COMPACT STORAGE

BACTERIA | BLOCK | FIRE

MAKROS | the intelligent protection of cultural and archival heritage

SAFE STORAGE DEVICE

FIRE RESISTANCE
AND BACTERIA PROTECTION

BACTERIA | BLOCK | FIRE

Essential elements

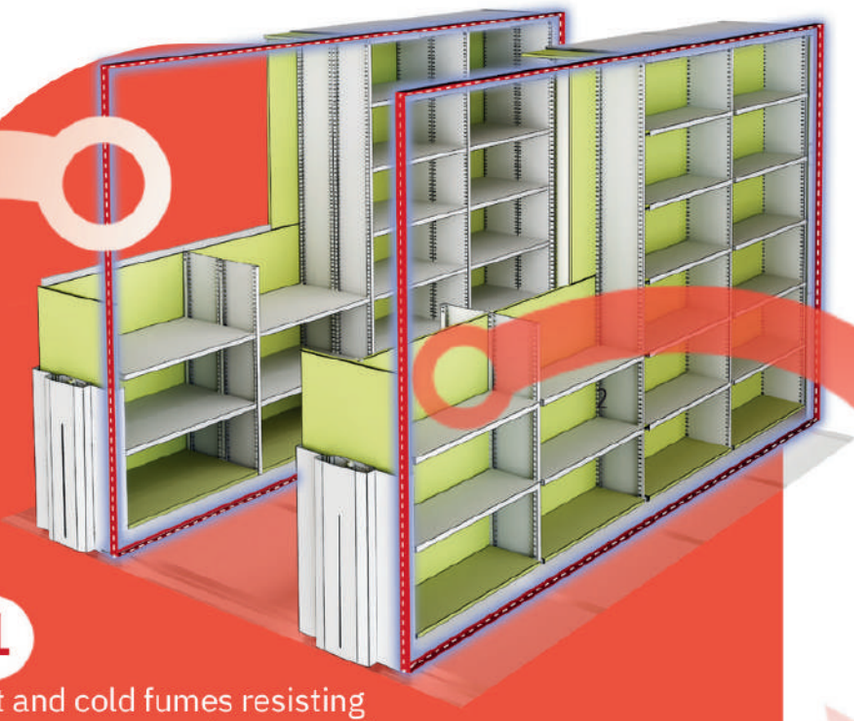
BACTERIA | BLOCK | FIRE

Fire resistance

It resists 120 minutes at 1000° C without damage to the stored material

Compacted cabinets
GUARANTEED SEALING

Fire resistance is achieved thanks to a combined action of two different construction elements



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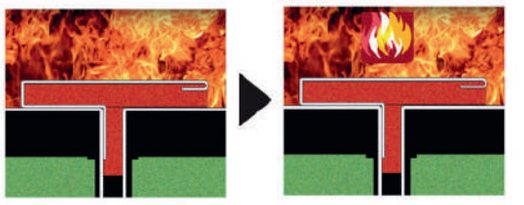
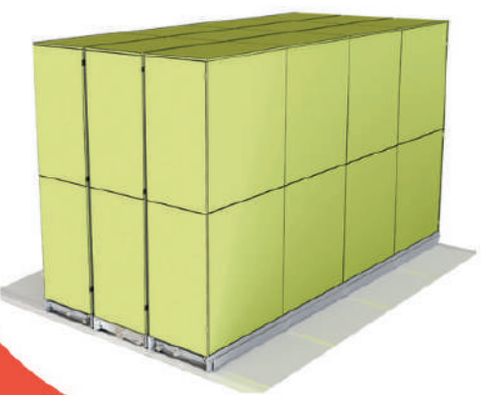
hot and cold fumes resisting
Intumescent perimeter gaskets
"sealing" the individual
containment blocks



Intumescent perimeter seals
They are activated in the presence of heat and react by increasing 30 times their volume (THERMO-EXPANSION), protecting the material contained in the cabinets from fire

Insulation panels



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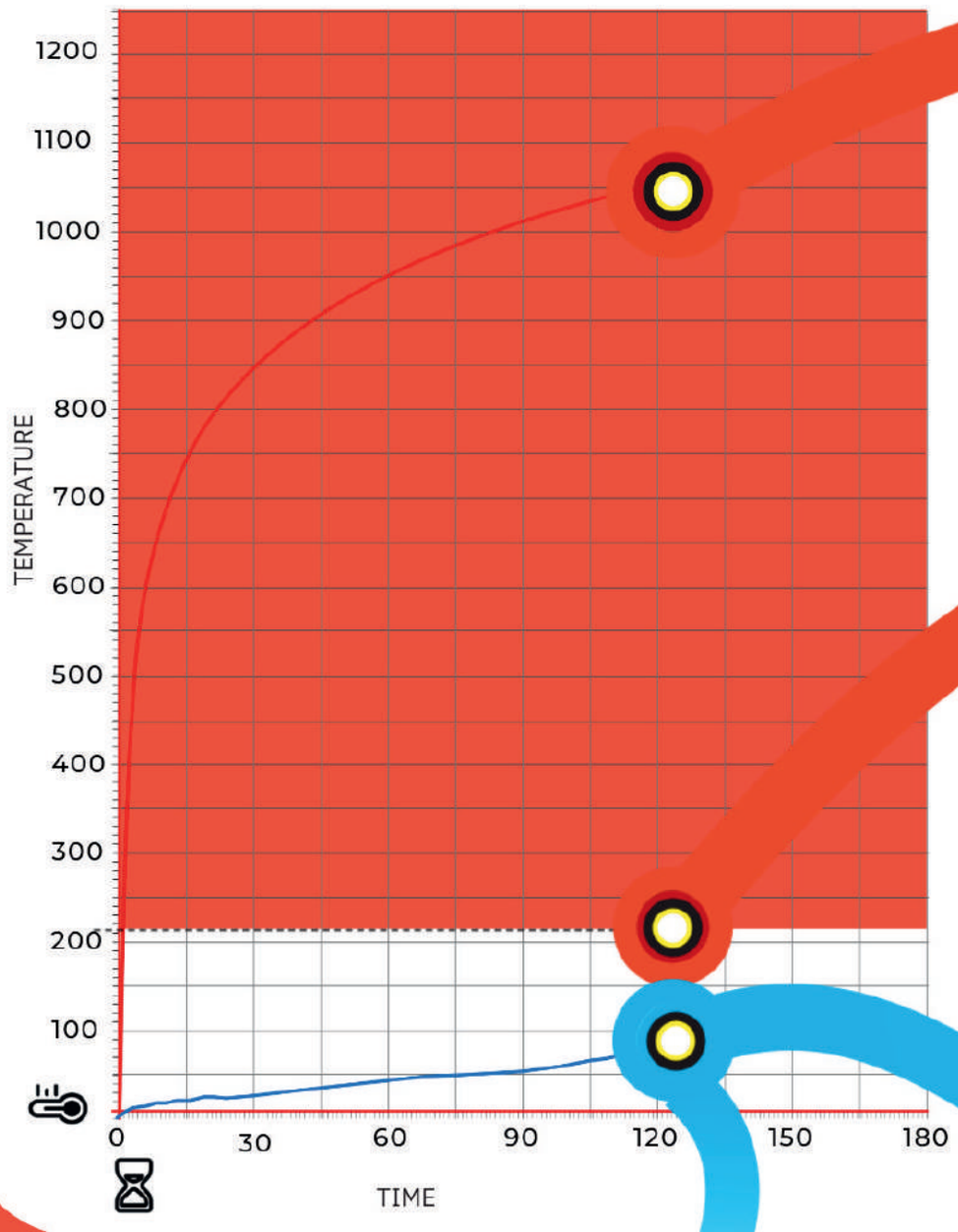
Insulation panels
with low thermal conductivity

