HAHN Protector Picture Case – Climate Protection for Hanging Artefacts

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Keywords

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GLASBAU HAHN was founded more than 160 years ago as a Glazing company.

For more than 70 years we have been manufacturing exhibition display cases, especially for the museum field and have been exporting our products worldwide since the very early days.

In 1953 GLASBAU HAHN carried out its first export project, in Athens, through an order from the Akropolis Museum.

Otto Hahn invented the first frameless display case in 1936 using a special adhesive called Hahn Glass cement which enabled us to bond glass to glass corners without frames. The visitor could concentrate his interest on the art object without being distracted by obvious frames. According to the motto:

The perfect display case is invisible

Our policy is: To realise the ideas of architects and designers but at the same time consider the handling and conservation requirements of the museums. It is our responsibility to preserve the treasuries from the past and present for future generations.

Problem

All valuable artefacts have something in common - They need to be protected from unsuitable or fluctuating relative humidity, ultraviolet and infrared radiation, as well as mechanical damage due to vandalism or handling in transport. Exhibits deteriorate rapidly when exposed to airborne pollutants and unsuitable environments. As result the cultural exchange of art has hitherto been limited because public and private collectors have been reluctant to loan such delicate artefacts.

Solution to the Problem

Museums and lenders, as well as the private collectors of today, are increasingly demanding extended protection for their artefacts and more control over the conditions while on display or in transit.

Following prolonged research and development HAHN now presents a glazing system for panels, canvas, graphic works on paper, textiles, and even for icons, that incorporates environmental protection. Guaranteeing a controlled **micro climate** as well as protecting against physical damage.

As the system is so straightforward to fit, it can be used as a temporary, exchangeable frame.

Icon of the Mother of god of Konevets

The miracle-working icon of the Mother of god of Konevets is double-sided; on the reverse side there is a depiction of the Holy Face.

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According to tradition, the icon was brought from Mount Athos in 1936 to the monastery of Konevets by Lake Ladoga.

Because of the Winter War in 1940, the monasteries of Valamo and Konevets had to be evacuated. In 1956 the remaining monks from the monastery of Konevets came to Valamo monastery, now located in Uusi-Valamo, and brought with them the miracle-working icon.

The icon of the Mother of god of Konevets has since then been placed in a position of honour in the church in Uusi-Valamo, Finland.

For an historical visit to Russia in July 2006, the icon was secured within a HAHN protector case. The case still continues to protect the icon in the church of Uusi-Valamo.

Complete Physical and Climate Protection:

The PROTECTOR provides a carefully constructed, custom built and hermetically sealed ”invisible glass safe”, to meet the needs of the objects housed within it.

The glass front is factory-sealed to the case framework. The rear panel is hermetically sealed to the case with double O-rings, ensuring an airtight fit. The case is meticulously designed and constructed of materials impervious to all environmental hazards, including temperature, moisture and pollutants.

UV protection is provided by non -reflective, laminated safety glass.

The patented air pressure compensation system (Patent EP 0676 160 B) describes a container which prevents damage to the case and the artwork inside, caused by changes in barometric pressure.
Extremes of increasing temperature or barometric pressure, cause air to be forced out of the foil and guarantees a pressure balance inside the protector case, thus preventing potential explosion and leakage. This process is reversible, for example during transport by airfreight.

Condensation is avoided, even at extreme temperature differences. (“study report” download www.glasbau-hahn.de)

Materials:
All materials within in the case are inert and all construction joints have non-corrosive sealants applied externally.

The fire resistant, anodised aluminium framework is rigid but lightweight.

The front is glazed with a highly transparent laminated safety glass ‘Mirogard Protect’. It is a mineral glass based on an optical interference, anti-reflective coating on both surfaces. Specially produced for picture glazing, it eliminates annoying reflections almost completely.
It combines the advantage of mechanical protection and resistance to forced entry, with a highly effective UV- absorbtion.

The back consists of an aluminium-faced insulated foam panel. It provides a vapour barrier and protects against cold spots on a wall.

