

Textile ducts with nozzles provide for a healthy indoor climate



KE Fibertec UK has supplied textile ducting for Center Parcs Woburn Forest, the largest Subtropical Swimming Paradise in the UK. The price was £250 million which makes it one of the largest leisure projects in the UK since the Olympics in 2012.

FACTS:

Architect:	Holder Mathias
Engineer:	Derry Building Services
Installer:	Venduct Engineering
Materials:	KE Fibertec UK



Uniform Air Distribution

Textile Based Ventilation solutions were installed in the swimming pool as well as a sports hall.

The pool is supplied with 180,000M³ of air via 4 runs of DireJet Vario Fabric ducting that follow the curvature of the building.

The 48mm Nozzles achieve throws of over 20m allowing them to jet warm air down from a height of 18m to uniformly heat the 4630 m² space.

As the air is always heated, a non-permeable plastic coated fabric is used, this ensures that 100% of the air is directed downwards via the Direjet Vario nozzles.

TECHNICAL DATA:

- Year of construction: 2014
- System: KE DireJet® with Ø48 mm nozzles
- Colour: Standard white (RAL no. 9010)
- Material: KE Inject
- Suspension: Double Safetrack



Computational Fluid Dynamics (CFD)

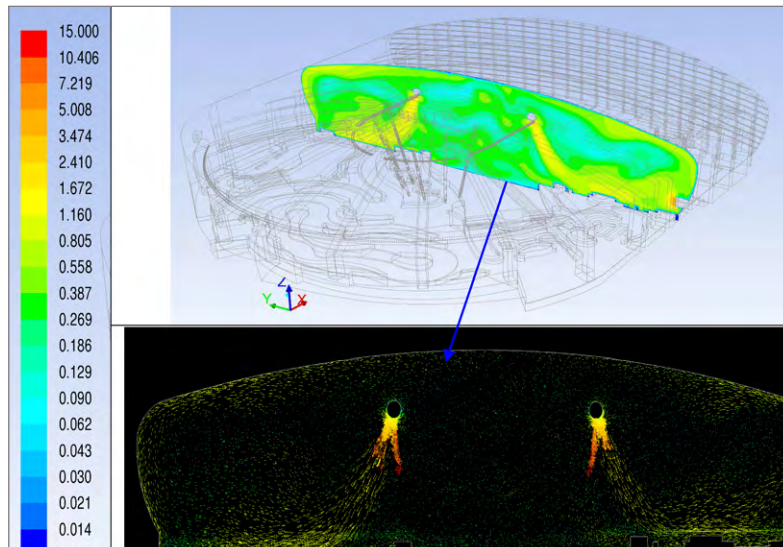
It was requested that KE Fibertec produce a Computational Fluid Dynamics (CFD) model to calculate velocity, temperature and relative humidity and to verify KE Fibertec's calculations from the Winvent design software.

The penetration of the heated air from the Direjet Vario nozzles was so effective, that after the first CFD run, the temperature of the supply air was reduced from 46 degrees to 38degrees.

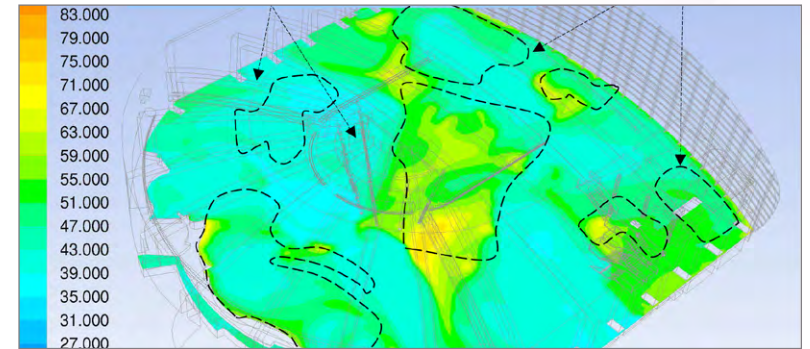
It is important that velocity across the pool surface was minimized to avoid excess evaporation.

One of the main areas of concern was the large area of Glazing. It was important to ensure the glass was "washed" with warm dry air to prevent the relative humidity rising too high and condensation forming.

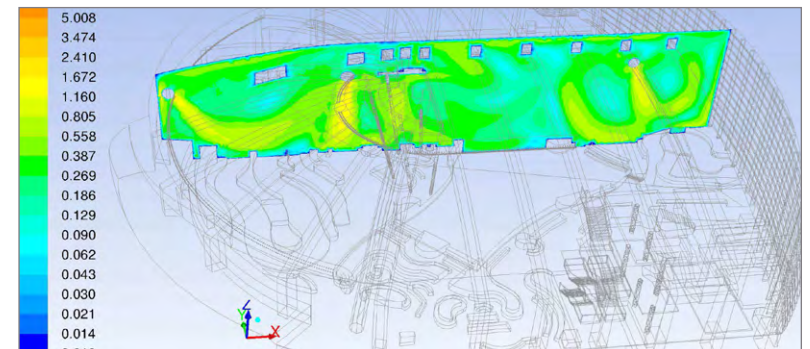
The CFD verified that the air supplied by the ducts was sufficient to keep the glazing free from condensation.