Essential elements

BACTERIA BLOCK FIRE

Total passive protection from the action of fire
Bacteria-Blockfire® resists a constant temperature of **1000°C for 120 minutes, managing to keep the contained paper**

INTACT at 78°C



BACTERIA BLOCK FIRE

Bacteria-Blockfire® is the first **TOTAL PASSIVE PROTECTION** compactable storage system
Bacteria-Blockfire® is patented and classified EI15-E120 and fire prevention regulation compliant.
Its construction features make it a fire-resistant system, without the use of **ACTIVE EXTINGUISHING SYSTEMS**, **thus determining fire load for contained materials equal to "0" (zero).**

In the event of fire, protection does not require any external device

Heating curve
UNI EN 1363-1

OUTSIDE TEMPERATURE 1000°C

after 120 minutes

TRADITIONAL STORAGE SYSTEM

Paper combustion temperature

BURNT PAPER 230°C

BACTERIA | BLOCK | FIRE

Temperature reached by paper inside **Bacteria-Blockfire®** device

INTACT PAPER 78°C

after 120 minutes

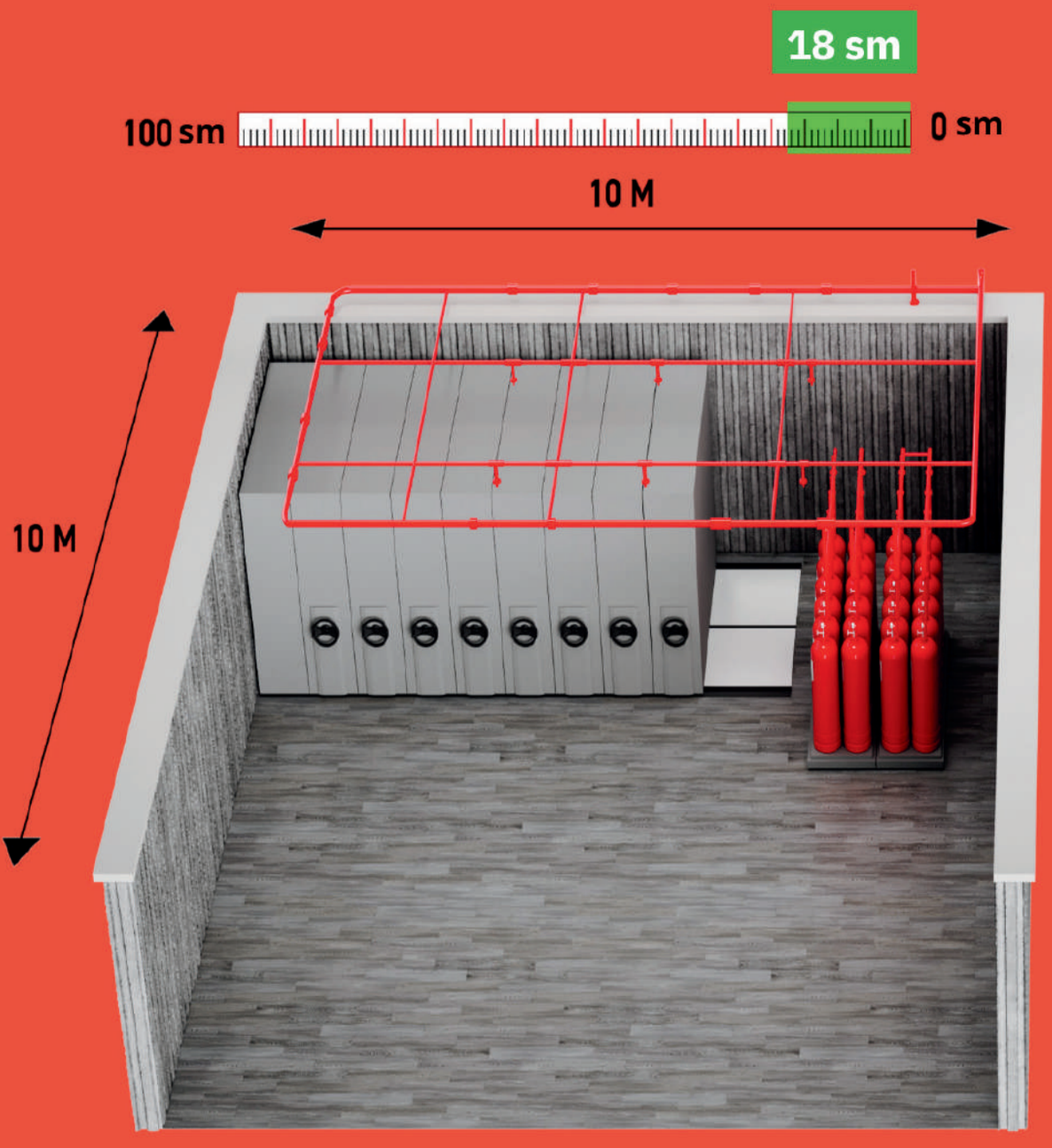
PERFORMANCE COMPARISON

Fire resistance and storage capacity optimization

MAXIMUM CAPACITY DEVELOPED

TRADITIONAL COMPACT STORAGE SYSTEM