Adjustable plastic clips and felt packers allow the tension-free suspension of artefacts within the PROTECTOR.
Suspension eyelets on the case relieve the picture frame of any load.

A humidity and temperature sensor is fitted within the side of the frame.

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Test Evidence

The office for Climate Control Technique and Sensorics, Dipl. Ing. Manfred Mayer, Graz /Austria investigated the conditions of a panel within a HAHN PROTECTOR over a 6 month period.

During the study the display case was exposed to extreme climatic changes with daily intervals between +10°C up to a maximum of 45°C, and an variation of relative humidity of 5% to 80%.
The test monitoring totally confirmed the advantages of the HAHN PROTECTOR case.

Test results: The Protector-Display case can be declared a water and vapour proof container. Under extremely varying conditions of temperature between 42°C and 15°C a maximum vapour difference inside the case of 5-7% was identified. Condensation inside could not be detected even with fast fluctuating temperatures of minus 17°C to plus 28°C. The wooden panel showed no movement
(warping or expansion) up to a temperature of 28°C. Higher temperature caused movement of the panel corresponding to the vapour difference within a minimal range.
(study report download www.glasbau-hahn.de).

Practical Proof

An additional long-term measurement within an ongoing exhibition confirmed these results
The painting "Schmerzensmann, by Lucas Cranach d.Ä. was restored in the Centre of Restoration at Schloss Nymphenburg (The Bavarian Administration of National Castles, Gardens and Lakes) in Munich, Germany, by restoration expert Ms Inga Pelludat. The painting was subsequently installed inside a HAHN Protector.
For the period between May 2004 to August 2005 a long term test monitored the relative humidity and temperature of the picture

"Schmerzensmann", Lucas Cranach d.Ä., Oil of Canvas, about 1540

Method of measurement/
installation of the sensor

Specified by the Bavarian Administration of National Castles – Centre of Restoration – Sensor Hanwell Humbug Type II from Hanwell Instruments Ltd.. The sensor is mounted inside the case in a location indicated by the Centre of Restoration. Collection of data was done via a cable attached to the bottom of the data logger, and connected to a laptop computer in order to store the data.

Interpreting the Collected Climate Data / Diagrams
Installation of the painting was done in an ambient conditions of around 50% relative humidity and at a temperature of around 20° C – **without any moisture buffer.**

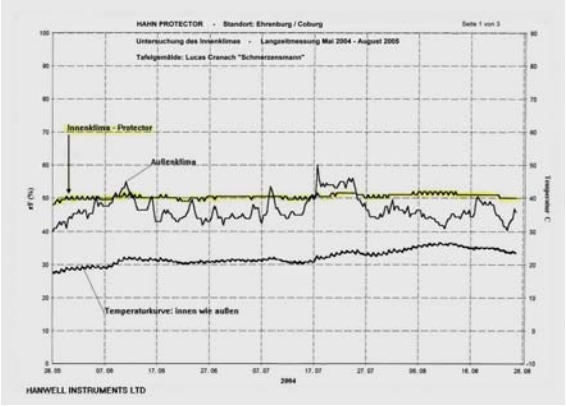

Diagram I

The data collected in the course of the period from May 2004 to August 2004 show a stable condition of the micro climate inside the case

(49 % - 51 % humidity) in contrast to the fluctuation of the ambient air outside (40 % - 60 % humidity).

Looking at the temperature curve (18° C -26 ° C), the fluctuation of the relative humidity (49 % - 51 %) is well within the commonly accepted range for loan artefacts.

