

August 2008

## PROTECT Magnetic Frame

### Empirical evidence

The PROTECT Magnetic Frame was developed to protect sensitive paper works of art from harmful fluctuations in humidity principally in badly - but also in well - air-conditioned exhibition spaces and for transport.

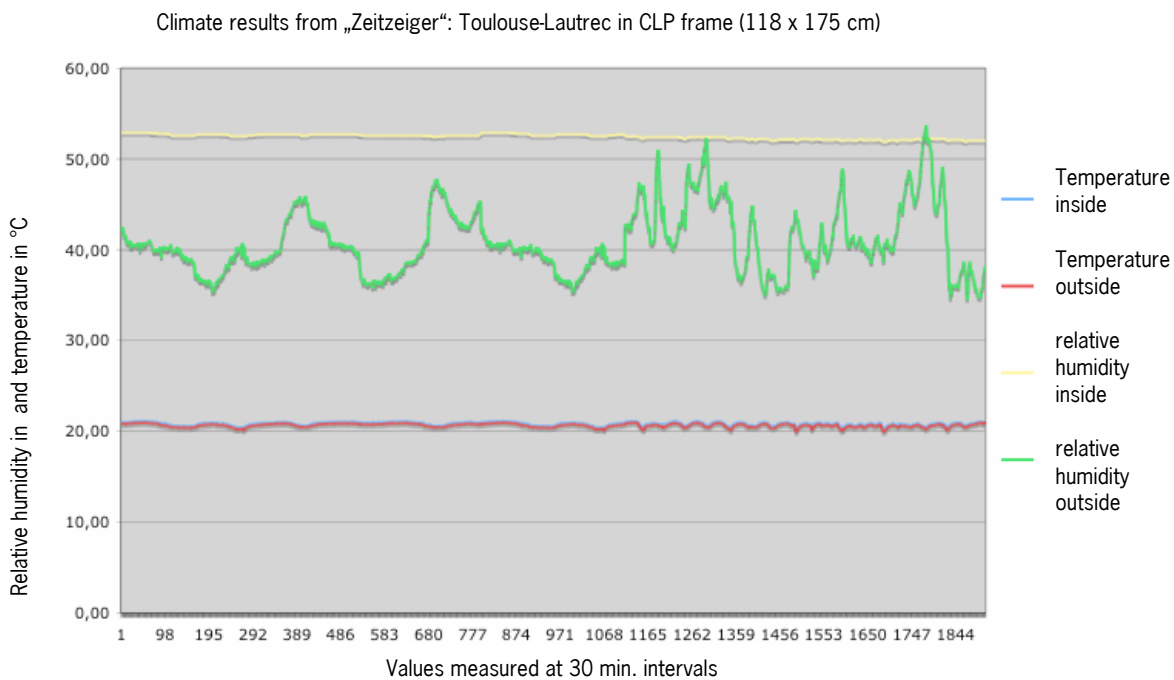
If damage to sensitive works at exhibitions is to be prevented, then the items can only be subjected to a limited amount of physical "exhibition stress". It is therefore general practice at museums for exhibitions to be held in suitably air-conditioned rooms only. For example, prints are exhibited at a relative humidity (RH) of 45% to 55% and at a temperature of 18°C to 20°C and with a high level of UV protection. Of the stress factors humidity, temperature and light, fluctuating humidity and the resulting expansion and contraction of paper works is ranked as the most serious cause of damage.

The PROTECT Magnetic Frame enables the humidity inside the frame to be kept constant. It provides the ideal climatic conditions for exhibitions with sensitive exhibits, which it creates regardless of external conditions. The frame's impermeability is achieved using a registered patent closure system and is fitted with innovative eccentric closures, which compensate for different inlay thicknesses and ensure impermeability of the glass. Where temperatures fluctuate, buffer materials including corrugated cardboard, background cardboard and a special silica gel regulate the relative humidity inside the frame. An aluminium sheet on the back serves as a diffusion barrier and the frame is sealed to the glass by a surrounding insulation seal. The frame is controlled by an electronic thermohygrometer in the backing which is operated and read off from outside the frame and provides a permanent display of the humidity and temperature inside the frame. An optional data logger can also be fitted to analyse and record climate progression.

The PROTECT Magnetic Frame therefore allows even exhibitions with original prints to be held in non air-conditioned spaces, such as ancient castles and unused industrial premises. For exhibitions with a variety of materials, e.g. metal and paper, it is possible to create a suitably dry atmosphere for the metal exhibits without damaging the paper items. The frame is also fully dustproof and eliminates the need for expensive climate-controlled crates. For airfreight transport, however, ensure that the frames are not subject to severe drops in pressure, as otherwise excess pressure might be generated within the frames.