with only a smoke detection system and automatic extinguishing system

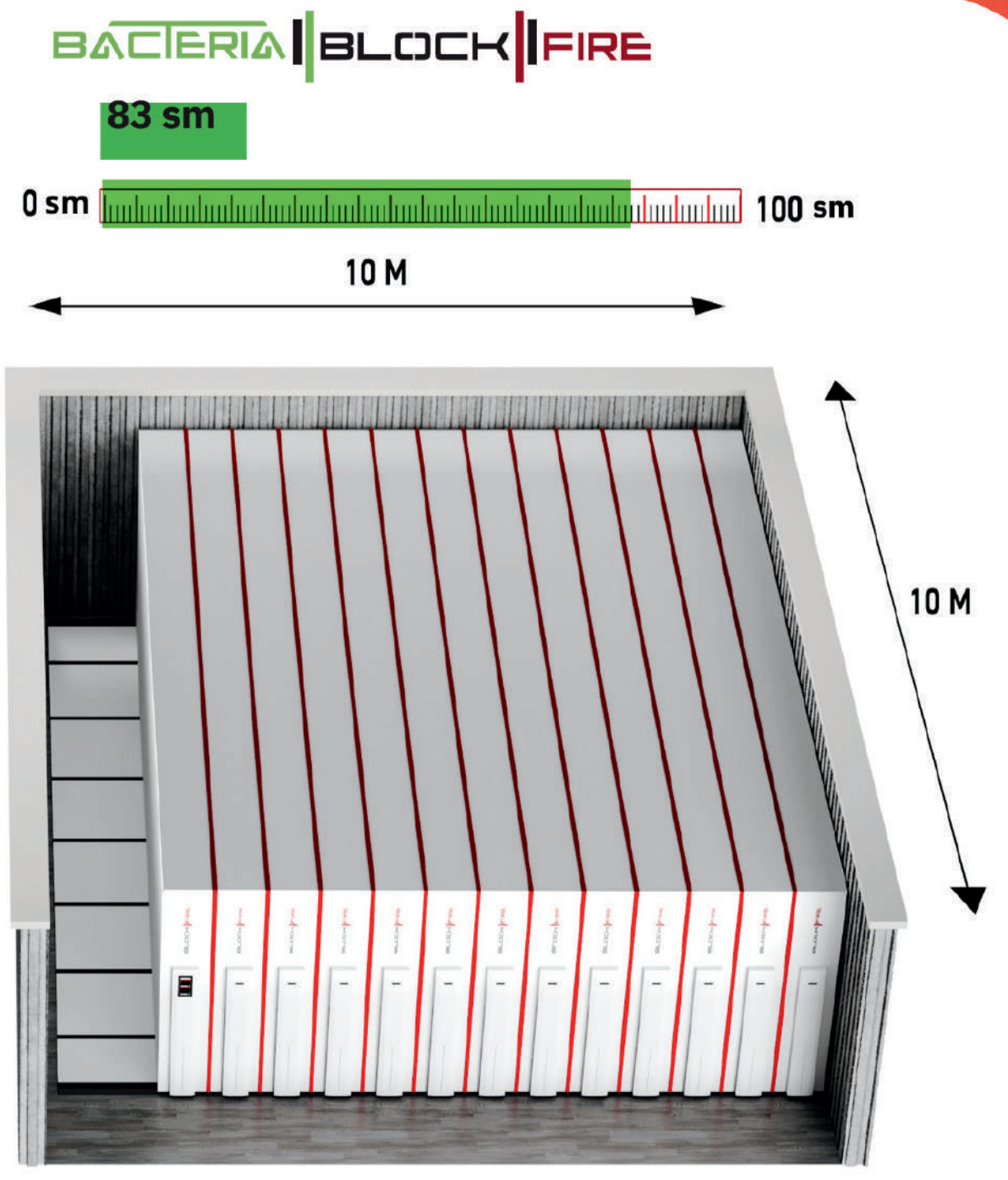


Traditional storage systems, when integrated with fire extinguishing systems, are bound by specific regulations (Ministerial Decree August 3rd 2015 Fire Prevention Code) which limit the possibility to use as much space as possible, due to fire load requirements.

MAXIMUM CAPACITY DEVELOPED

COMPACT STORAGE DEVICE

with smoke detection system only



The **Bacteria-Blockfire®** device allows you to optimize the available space in the rooms, **maximizing the storage capacity without requiring any building structural modification**. Thanks to the zero fire load, in full compliance with the specific legislation (**Ministerial Decree 3 August 2015 Fire Prevention Code**), there are no limits to filling the space

Comparison example of a **100 sm** warehouse layout, **2.70 m high Local classification = REI 60**

TODAY

RETURN OF INVESTMENT

- Fire prevention: flame and smoke control
- Anti-deterioration of contents stored in archives
- Environment: air recirculation and temperature control
- Access control and management
- Lighting control
- Full use of available space
- Safety of all contained materials

