

The Dewpoint

Solutions to humidity problems
Produced by Seibu Giken DST AB



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Lars-Erik Barkman is a curator, holding overall responsibility for the indoor climate at three museums in Stockholm. Here, he explains all about the various challenges faced by museums when they display delicate artefacts while also preserving them.

A curator adopting a holistic approach

Lars-Erik Barkman is a curator and unit manager at Bevarandeenheten Stockholm, which is part of National Museums of World Culture. Of these four museums, three are in Stockholm: the Museum of Far Eastern Antiquities, the Museum of Ethnography and the Museum of Mediterranean and Near Eastern Antiquities. The Museum of World Culture is in Gothenburg. With experience dating back to 1975 and training abroad, Lars-Erik has an enormous knowledge and experience of working with artefacts and archiving of all types of material. He has shared his knowledge with us in an interview, which is reproduced here.

The world of museums and climate control, a matter of course

The Museum of Ethnography was something of a pioneer when the management invested major resources in climate control – that is, controlling moisture and temperature levels in display areas and archive areas – when the “New Museum of Ethnography” was created in 1978. Lars-Erik Barkman was already working actively on these issues at the museum at that time. Nowadays, moisture and temperature levels are controlled as a matter of course in the display areas and archives of more or less all museums.



The Museum of Far Eastern Antiquities, in the beautiful district of Skeppsholmen, is one of the most exciting museums in Stockholm. This museum is one of the National Museums of World Culture. Photographer: Karl Zetterström.

Preservation work has developed over the past 30-40 years; and now the museum world is more aware of the effects of light, climate and the choice of materials surrounding the artefacts in both archives and exhibitions*.

Preventive measures

Conservation involves preserving artefacts unchanged. As a curator, you can work with active conservation on the one hand, saving or recreating artefacts that have fallen victim to corrosion or insect attack, for instance, and on the other hand you can work with preventive conservation, which is best both for the artefacts and from an economic standpoint.

For example, 97% of all the artefacts at the Museum of Ethnography are divided over some 220 000 archive numbers in the artefacts archive, while the remaining 3% are on display in exhibitions or out on loan*. Relative

humidity and temperature are regulated and monitored carefully in both the artefacts archive and exhibition halls. The Museum of Ethnography preserves artefacts from many different cultures and periods, so preventive conservation is its most important task.*

Japanese storage method

One interesting element of the museum's work with climate control in the artefacts archive is that it uses a Japanese method dating back many hundreds of years. This method means that delicate artefacts are stored in cabinets with untreated wood fittings. Wood, as we all know, is always in equilibrium, with the moisture level in the ambient air. If the relative humidity were to rise for any reason, the wood would absorb moisture and thereby protect the museum's artefacts. Shelves made from aluminium and polyester are used for textiles.

* Source: Website of the Museum of Ethnography

Damp – the facts

100 % RH*
Fog or rain

~93-96 % RH
Salmonella bacteria die
out below this level

80 % RH
Annual average, outdoors

70 % RH
Massive increase in the
risk of mould and fungus
forming

60 % RH
Level of humidity in
display halls of museums

55-60 % RH
Maximum level for
storage of Japanese
lacquerware

35-40 % RH
Timber dry enough for
carpentry.

20 % RH
Humidity level for storages
of archaeological bronze

10 % RH Maximum
humidity for
gelatine manufacture.

1-2 % RH*
Maximum humidity for
lithium battery manufacture.

Climate zones

Lars-Erik Barkman specifies five climate zones for museums in order to create as effective a storage climate as possible for various materials. All RH** levels in the list below are specified for a temperature of approx. 19°C unless specified otherwise.

• Base climate: 40-60%RH

The base climate is applicable to display halls. The climate is affected by , among other things, visitors who give off moisture, and the temperature which varies from season to season. Light sources should not be mounted in display cases as these give off heat. The radiation from visible light starts the decomposition process and is harmful to organic materials*.

• Archaeological bronze: 20%RH

• Japanese lacquerware: 55-60%RH

• Textiles: 17-18°C, 40-50%RH

For textiles, a low temperature is important. Textiles mainly need to be protected from insects. Initial freezing gets rid of insects such as moths and carpet beetles. Museums used to use toxic mothballs, but it later turned out that moths fed off these.

• **Furs and feathers:** 8-9 °C, approx. 40-50% RH. Fur and feather artefacts are stored cold to prevent attack from insects.

Find out more here!

Would you like to know more about conservation, or visit an exhibition?

Take a look at www.smvk.se (click on "Engelska" for English version) for links to the museums of National Museums of World Culture.

* Source: Website of the Museum of Ethnography.

** RH= Relative humidity is, to put it simply, "the percentage of water in the air, compared with the maximum possible amount of water present in the air at the current temperature".

100 % RH = water vapour.

Controlled climate in museums and archives.

DST's representatives have many years of experience of resolving problems with moisture for museums and archives, among others.

Take a look at www.dst-sg.com for more information on lots of different areas; click on "Applications".

Seibu Giken DST AB is one of the world's top suppliers of sorption dehumidifiers. DST is currently represented in approximately 40 countries all over the world. You can get in touch with all DST representatives at our website www.dst-sg.com

"The Dew-Point" is a customer magazine produced by Seibu Giken DST. Its aim is to pass on knowledge regarding how moisture problems can be resolved and prevented.

About Seibu Giken DST

DST was founded in 1985 and in 1993, DST became a subsidiary of Seibu Giken Co Ltd, Japan, a world leader in desiccant technology.

Seibu Giken Co manufactures dehumidifier rotors, VOC-rotors, heat exchangers, honeycomb rotors etc. Visit Seibu Giken Co Ltd at:

www.seibu-giken.co.jp

The Seibu Giken DST range of products is specifically designed to solve humidity problems in commercial and industrial applications

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