The experience at first-time exhibitions for the PROTECT Magnetic Frame demonstrates an absolute minimum in humidity fluctuations of only +/- 0.2% RH at constant temperature, which are so small as to be practically impossible to measure. The first prototype was subject to extreme testing as part of a series of tests at the Cologne Institute of Conservation Sciences (CICS) at the city's University of Applied Sciences. A value of 50% +/- 7% was obtained inside the frame with a rapidly changing exterior climate of 6°C to 39°C and 6% to 94% RH.

Illustration: Climate results obtained from "Zeitzeiger"

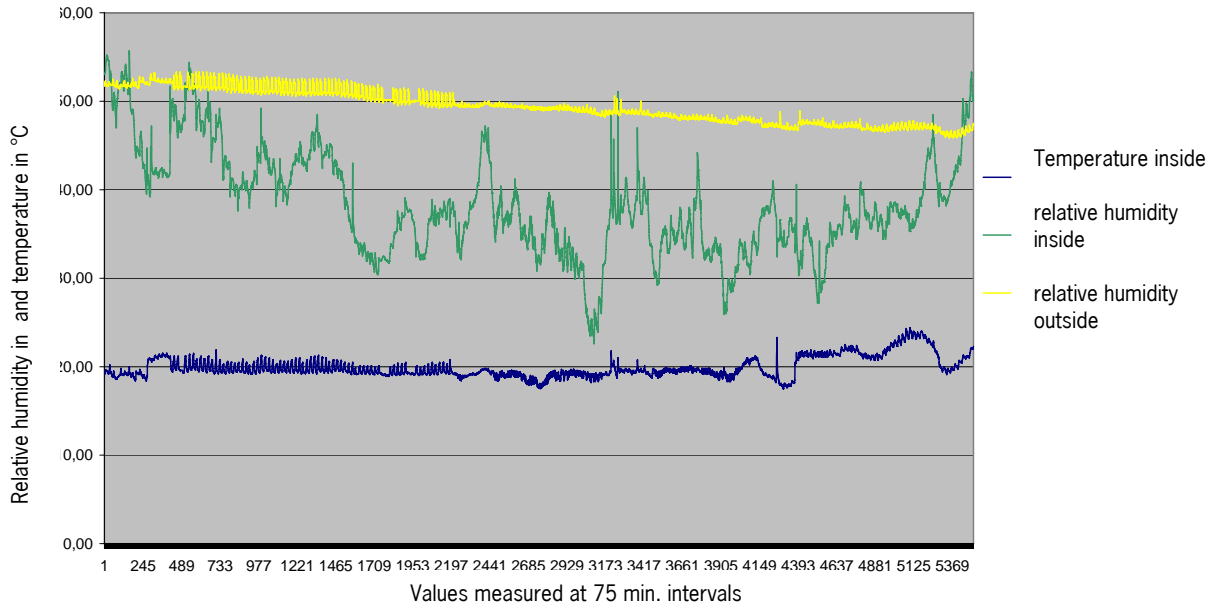


300 historic posters were exhibited in the PROTECT Magnetic Frame at the Folkwang Museum in Essen in the "Zeitzeiger" poster exhibition. Two of the frames which had been preconditioned to 52% RH as well as the exhibition spaces were fitted with data loggers. The climate graph with the air-conditioning system switched off showed humidity fluctuations inside the frame of only 52% +/- 0.2% RH at minimal temperature fluctuations.

Experience at exhibitions in Asia has shown that the frame can still keep the RH constant within the tolerances - even at temperatures of more than 30°C. As a general rule, the ageing process of organic materials progresses faster at higher temperatures and therefore needs to be prevented.

Illustration: Climate results obtained from “nacht aktiv”

Climate results from „nacht aktiv“: Frame Nr. 2 (50 x 60 cm)



14 exhibits were shown over a period of 9 months (mid-September to end of June) in the PROTECT Magnetic Frame at the “nacht.aktiv” exhibition held at the Rhine Regional Museum at the Engelskirchen Gallery Complex. All the frames and the exhibition spaces had been preconditioned to 52% RH and were fitted with data loggers. The PROTECT Magnetic Frame was able to buffer fluctuations to +/- 0.5%, however, over the long term there was a loss of humidity of 0.5% per month.

At the same time, the experience showed a slight drop in RH of 0.5% per month in the very dry ambient air of the winter months. This is due to the very slight water vapour permeability of acrylic glass. Hence the recommendation that maintenance is carried out on the frames at least every 3-6 months. Conditioning the frame is very easy, by leaving it open for at least 48 hours in an air-conditioned space.

All the material components for the PROTECT Magnetic Frame have been selected according the strictest quality criteria to provide the best possible protection for sensitive exhibits.

Lars Herzog-Wodtke (Graduate Conservator)

Halbe Rahmen GmbH  
 Herrenwiese 2  
 D-57548 Kirchen/Germany

Telephone: +49 (0)2741 95800  
 Fax: +49 (0)2741 958080  
 info@halbe-rahmen.de  
 http://www.halbe-rahmen.de