BACTERIA BLOCK FIRE

COMPACT SYSTEM PURCHASE

COMPACT SYSTEM INSTALLATION

Use of space in 100 sm warehouse H 2.70 m REI 60

83 sm

TRADITIONAL STORAGE SYSTEM

18 sm

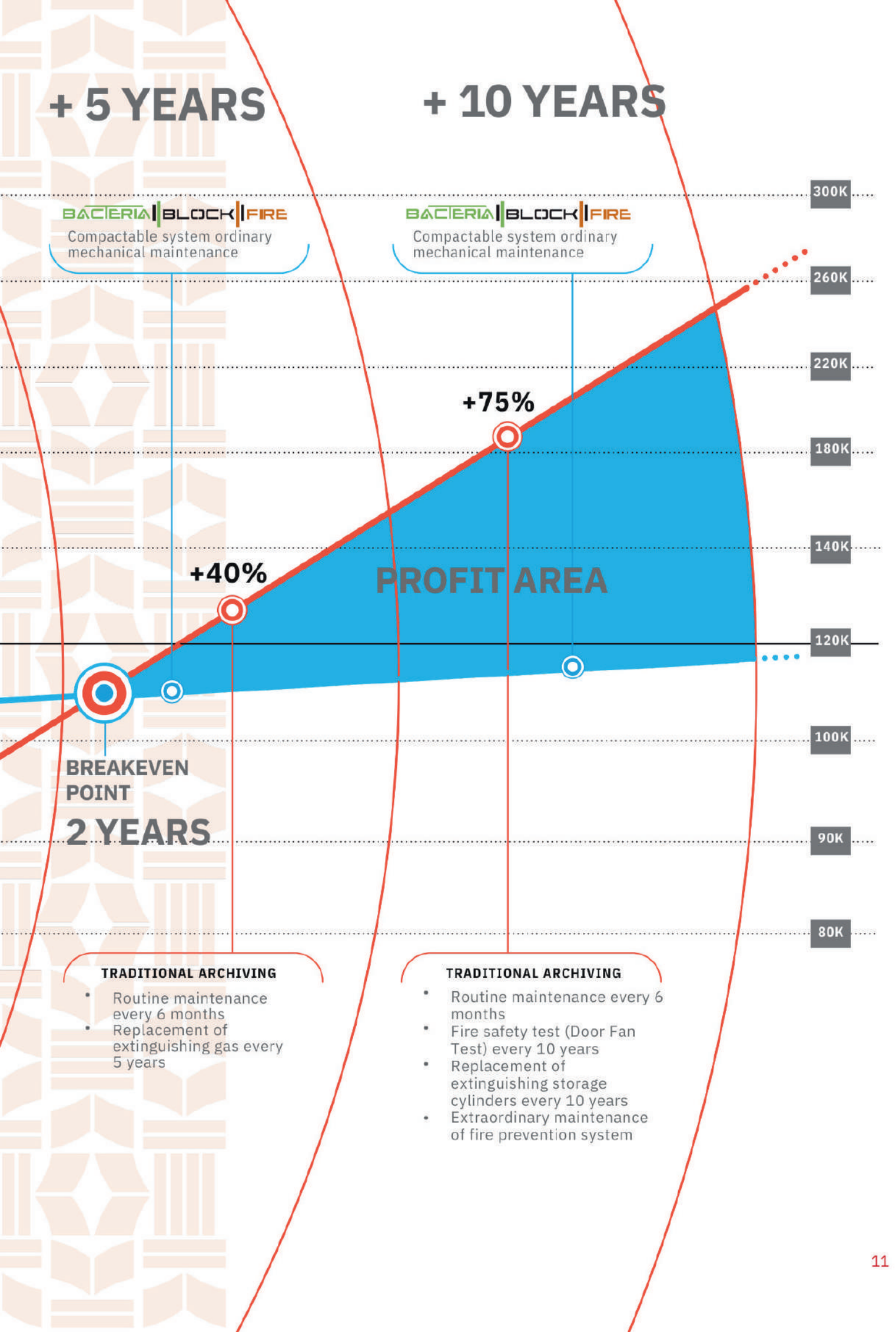
Use of space in 100 sm warehouse H 2.70 m REI 60

