing agent.
- Compatible with electrical equipment.
- More tolerant of lack of air-tightness of gas systems.
- Effective on flammable liquid fires.
- Harmless to protected equipment, people and the environment.
- Minimal damage to the contents.
- Drastic temperature drop in the enclosure.
- Oxygen level not affected.
- Scrubbing water-soluble smoke and toxic gases from atmosphere.
- Prevention of reignition.
- Ease of testing - reliability.

Our commitment

CHOICE OF SYSTEMS

SIEX has the widest range of products and systems to suit different needs, both as regards pressures and extinguishing agents.

COMPETITIVE PRICE

Optimizing all of our processes make us more and more competitive worldwide.

SPECIALIZED ENGINEERING

Our highly qualified staff ensure the best service for customers both as regards technical advice on the choice of system, and solving any problems that might arise after installation. Backed up by our extensive experience and a track record of successful projects.

INNOVATION

At the forefront of innovation in every product we develop, ensuring the technical features offered.

QUALITY GUARANTEE

All products meet the highest quality requirements and internationally recognised official approvals.

OTHER SPECIAL HAZARDS PROTECTING BY SIEX:

SERVICE STATIONS

ARCHIVES AND LIBRARIES

DPCs

PAINT SPRAY BOOTHS

ELECTRICAL PANELS

INDUSTRIAL KITCHEN

TURBINES AND GENERATORS

ROAD TUNNELS

NATURAL GAS PLANTS

CLEAN ROOMS

CABLE TUNNELS

TELECOMMUNICATION CENTRES

HOTELS

HOSPITALS

EDUCATIONAL ESTABLISHMENTS

TRAIN AND UNDERGROUND STATIONS

TRAINS

TRANSFORMERS

OFFSHORE PLATFORMS

SOLAR THERMAL PLANTS

MACHINE TOOLS

PRINTING INDUSTRY

HISTORIC BUILDINGS

ROBOTIC PARKINGS

WIND TURBINES

STEEL INDUSTRY

BANKS

OFFICES

LARGE VEHICLES

CONVEYOR BELTS

GAS PUMPS

OIL & GAS

TIMBER INDUSTRY



C/ Merindad de Montija, 6
P.I. Villalonqu jar
09001 Burgos (SPAIN)

tlfno: +34 947 28 11 08

fax: +34 947 28 11 12

siex@siex2001.com

www.siex2001.com



SIEX®