

THE DOME LEISURE CENTRE, DONCASTER

Background

The Dome opened in November 1989, and is one of the regions premier sports, leisure & entertainment destinations (www.the-dome.co.uk) it is operated by Doncaster Culture and Leisure Trust on behalf of Doncaster Metropolitan Borough Council. The Centre comprises of seven free form interlinked pools with a children's area and flume water rides. Other features include two whirlpool spas, eighteen 'Water Bubble Beds', two artificial geysers, four water cannons, three massage channels, four water gargoyles and a mushroom drench shower. This high level of activity in such a large number of pools requires substantial ventilation & dehumidification equipment.



Business Situation

In the 23 years since The Dome opened, the swimming pool ventilation and humidity



control equipment had failed and been replaced twice. High moisture loads & aggressive chemicals caused the poorly designed equipment to fail proved by the average lifetime of just

11½yrs. Doncaster Metropolitan Borough Council required a solution with a much increased lifetime (upwards of 20 years), with reduced operational costs and importantly, gave a pleasant environment for bathers and effective protection for the building.

Project Brief

To provide a swimming pool ventilation and dehumidification solution with long life time and low operating costs the priority. Furthermore, the solution would be installed without any impact to the operation of the swimming pool or to the enjoyment of bathers.

Solution

- Dantherm provided a swimming pool ventilation and dehumidification solution with an expected operational life in excess of 20 years.
- The energy efficient products will provide an immediate saving in operating costs for the customer.
- Dantherm dismantled both of the DanX air handling units and transported them safely into position within a very restricted plantroom and then reassembled them to factory standards.
- Dantherm's project management team were responsible for the on-time delivery of a high quality installation working with particular focus on Health and Safety.
- The Dome Leisure Centre was operational and open to the public throughout the installation period and the new units provided temporary ventilation until final commissioning, after phase II.
- Dantherm's commissioning package included customer training and a detailed handover.

Customer Comments: Terry Parker Head of Facilities, DCLT (Doncaster Culture Leisure Trust)

"DCLT had a clear remit from the start. We could not close the pool other than for a 4 week closure to decommission the old AHU's and commission the new AHU's. With this in mind the only way to do this was to split the project into two Phases. Phase 1 involved the creation of a new plant room and the delivery and installation of the two AHU's. This part of the project was very well coordinated and allowed the pool to remain open. The second phase of the project was very challenging for all parties. It involved a team of engineers from a number of companies working together to remove the old plant, adapt the Mezz floor, install the new ductwork, install a new BMS and commission the plant all within 4 weeks. Everyone pulled together to ensure that the project was delivered on schedule and within budget. Dantherm were a key part of this team and I would not hesitate in using them again on future projects".

Head of Facilities, Mr Terry Parker, DCLT

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Some images that demonstrate the condition of the existing ventilation system:



Unprotected heating coil fins were badly corroded after just 10 years.



The existing belt drive fans were unpainted and corroded in the chlorinated atmosphere

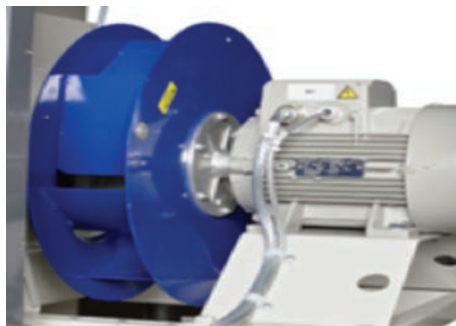


Filters were an ineffective, low grade specification, with cardboard frames that collapse in a moist environment

Dantherm Solution

Installation of two DanX 16/32 XKS pool air handling units complete with high efficiency plate heat exchanger, 3 way mixing box, inverter controlled direct drive fans and TREND IQ compatible humidity demand based controls package.

Each unit capable of a supply air volume of 8.5 m³/s and heat recovery efficiency up to 83% during winter operation.



DanX models all include highly efficient direct drive plug fans that are painted as standard.



The DanX filter section is designed for high humidity and a chlorinated atmosphere.



DanX heating coils feature epoxy coated fins and all sheet metalwork is powder coated at the point of manufacture.

Business Requirements/Technical situation:

As a direct funded project one of the principle directives from Doncaster Metropolitan Borough Council was the longevity of the new equipment, whilst maintaining low running costs and maintaining optimum conditioning for both bather comfort and building fabric protection.

It was also critical for the installation to be carried out with minimal disruption to the operation of the swimming pool. Initial plans were to demolish the exterior masonry wall, to enable the decommissioning of the existing AHU and the positioning of the new AHU in the plant room. This would have represented a huge cost to the local authority and a substantial loss of revenue for the leisure centre. Dantherm's solution cost less and enabled continued revenue, whilst maintaining optimum conditions for both bather comfort and building fabric protection.

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Solution

In order to keep the pool operational during the works a new plant room was constructed in an existing office/store room. Access was difficult but overcome by Dantherm's installation team by breaking down the new units to component parts before reassembling in situ. Dantherm's team of technical surveyors and engineers introduced an innovative approach to solving the inevitable problems on a project of this complexity and ensured that the project remained on schedule.



The DanX air handling units arrived with the solution agreed and Dantherm Engineer's set to work:

Meet the team www.dantherm.com/uk



Phase 1 – With the pool fully operational and accessible to customers

The DanX air handling units arrived fully assembled to factory standards. It was now down to the qualified team of Dantherm engineers to dismantle, re-assemble and commission them.

To keep the leisure centre open and with restricted access, the Dantherm engineers started the process of dismantling both air handling units to a size that allowed access to the plant room through the existing main entrance doors to the reception area of the leisure centre, still enabling customers to have access with minimal disruption to the leisure centre and meeting the Health & Safety requirements for the customers and Dantherm engineers.

Dantherm engineers re-assembled the bespoke DanX AHU back to the factory specification. This is quite an achievement given the limited space in the small, high level plantroom. Dantherm engineers achieved the specified work with minimal disruption to the leisure centre and bathers.

Customer Comments: - Tom Maloney; Project Manager – DMBC (Doncaster Metropolitan Borough Council)

"Dantherm provided the bespoke element of the project where they fitted the DanX units fitted within the limited new plant room, the excellent professional working relationship between teams and delivery of a quality product on time and within budget".

Phase 2 – Removal of the redundant equipment and modification of the ducting connections

This part of the works included stripping-out of the redundant air handling equipment and installation of high quality & specially fabricated ductwork connections. Dantherm's project coordinator, Robert Tilbury, commented "it was reassuring to work alongside Glen Wilson Ltd, who are a company with particular expert knowledge & experience of swimming pool ductwork".



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