Microclimate-Protector = yellow curve

Outside climate = black curve with significant peaks and lows

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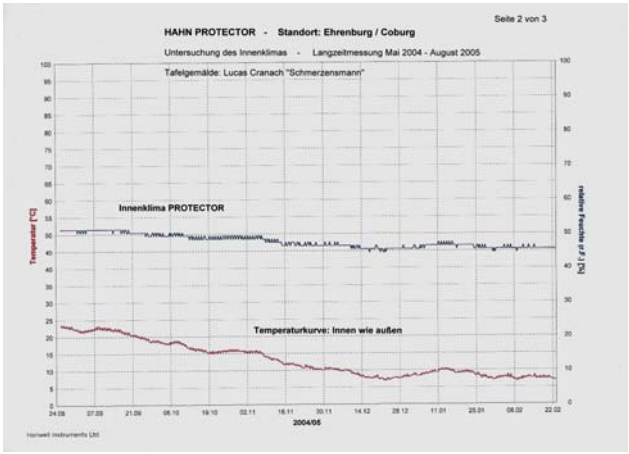
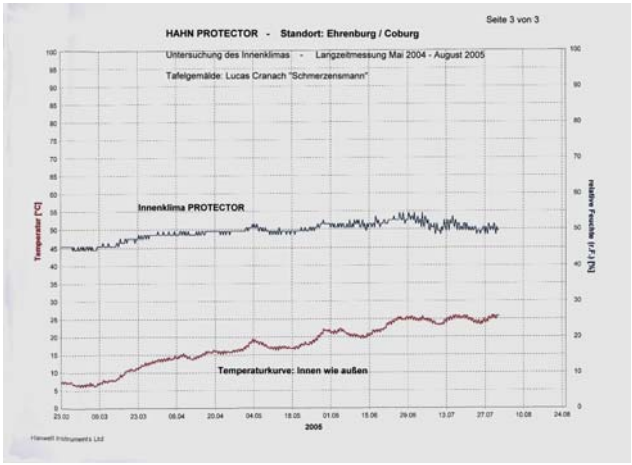
Temperature curve: inside equal to outside

Diagram II + III





Microclimate-Protector = blue curve
Temperature curve in red: inside equal to outside

Due to a break down of the data logger for measuring the ambient climate (type described above) no data was available for the ambient humidity. Therefore only an interpretation of the history of the relative humidity inside the case, compared to the temperature, is possible.
The fluctuations of relative humidity inside the case recorded in the period of August 2004 to August 2005 of 55 % - 45 % are obviously related to the fluctuation of the ambient temperature in the galleries without air-conditioning (26° C - 07 ° C).

Here as well, the recorded humidity was well within the commonly accepted norms for loan artifacts.
Without the HAHN PROTECTOR case the painting would have

been exposed to extreme fluctuations of relative humidity.

Again the Protector qualities were evident: humidity stayed constant inside the display case.

For decades, museums, private collectors and lenders world wide, trust in the virtues of the HAHN PROTECTOR. Numerous paintings, canvases and graphics enjoy the protection by HAHN PROTECTOR.
www.glasbau-hahn.de or www.glasbau-hahn.com

