



[www.pausebox.eu](http://www.pausebox.eu)

# PAUSEBOX®

The PauseBox® is a ready-to-use solution for archives, archeology and museums storage facility. It provides an optimal environment for preserving collections with a minimum investment and low annual costs.

The PauseBox® was developed by Helicon based on 25 years of experience with museum collections.





# INTRODUCTION

Some animals such as bears for example, hibernate. These animals lower their metabolism: their body temperature reduces and important information about the environment is still registered to determine if everything is safe. To the end of hibernation, life processes accelerate, and the bear wakes up, hungry but perfectly healthy. The bear can prolong its life and save energy.

Collections are not always in use and if not exhibited they are stored. What would happen if collections, like bears, could go into hibernation?

If they could remain in a safe environment without disturbances with little decay and therefore a longer life expectancy?

What if you could press a pause button to stop time?

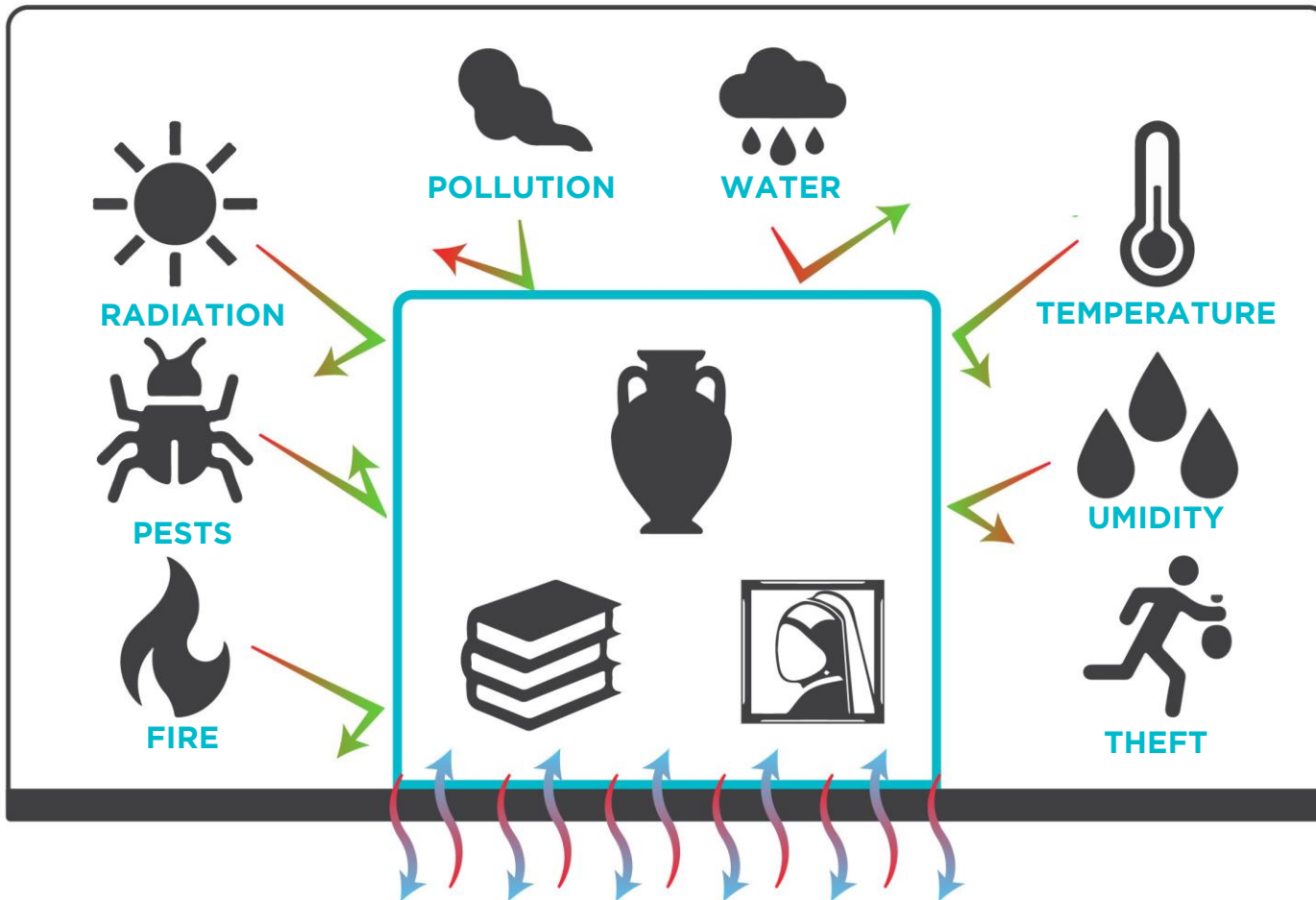
That is the idea behind the PauseBox®.