COMPACT SYSTEM PURCHASE

COMPACT SYSTEM INSTALLATION

FIRE PREVENTION SYSTEM PURCHASE

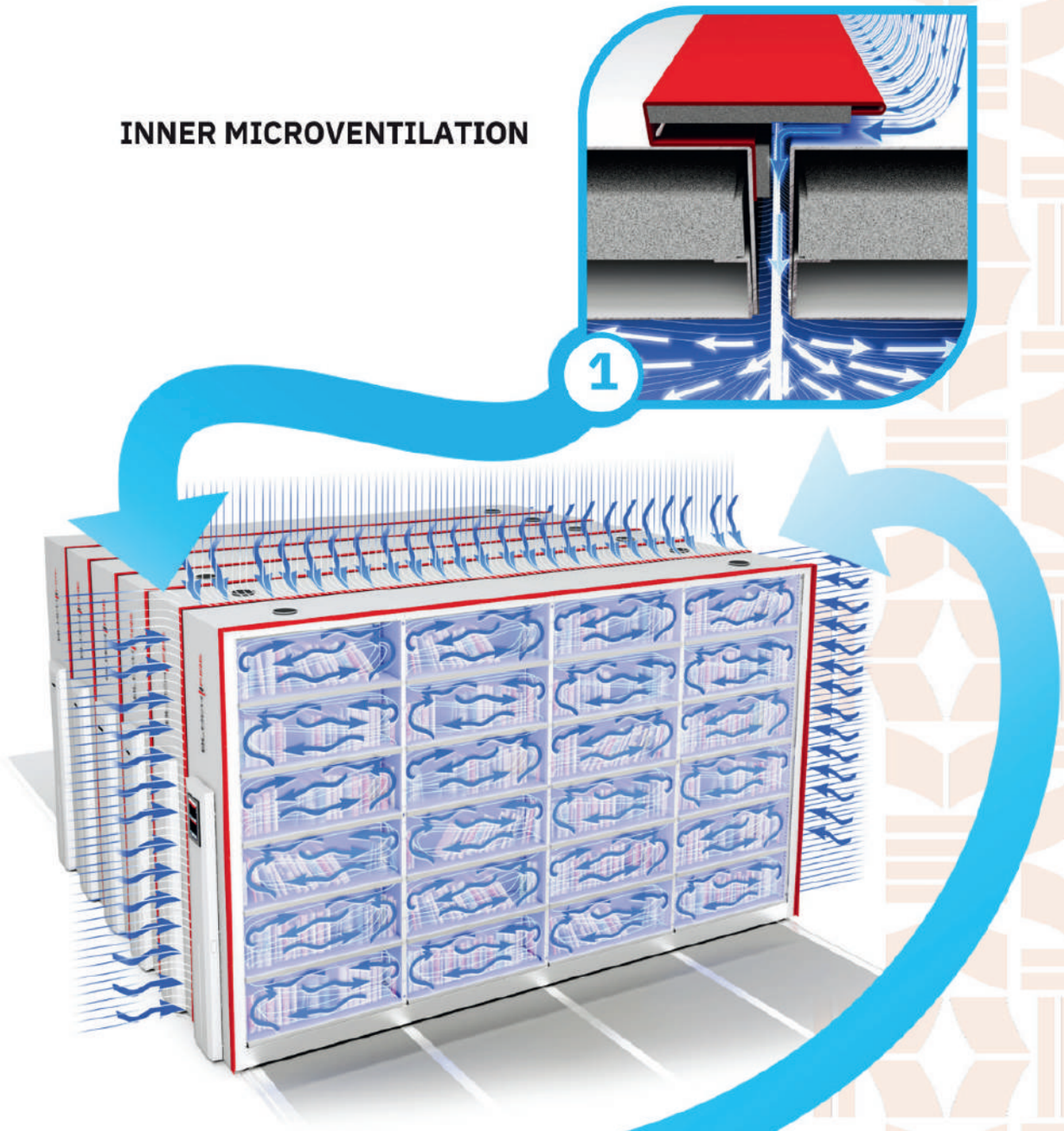
INSTALLATION PREMISES ADAPTATION

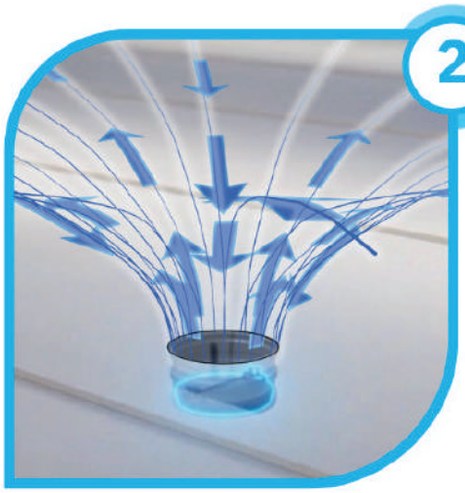

+ 5 YEARS
+ 10 YEARS
BACTERIA BLOCK FIRE
Compactable system ordinary mechanical maintenance
BACTERIA BLOCK FIRE
Compactable system ordinary mechanical maintenance
300K
260K
220K
180K
140K
120K
100K
90K
80K
+75%
+40%
PROFIT AREA
BREAKEVEN POINT
2 YEARS
TRADITIONAL ARCHIVING
Routine maintenance every 6 months
Replacement of extinguishing gas every 5 years
TRADITIONAL ARCHIVING
Routine maintenance every 6 months
Fire safety test (Door Fan Test) every 10 years
Replacement of extinguishing storage cylinders every 10 years
Extraordinary maintenance of fire prevention system

Ambiente: air recirculation

The peculiar structure of **Bacteria-Blockfire®** is able to guarantee natural air recirculation inside the storage compartments even in **compact mode**, thanks to:

INNER MICROVENTILATION





INTUMESCENT VENTILATION CHIMNEYS at the top of the spans (if required) ensure adequate air exchange with the surrounding environment.

Essential Elements

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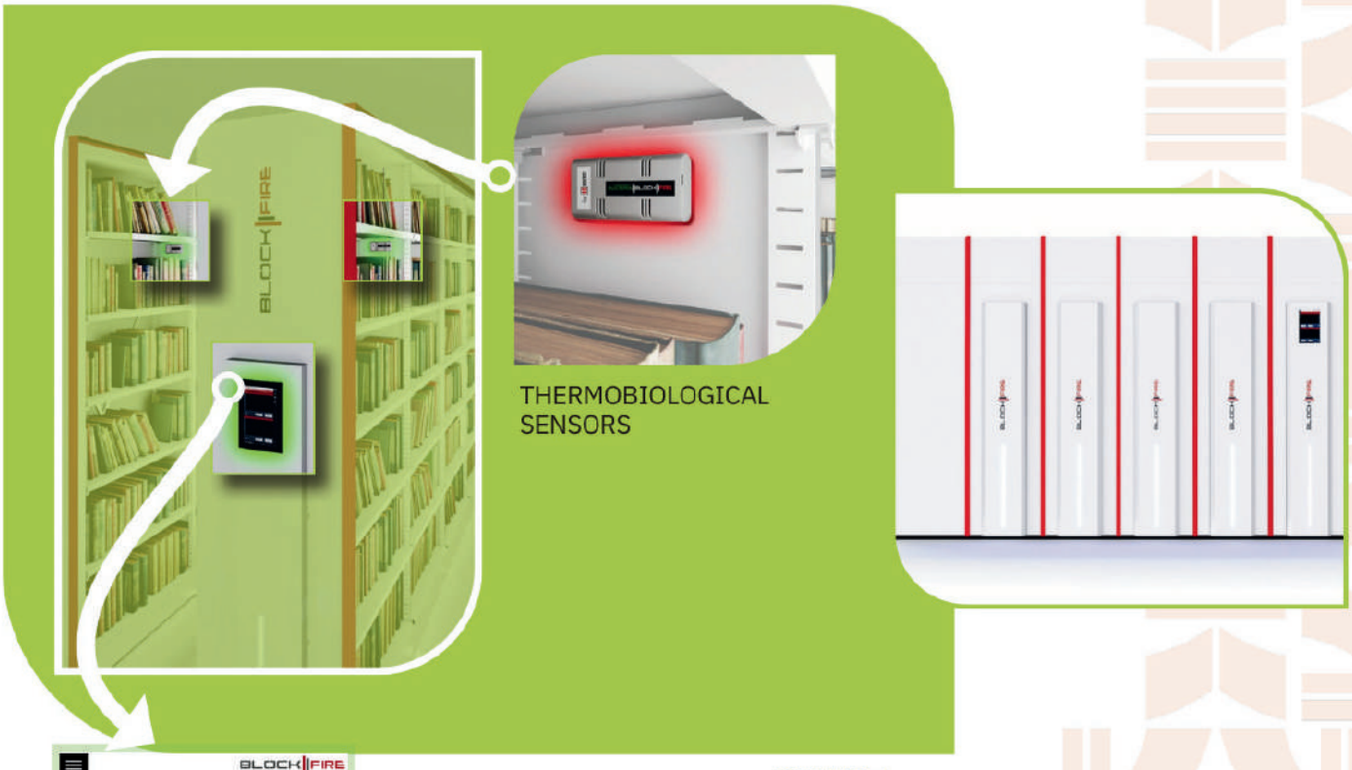
Essential elements