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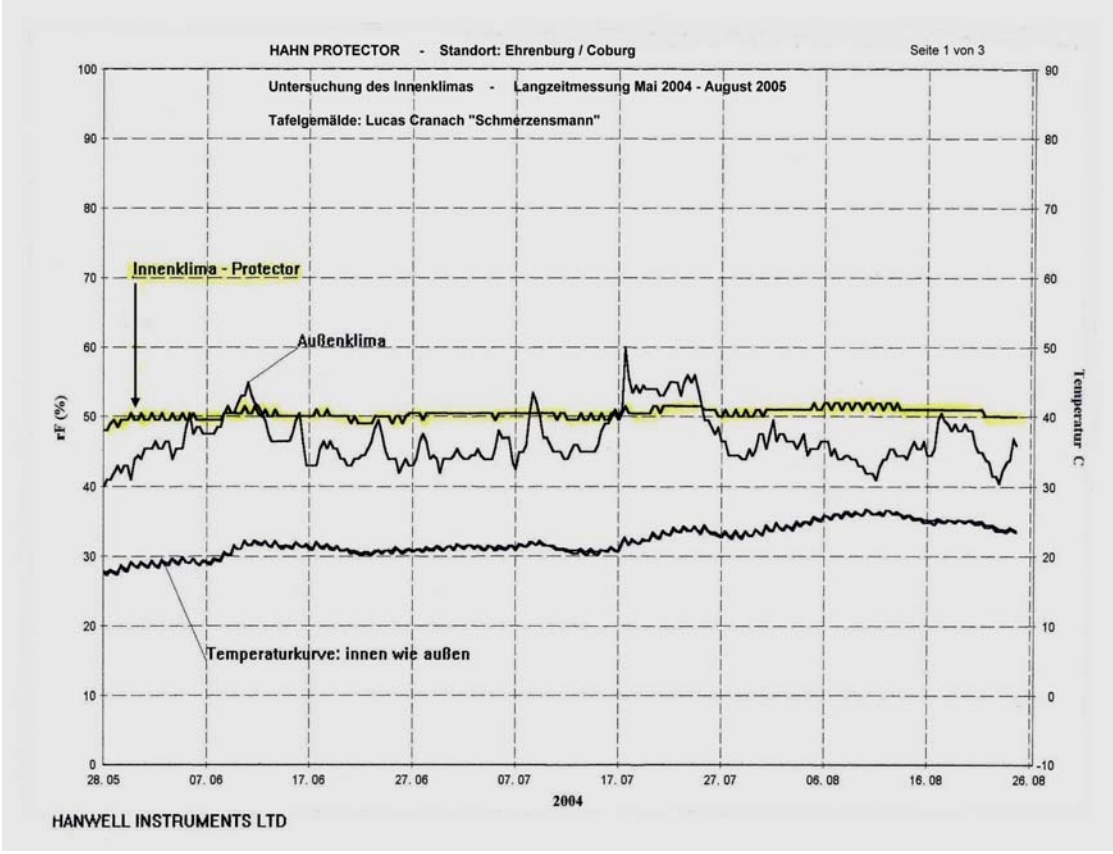

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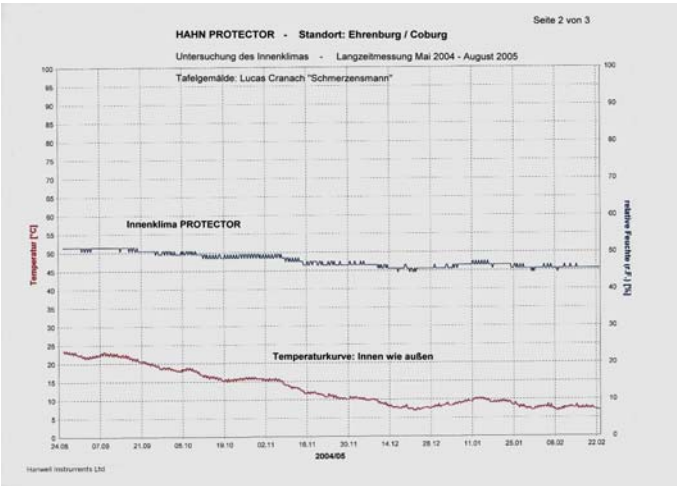
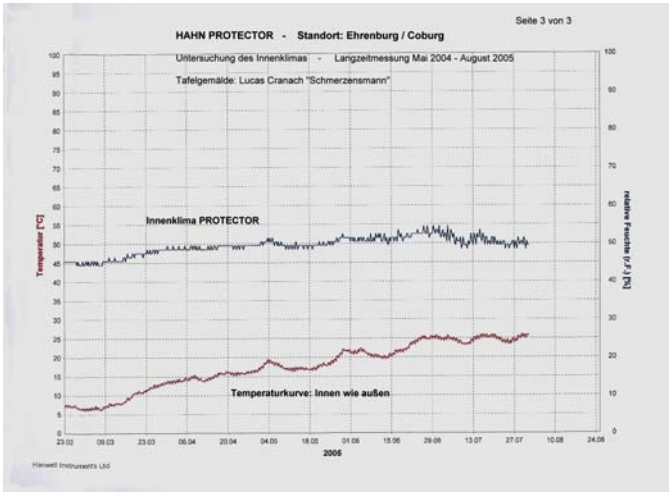
Diagram *II* + *III*





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