# HOW IT WORKS

Most objects are hygroscopic; that means that moisture is present in the materials. For example, paper objects contain about 10 percent of their mass as water. Changing this amount of water causes contraction and expansion, which can lead to strain and damage.

The material moisture content should therefore remain somewhat constant. Traditionally, the relative humidity of the air is kept constant by various devices. However, an environment is created in the PauseBox® in which disruptions are minimal. The box is constructed in such a way that temperature, moisture, solar radiation, pollution, fungi and insects are excluded. Since no changes occur, no correction is required.

Most risks to collections are caused or influenced by the building. A representation of these is showed on the left picture.



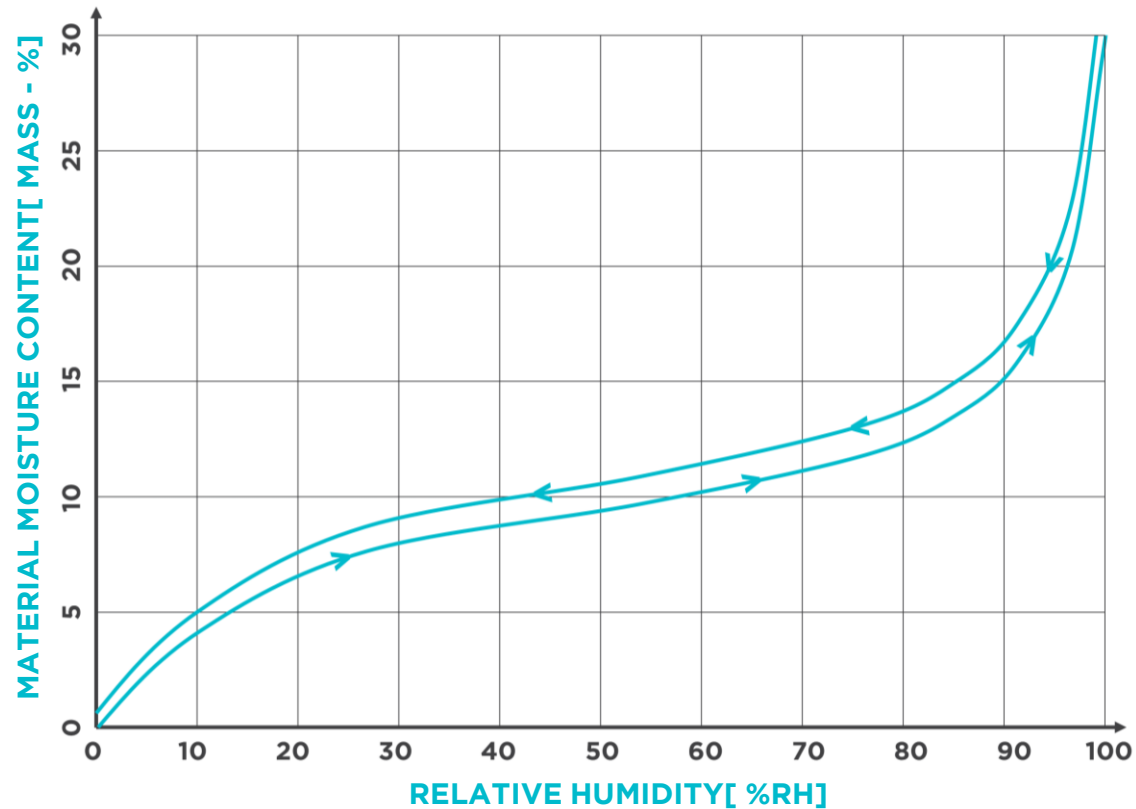
