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Berlin's Museum Island: an example of the modern art of building management.

Museums present building management engineers with some very special and highly demanding technical problems. This is all the more so when a complex of five buildings with different requirements has to be controlled, as on Berlin's Museum Island. Hans-Peter Thiele of the Federal Office for Building and Regional Planning is responsible for planning the technical infrastructure here. Sauter Facts and Frank Göschick of Sauter Cumulus GmbH talked with him about the special features of building management in museums.

Facts: Mr Thiele, the climate in a museum – what does it mean, and what does it require?

Thiele: It's almost impossible to give a generally valid answer to that question. Here on the Museum Island, we're dealing with historical buildings – with a complex of buildings that has been designated as a world cultural heritage site by UNESCO, in fact. Of course, this is a different situation from a newly-constructed museum building. The historical fabric of these buildings imposes certain limits on us as regards the permissible temperature and humidity values that are specified.

These values also vary according to the particular museum and the exhibits. For example, there are differences between the Bode Museum and the New Museum. The permitted humidity values in the New Museum are lower because most of the works exhibited there are made of stone. But in the Bode Museum, we have many wooden sculptures and also pictures on display, and they need higher humidity.

The fluctuation ranges that we allow for the control technology are +/-5% for humidity and +/-1°C for temperature. This approach has proven valid in the Old National Gallery, where we don't even make full use of this tolerance range during normal operation.

Facts: As we know, there are disturbance variables such as the entry of a large group of visitors.

Thiele: There are experience-based values for visitor flows, of course. We generally calculate 5 – 10 square metres of floor space per visitor for permanent exhibitions. Extreme values – such as the flow of visitors during the Goya exhibition in the Old National Gallery when only 1.5 – 2 square metres of floor space was available for each visitor, or in the first few months after a museum opens – are not usually

taken into account when the technical plant is designed. But this aspect needs more attention in areas of the museum that are used only for alternating exhibitions.

So as you can see, there is no generally valid statement here either.

Facts: Of course, you can't just control the visitor flows as you wish...

Thiele: No, but we naturally try to control them to some extent when a museum is newly opened. You can see that, because the queues of visitors outside the museum are especially long! Building regulations also have to be observed, as they limit the number of visitors in the museum at any one time due to the escape and rescue routes that are available, for example.

Facts: Does the control technology take account of these load differences automatically?

Thiele: If we take account of what we've

interface that is easy to understand. An appropriate solution was created here together with the Sauter technicians, the user and the Federal Office for Building

"Thanks to its extensive experience, Sauter is able to meet complex challenges in particular."

Frank Göschick

Manager of the Berlin office of Sauter-Cumulus GmbH

already said, that is not usually necessary.

In extreme situations, or if an exhibition changes, setpoint corrections are needed in the BMS. This calls for a user-friendly

and Regional Planning.

Facts: You have enormous know-how regarding museums. What would you advise on the basis of your experience, and which experiences would you pass on?





Thiele: Regardless of whether you're dealing with a new building or a historical museum, you should always remember that energy costs money. So you should choose a solution that saves energy. The greatest effect of all is achieved by defining the permitted climate data. You have to consider: which maximum temperatures should I allow in summer? How much humidity do I really need in winter, to avoid excess humidification? In my view, the sliding seasonal method of temperature and humidity control (as it's known)

Museum Director, the restorer, the museum's Technical Service and (as in our case) the relevant construction authority.

The architect, the technical consultants and the companies involved have key parts to play in implementing the requirements, and so far this has worked very successfully. Many experts and visitors praise the fact that the installed technology is virtually invisible in the buildings on the Museum Island.

Facts: Let's stay with the technology. You have a higher central management

"Regardless of whether it's a new building or a historical monument, we should always seek the solution that saves the most energy."

Hans-Peter Thiele

will continue to become more firmly established in new buildings.

Also, these are general technical conditions which call for many discussions and mutual recognition of arguments. The good result that has been achieved from the planning for the Museum Island is the outcome of many discussions of this kind involving four important partners: the

level for the entire complex here. For what reasons? And what is the lower-level technology like?

Thiele: We used the novaPro system from Sauter in the Old National Gallery. After BACnet was declared as the global standard in 2003, it was an obvious idea to use one uniform management level for the entire museum complex. We opted for

the Intouch visualisation software from Wonderware®, because this system had already been used in many government buildings. The entire automation level is connected to the management level via the existing IT network using Sauter BACnet stations. Sauter also implemented the connections for the non-Sauter systems: from Jan Müller, for recording the measured and metered values, and SAJA for the control technology in the museum courtyards.

Facts: Are you satisfied with Sauter's implementation of this complex plant?

Thiele: Sauter has proven to be a highly professional partner who guarantees us good technical support. The Sauter Cumulus specialists have given us enormous assistance on the spot here.

Facts: That can only happen if there is good teamwork among everyone involved. Very close communication is needed, especially in the run-up phase.

Thiele: That's an important comment! The know-how has to be introduced at an early stage, and there has to be good support for the plant when operation begins. This requires a special degree of readiness; after the acceptance according to the official contract procedure for building works, the company also has to be on site

frequently to perform the fine parameterisation that is so very important for a museum operation. The simple fact is that you need three months to get an installation functioning properly. This should be taken into account in the scheduling.

Facts: Do the restorers check the ambient conditions for the exhibits?

Thiele: Restorers have a healthy distrust of building technology. The restorers have their own operating position on the Museum Island, and – like the technicians – they can inspect the data.

Facts: We haven't talked about the technical staff yet...

Thiele: The experience gained by the Museum's technical staff is very important to us. They tell us about valuable experience gathered during operation, which we try to incorporate in the next construction project.

Facts: Many thanks for your informative comments, Mr Thiele. They will help Facts readers who are interested in this subject to understand the high standards that can be achieved in both new and historic museum buildings thanks to the necessary know-how, and with Sauter's service and technology.

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