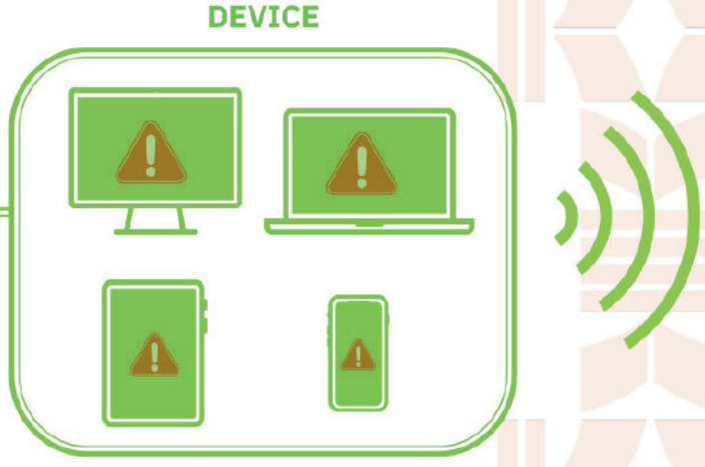
BACTERIA | BLOCK | FIRE

ANTI-DETERIORATION OF CONTENTS STORED IN COMPACTED ARCHIVES

Main causes of deterioration are:
- **fungal proliferation**
- **variations in temperature and humidity**



CONTROL PANEL



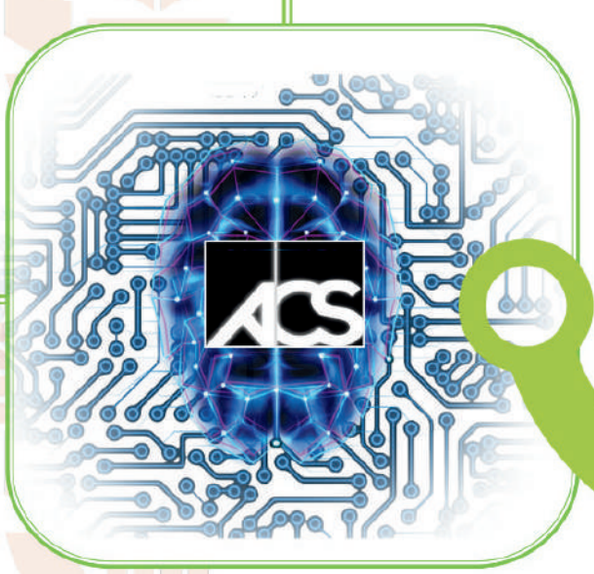
DETERIORATION ALERT
INCORRECT ENVIRONMENTAL CONDITIONS ALERT

Our **technical-scientific committee** has developed an algorithm that allows us to immediately **identify, the archives' incorrect conservation conditions, preventing them from the beginning** and establishing possible remedies well before the start of fungal proliferation thanks to **data detected by specific sensors and processed by specific software**

THIS IS HOW A.C.S. (AERIAL CONTROL SYSTEM) WAS BORN

Thanks to its algorithm, A.C.S. performs continuous analysis of thermohygrometric and biological parameters inside the archives. When it registers a combination of parameters favorable to the proliferation of harmful or non-compliant biological agents, **A.C.S. sends Alerts in real time:**

- **Decay Alert** (microclimatic and biological conditions for triggering fungal proliferation)
- **Environmental conditions Alert** (non-optimal temperature and humidity)



(AERIAL CONTROL SYSTEM)

AUTOMATIC OR MANUAL ACTIVATION OF CORRECTIVE MEASURES TO RESET OPTIMAL CONSERVATION PARAMETERS

Essential elements

BACTERIA | BLOCK | FIRE

HUMIDITY CONTROL

Fire resistance and storage capacity optimization

The protective structure of **Bacteria-Blockfire®** is composed of insulating panels with a basic PH. The chemical composition, free of harmful substances is even a deterrent against formation of pathogenic mold and nesting of dust mites.
The central panels, structurally adjacent to the stored material, contribute to absorb eventual excess humidity, thus stabilizing the relative average value.

DANGEROUS SUBSTANCES FREE

- **SAFEGUARD of the content and operators' health**
- **NO PFAS substances**

- **CERTIFICATIONS compliant with regulation (EU) 2021/1297 and REACH regulation (EU)**

- **COMPLIANCE with C.A.M. (Minimum Environmental Criteria) referred to in the Ministerial Decree of June 23rd 2022 n. 254**

Products

BACTERIA | BLOCK | FIRE

FLUXFIRE

FLUXFIRE is the fixed storage solution with doors, which fireproof structure is highly heat-resistant.

It is both a furniture design container, and a fire protection system for documents.

It does not increase fire load in the rooms in which it is installed.

It is perfect for corridors and small spaces.

It has no capacity limits and can be made in series of cabinets.

Products

BACTERIA | BLOCK | FIRE

SAFELIBRARY

SAFELIBRARY is a completely passive storage solution, suitable for high-consultation libraries, where it is necessary to keep multiple aisles open for users.

The positioning – shelf-aisle-shelf-aisle – allows to keep all aisles open for consultation, or to open only the modules which are habitually consulted, thus keeping the others safe (sealed).

It allows to optimize the inner spaces of the library. In case of conferences/workshops etc., the total compaction of the SAFELIBRARY allows to use the free space left, facilitating access.

Open configuration sliding bookcase for consultation.

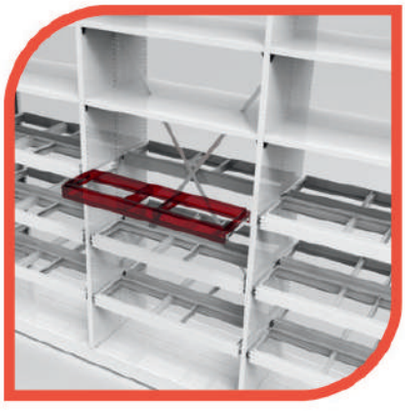
Closed and fire-protected sliding bookcase.
It frees up space for other activities such as conferences and/or temporary meetings. This configuration guarantees total protection of the volumes inside the fire-resistant covering shell.