The PauseBox® effect on these risks

# FIND THE BALANCE

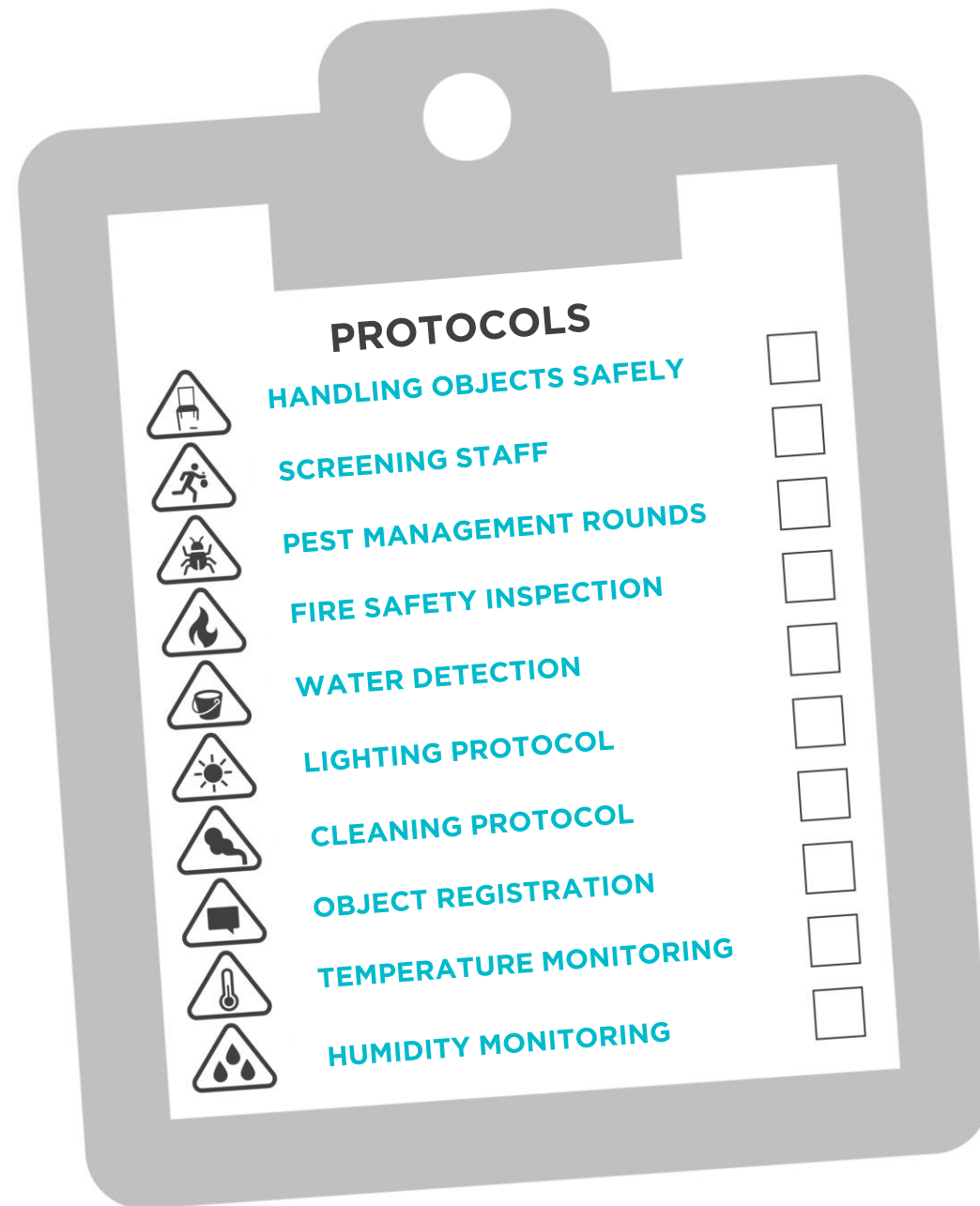
Objects and the surrounding air come into an equilibrium situation. The amount of moisture in the objects is in equilibrium with the relative humidity of the surrounding air. However, air contains relatively little moisture; 99.9% of the moisture present in the PauseBox® will be in the objects.

In the event of a disturbance, for example when opening a door to take out an object, the relative humidity will change somewhat due to the influence of the surrounding space. When the door is closed, a new equilibrium is established.

Due to the large difference in moisture content, the moisture content of the materials will hardly change, while the relative air humidity will become almost equal to the previous equilibrium value.



