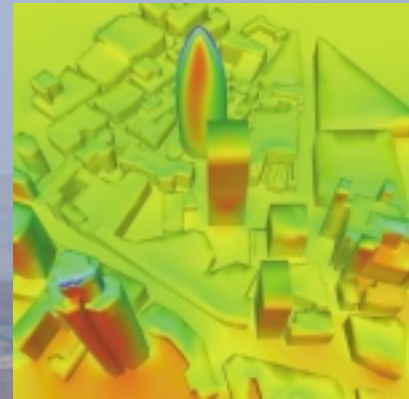


# Effective architectural approach to design solutions

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External wind study of a 0.5km by 0.5km London site using CFX-5. Bird's-eye view from the wind direction with surface pressure superimposed on the geometry.

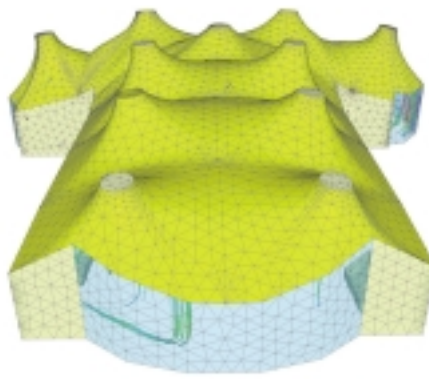


'CFX-5 has delivered major improvements to the level of service we provide'

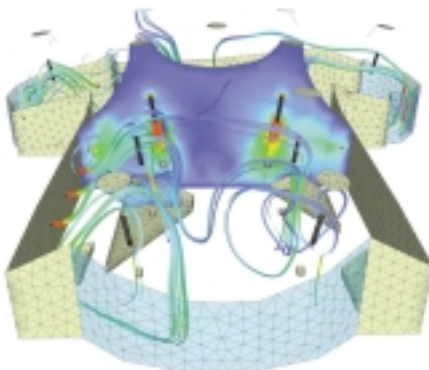
Above: Butlins Skyline 2000 project (Minehead site).

BDS P Partnership is a building services engineering consultancy established in 1995 with a portfolio ranging from office developments through to environmental research work for the European Commission. Each project is approached using a rigorous process of design analysis, starting with consideration of environmental issues at the earliest stages. One tool that is routinely used is CFD, providing us with a detailed picture of system performance, which in turn can lead to changes in architectural approach and/or innovative design solutions. We have also found that the graphical nature of CFD results is a useful medium for architects and clients to understand complicated engineering issues.

As part of our drive towards providing the highest quality service, in 1998 we reviewed the CFD software market which resulted in our choosing CFX-4 and CFX-5. Today, the majority of our CFD studies are carried out using CFX-5, with certain exceptions, such as heat transfer through solids, analysed using CFX-4.



Butlins Skyline 2000 project (Bognor site) – The effectiveness of destratification fans has been studied using CFX-5. Above: geometry and surface grid visualisation. Below: Cutaway section showing velocity slice and ribbon streamlines.



CFX-5 has delivered major improvements to the level of service we provide, primarily through quicker response times achieved as a result of the automatic mesh generation and coupled solver.

A typical application of CFX was a recent external wind study for a new building in central London. The results were used to establish surface pressures and wind pressure coefficients for the building, which were subsequently used for natural ventilation performance assessment on typical office floors.

Another application was the study of the ventilation systems of the new 'Butlins Skyline 2000' projects at three sites in Bognor, Minehead and Skegness (UK). One aim of the study was to establish how effective destratification fans would be in counteracting air temperature stratification within the high tent enclosure (up to 30m tall). Using CFX-5, we were able to fine-tune the position and volume flow rate of these fans and predict the occupied-level comfort conditions.