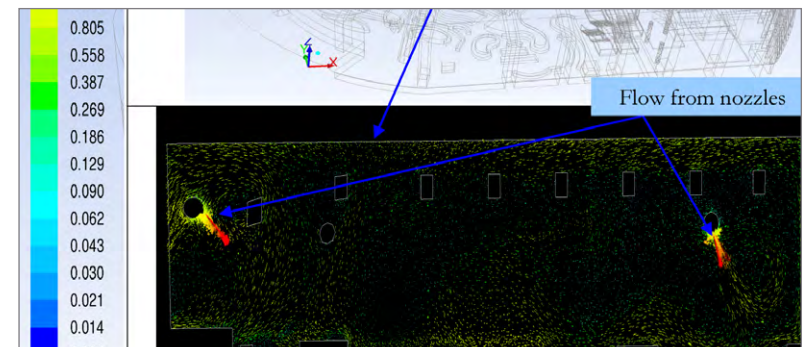
Contour and vector plots of velocity (in m/s) in X-plane-3 in 'STSP, Center Parcs, U.K'



Contour plot of relative humidity (in %) at 4.0m height from the floor level in 'STSP, Center Parcs, U.K'



Contour and vector plots of velocity (in m/s) in Y-plane-5 in 'STSP, Center Parcs, U.K'



Contour and vector plots of velocity (in m/s) in Y-plane-7 in 'STSP, Center Parcs, U.K'



Having enjoyed holidays at 3 different Center Parcs sites already, I was pleased to be involved with design of the latest subtropical swimming paradise.

Achieving uniform air distribution in large swimming pools like this is challenging but essential. Stagnant chlorinated air will quickly cause corrosion.

As fabric ducts distribute air evenly along their length, they cause all of the air in the ventilated space to move as one, this minimizes areas where air is left still. Still moist air can rapidly allow the build-up of condensation on cooler surfaces of the structure, this condensation facilitates corrosion.

Distribution from fabric ducts is so effective, the humidity of the pool hall can be increased, this saves energy and reduces echo in the space.

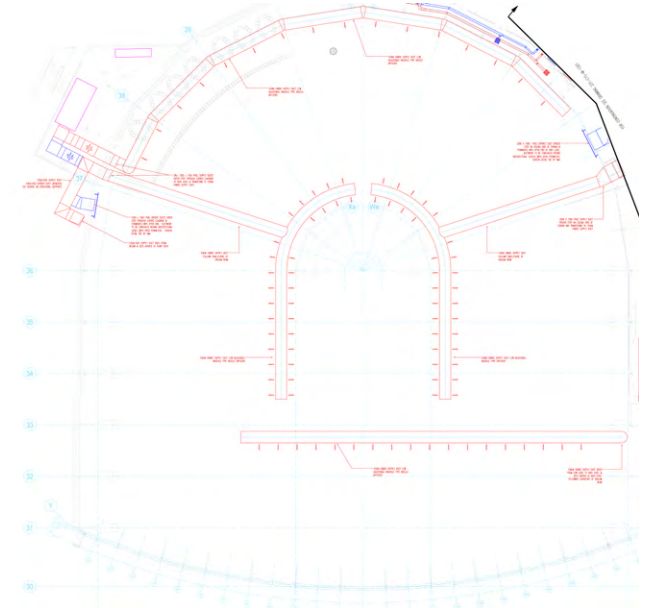
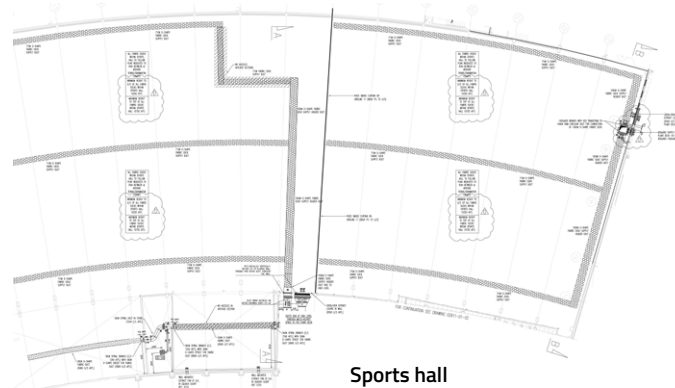
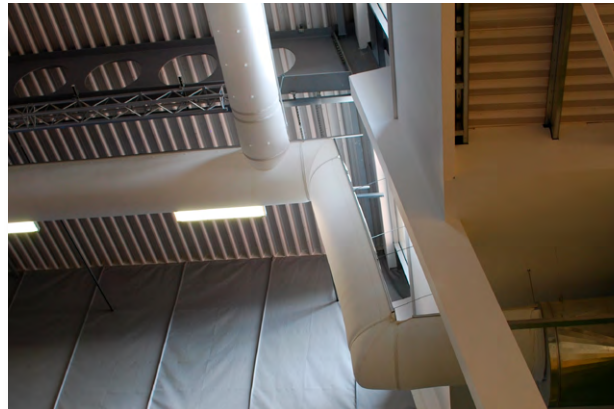
Adam Taylor
Technical Manager
KE Fibertec UK



KE Fibertec AS is market leader in Textile Based Ventilation. We create good indoor climate through our tailored textile ducts for installation in sports arenas, offices, laboratories, schools etc.

Textile ducts are customizable, easy to install, washable, hygienic, and come in all shapes and colours.

For more information please visit our website: www.ke-fibertec.com



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Swimming pool