Accessories

BACTERIA | BLOCK | FIRE

Pull-out drawers
Different sizes pull-out drawers can be inserted in each span depending on the filing or storage needs.

Inside the drawer there are vertical and horizontal slots for the application of any inner separators.



Pull-out file frames
Different size pull-out file frames suitable for each file in use in the archive can be inserted into each span.

Dividers and bookends
Each shelf can be equipped with a divider to separate or support the archived/stored material.

PAINTINGS
Internal grids for pictures.

Upper anti-tipping system
The upper anti-tipping system is necessary when the height of the shelving above the mobile bases becomes significant. This system, operating simultaneously on sliding sleds and stabilization tubes, prevents the tipping motion from being triggered, even in the presence of lateral tipping forces caused by abrupt movements of the mobile base.

ACCESS CONTROL AND MANAGEMENT

The **Bacteria-Blockfire®** device includes a user authentication mode to access the stored material.

Operator access to various corridors can be restricted by selecting different authorization levels.

Bacteria-Blockfire® can be equipped with special movement TAGs to be directly applied to the most valuable items, thus allowing the monitoring of any unauthorized movement. Every event is always recorded, with the option to generate dedicated reports.

LIGHTING CONTROL

The impact of UV rays, present in both sunlight and artificial light, can be harmful to archival materials. Bacteria-Blockfire® can be equipped with a selective lighting system for open corridors, consisting of low UV radiation and reduced energy consumption LED lamps

Essential elements

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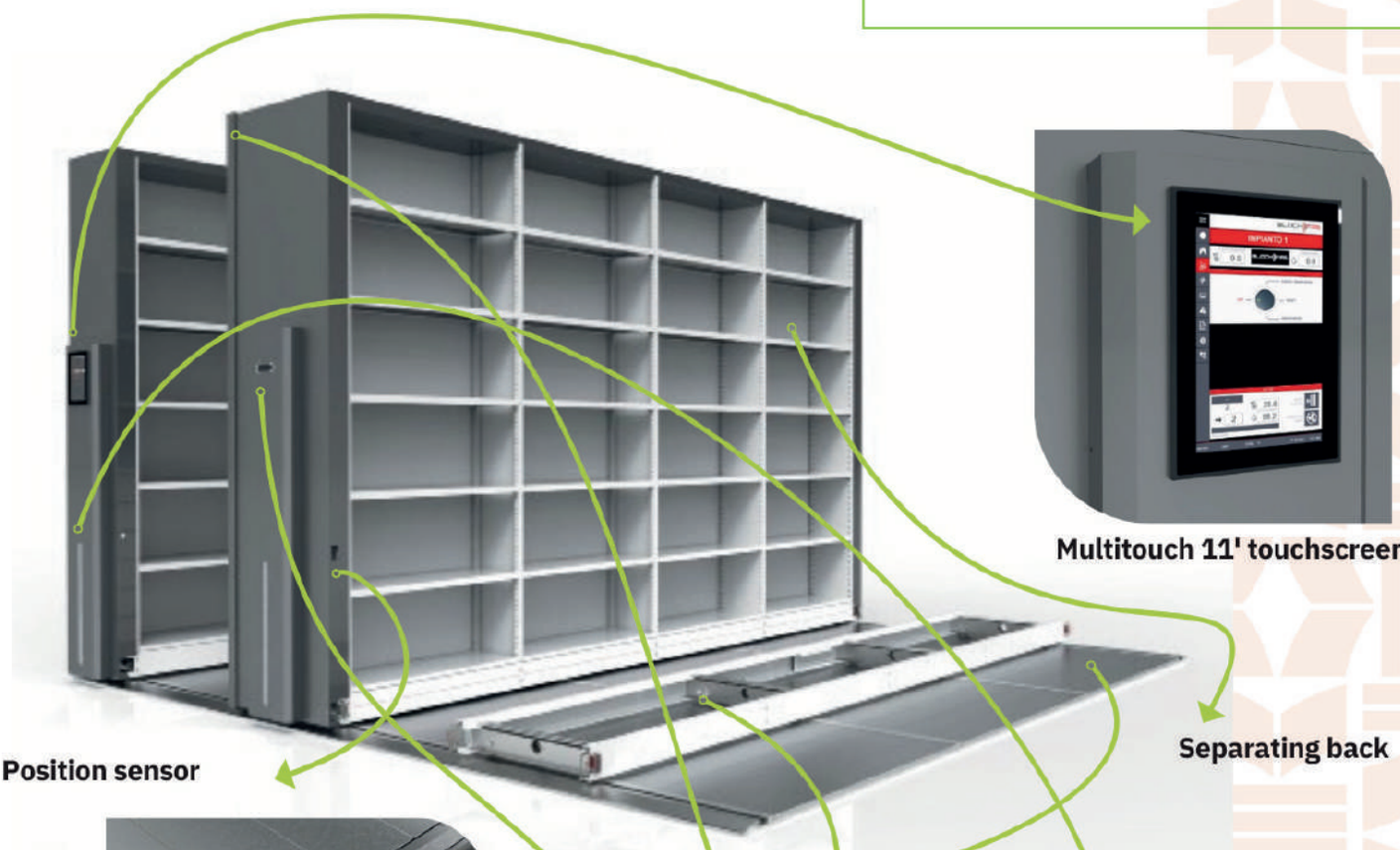
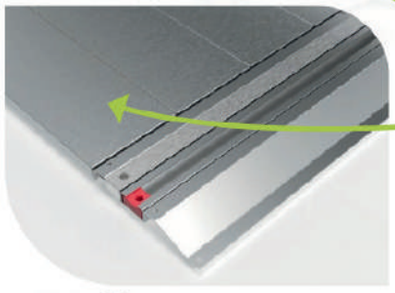
AUTOMATIC	
Maximum height	up to 6.000 mm
Maximum mobile element length	up to 25.000 mm
Permissible Payload	up to 30.000 kg