Example of a hygroscopic curve



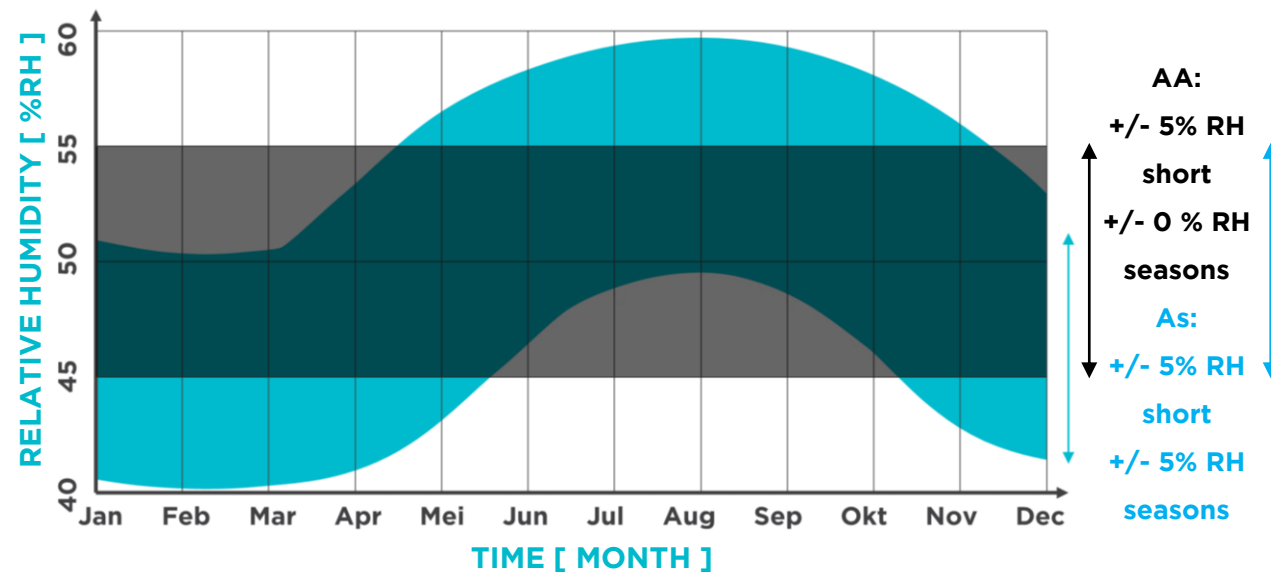
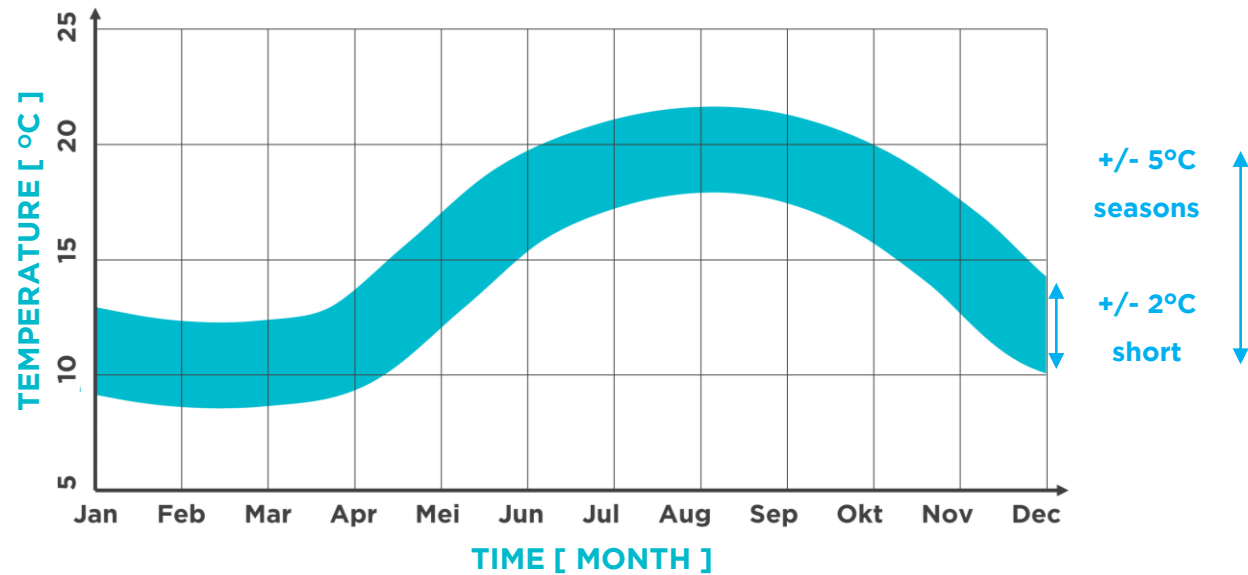
# PROTOCOLS

A storage is more than just a building. Protocols are needed to ensure that practices are documented, and routine checks are performed.

