



Eaton-Williams humidifiers help preserve exhibits in Margate's Turner Contemporary Gallery



Case Study

Art galleries can present a unique set of challenges when it comes to humidification. A coastal location in an aggressive salt-laden environment and constructed with vast expanses of glass and constantly opening doors and closing were just some of the issues facing Margate's iconic Turner Contemporary art gallery when it came to designing a controlled environment for visitor comfort and the preservation of exhibits.

The gallery's 2,730m² building is made up of six identical inter-locking north-facing rectangular blocks positioned on plinths to protect them from high winds and the sea. Each block is laid out over two floors and has a pitched roof at a 20° angle.

A double-height entrance hall window affords an unobstructed sea view and the ground floor events space, an external terrace and first floor Clore learning studio, all have large north-facing windows which also offer uninterrupted views out to sea.

On the first floor are three climate controlled galleries, lit by natural 'maritime light' from the north-facing roof and sky lights. The balcony on this level cantilevers out over the ground floor gallery, also providing spectacular sea views. The 'urban window' of the reception area, café and shop faces the

town and connects the buildings to its surroundings.

To emphasise the changing and dramatic effect of the light outside the building, a white opaque glass façade has been used and designed to resist storm and wind damage, humidity and saline ingress.

Situated directly on the seafront, the gallery is at the mercy of salt and sand. The added high solar gains due to the large expanses of glass - 4,500 panes are an integral part of the building's design - 70 internal doors, high ceilings and underfloor heating, all provide an interesting scenario with significant swings in temperature and humidity.

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Kent is predominantly a hard water area, which set the parameters for the use of resistance humidifiers in conjunction with a water softening system to limit scaling -although any scaling will be predominantly 'soft' and easily removed by flushing and wiping down units as part of a low maintenance programme.

Eaton-Williams provided seven VAPAC® LR close control resistance humidifier systems.



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Two LR10P units provide moisture for the learning studios where temperatures are maintained at 23°C with 55% relative humidity and the open plan offices which have their own unique temperature variances with a noticeable swing of 7°C from one side to the other are air conditioned only. But a combination of automatic blinds, extra sensors and adjustments to the fan coil units' settings achieve the required temperature.

A further five VAPAC® LR05P close control resistance systems provide humidification for the four first floor galleries and art store, where temperatures of 20°C -23°C with 45%-55% relative humidity are required. The main reception area and ground floor gallery, shop and multi-function events space, toilets and café are air conditioned only.

LR Humidifier Benefits

- Seven units available ranging from 5-60Kg/hr
- VAPANET® control system provides easy access to performance information
- Variable water types
- Stainless steel cylinder with removable liner

As the internal climate can depend on a number of variables including weather, frequency of the doors opening and closing and numbers of visitors, a localised thermal zoning within the building enables control of thermal comfort to meet occupancy levels in individual spaces.

The gallery's proximity to the sea requires any air to be de-humidified before it is brought into the gallery. It is then humidified to achieve the required RH levels for the galleries.

The underfloor heating in the galleries is supplied by a ground source heat pump and this can add up to 7°C to room temperatures. Further heat gains are generated by the glass walls, which means that the air handlers and the humidification units are worked hard 24/7. The humidification units really come into their own in the winter months when temperatures drop and the ambient external atmosphere is actually more humid, the building's heating makes the air even drier internally than in the summer, a reverse situation to what would be expected.

All the humidifiers are linked to the gallery's own building management system and like other key components of the galleries infrastructure are carefully monitored to ensure optimal performance.

From the planning stages Turner Contemporary was keen to embrace environmental initiatives. It minimised its environmental impact during the design, construction and fit out of the building, with the result that Turner Contemporary has received a 'Very Good' BREEAM rating.