Multitouch 11' touchscreen

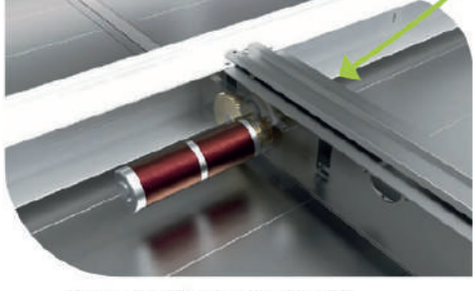
Separating back

Position sensor

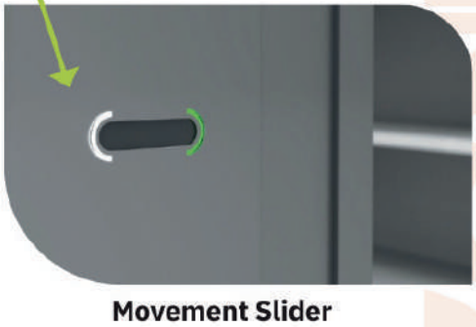


Metal floor

LED signaling light



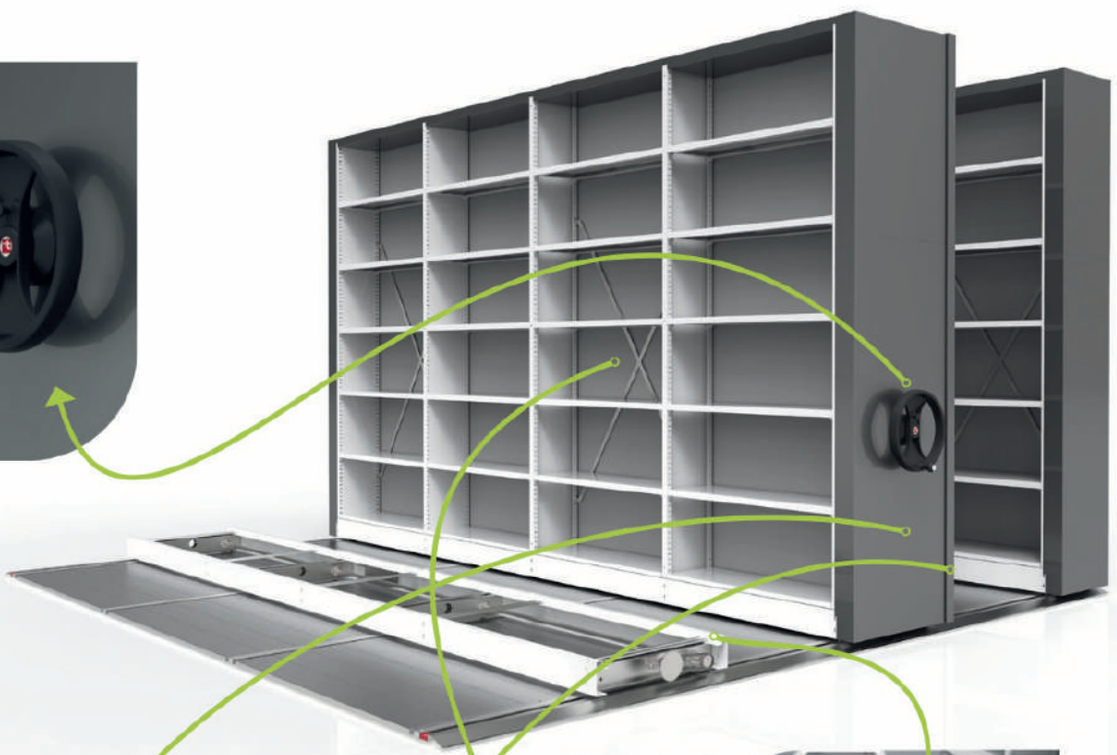
Automatic movement

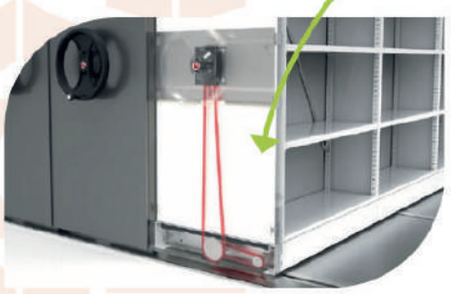


Movement Slider

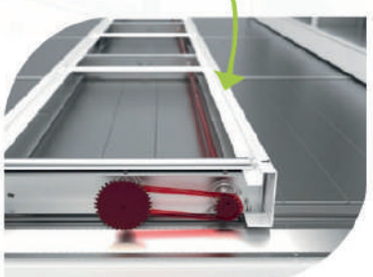
MANUAL	
up to 5.000 mm	Maximum height
up to 12.000 mm	Maximum mobile element length
up to 20.000 kg	Permissible Payload

Manoeuvring handwheel

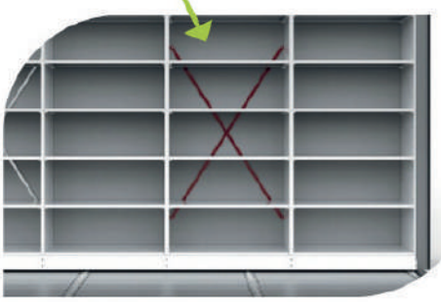




transmission distribution



Movement transmission



Stabilization cross

Sealing profile

Case history

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It is installed in Italy and abroad in institutions such as Municipalities, Provinces, Regions, Museums, State Archives, Ministries, Universities, Courts, Libraries, Local Health Authorities, Banks, Foundations, Ecclesiastical Institutes, Private citizens.

Below are some sites where the fire protection and biological degradation conservation system Bacteria-Blockfire has been installed.

Polytechnic University of Torino

Court of Torino

Revenue Agency of Arezzo

Museum & Historical Archives of Bordeaux, France

University of Genova

Cecchignola Military School, Roma

Bank of Italy, Roma

Polytechnic of Milano

Rami Barrack Book Center,
Istanbul, Türkiye

Max Planck History of Art
Institute in Firenze

BLOCK|WATER


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REAL PROTECTION

MAKROS

The intelligent protection of cultural and archival heritage

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Firebreak Archiving Solutions
www.makros.org - www.blockfire.it