This guarantees maximum safety during the entire ‘pause’ of the collection. Monitoring the indoor climate, a pest management program, a disaster plan, good registration, etc. are all included in these protocols.

Protocols for extra safety in the use phase





ASHRAE Climate Class AA & As Bandwidths

# CLIMATE

PauseBoxen® are placed in a larger enveloping space.

This can be an existing or a new space. This one enveloping space provides a good basis: wind, rain and sunlight are kept out. In addition, this enveloping room can be controlled to a desired temperature, based on optimal preservation, safe handling of objects or a combination of both.

To meet the strictest climate class ASHRAE\* class AA are seasonal adjustments in the temperature of +5°C and -5°C allowed. In most buildings, the PauseBox® can meet these requirements without having to cool or heat the surrounding space. In the case of a desired minimum temperature of, for example, 18 °C, a simple underfloor heating can be used

\* = ASHRAE, 2011, Museums, libraries and archives (chapter 23), in 2011 ASHRAE handbook: Heating, ventilating, and air-conditioning applications, SI edition, American Society of Heating, Refrigerating and Air-conditioning Engineers Inc., pp. 23.1-23.23



Room sensor  
Elsys CO2 SensorLoRaWAN

# SENSORS

Helicon's measuring system consists of various sensors that perform a measurement every 15 minutes.

The Room Sensor measures temperature, relative humidity, CO2, light and movement.

The Door Sensor measures water detection and movement.

The result of this measurement is sent wirelessly, via its own frequency, to the central receiver and stored there.

Once every 15 minutes, the central receiver makes contact with the Helicon database via the gateway and synchronizes the measurement data.



Door sensor  
Elsys Door / Window  
Sensor LoRaWAN

# STORAGE DESIGN

The PauseBox® is made of white sandwich panels that are easy to clean.

Designing an entire depot involves measuring and positioning various PauseBoxes® in a building. Often the collections determine which storage type will be used (e.g.; shelves, drawers and/or painting racks). This affects the width of the aisle.

The number of aisles and the depth and width of the storage system determines the size of the PauseBox®. It is recommended that you aim for a surface from 50 to 200 m<sup>2</sup> per PauseBox®.

The image on the left shows how a depot with multiple PauseBoxes® can be designed.



Example of multiple PauseBoxes® in an existing building





# WHAT IS INCLUDED?

The PauseBox® is fully delivered.

That includes:

- Self-supporting panel construction, air and vapor tight
- Double seal sliding door
- Air recirculation system
- Temperature and Relative Humidity Monitoring
- Additional dehumidification (PauseBox® Dry)

Additional options:

- Automatic access control system
- LED lighting with motion sensors
- Alarm sensors
- N2 fire suppression system
- Additional carbon filtering (PauseBox® Filtered)
- Additional cooling and dehumidification (PauseBox® Cool)



# FINE TWEAKS

The performance of the PauseBox® depends, among other things, on the type of collection being stored, the ratio between air and objects, the natural climate of the enclosing space and your wishes.

In order to achieve an optimal situation, Helicon help you determine the exact structure of the PauseBox®, for example to determine whether insulation should be applied and in what thickness. Due to our calculation, you can be sure in advance about the quality your need for your collection.

# ABOUT HELICON CS

Helicon Conservation Support B.V. has been a specialist in preventive conservation since 2000.

Helicon advises museums, libraries, archives, institutes, notaries, companies and private individuals on the security of their collections and provides answers to all collection-related questions.

## NEDERLAND

Helicon Conservation  
Support B.V.  
Industrieweg 13  
2382 NR Zoeterwoude  
Nederland  
+31 (0)71 30 30 940

info@helicon-cs.com  
www.helicon-cs.com  
KvK Haaglanden 56188218  
BTW NL852011763B01  
NL44 RABO 0134 4817 12

Photos by Esther Maire and Marzia Loddo



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