

FOCUS

Is natural ventilation the new wind of change?

LANDMARK BUILDINGS THROUGHOUT THE UK ARE TURNING TO INNOVATIVE NATURAL-VENTILATION SOLUTIONS TO PROVIDE LEVELS OF FRESHNESS AND ENERGY EFFICIENCY THAT CANNOT BE ACHIEVED BY MECHANICAL VENTILATION AND AIR CONDITIONING. **ALLAN HURDLE** TRACES PROGRESS.

It is perhaps hard to believe that it is nearly 15 years since 'green issues' became the buzz phrase for those with an over-developed social conscience eager to leap on the next emotionally charged environmental bandwagon.

CENTRAL LINK

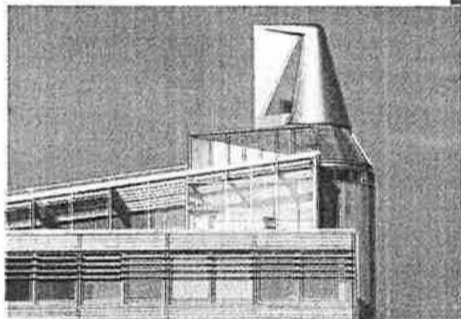
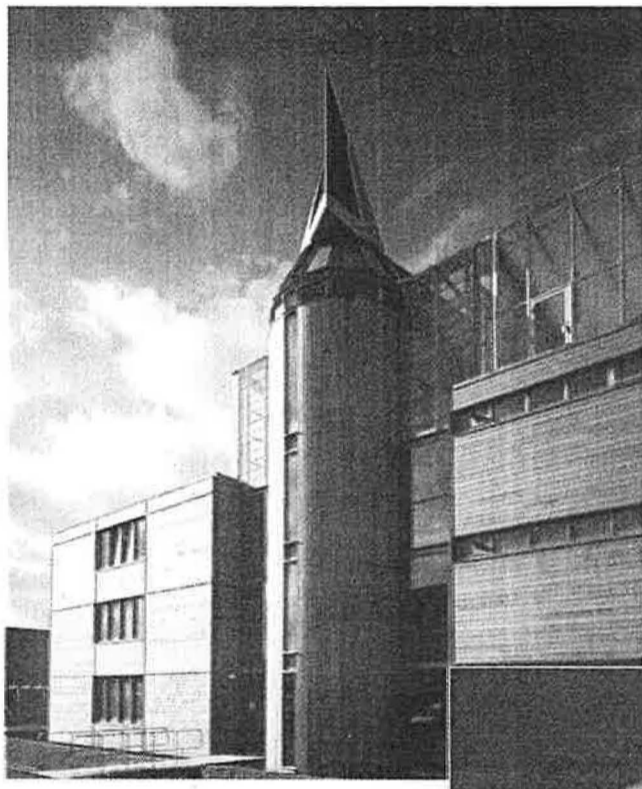
The intervening time has provided us with a whirl of incident and image with The Environment as the central link — from John Major jetting off to the earth summit in Rio, to Swampy clinging to a tree at Newbury, from Greenpeace's *Rainbow Warrior* being sunk in the South Seas to widespread hysteria over global warming.

"EXPERTS WORKING IN THE VENTILATION SECTOR ARE CURRENTLY DEVELOPING COST-EFFECTIVE AND USER-FRIENDLY METHODS OF VENTILATING AND LIGHTING OUR SHOPS AND CIVIC BUILDINGS"

Green issues are still very much to the fore in the new millennium, but the environmental movement appears to be gathering a certain maturity and, more importantly, focus and direction.

MAJOR ROLE

Targeted action has replaced panicked reaction, and the Government is at



Revolving cowls on the Jubilee Campus at Nottingham University use the wind to extract exhaust air from the buildings (Photo. Martine Hamilton Knight).

the centre of a number of green initiatives. Companies in the heating and ventilating industry have realised the importance of these initiatives and are now playing

a major role in these consultations.

One of these initiatives is a Westminster-led call for providers of power to treble the total UK electricity sup-

ply derived from renewable sources and in October Prime Minister Tony Blair made his first speech on the environment for four years. The environment has risen up the political agenda as the electorate now realises what devastating personal consequences the effects of climate change can have, as recent floods have shown.

Carbon-dioxide emissions to the atmosphere must also be cut by the year 2010 under the Kyoto agreement, and the opportunity to obtain electricity from resources such as wind power, hydroelectric and solar power is already well established.

But it is not just the eco-weary householder that is on the receiving end of the latest power play to prick the

ly at the forefront of new-product development in the construction industry.

USER FRIENDLY

Experts working in the ventilation sector are currently developing cost-effective and user-friendly methods of ventilating and lighting our shops and civic buildings.

My company and our spe-

"WAYS OF INTRODUCING ENVIRONMENTALLY FRIENDLY METHODS OF SERVICING LANDMARK PUBLIC BUILDINGS ARE CURRENTLY AT THE FOREFRONT OF NEW-PRODUCT DEVELOPMENT IN THE CONSTRUCTION INDUSTRY"

cialist consultants are leading the field with the 'Green Air' concept of providing natural ventilation, which is becoming ever more relevant as environmental issues and their consequences take an increasingly bigger hold.

Natural ventilation is by no means a new concept, but its significance in an environmental parlance is only just starting to be fully exploited.

Developers with plans to build, for example, a new indoor shopping mall increasingly want the ventilation system to be energy efficient with low running costs.

Systems which control the indoor environment by air conditioning and ventilation can prove costly to operate, both in high running costs and expensive maintenance.

Also, these systems are not eco-friendly but are often seen as the easy option.

RECREATE

Natural ventilation still provides controlled airflow but aims to recreate the variability and freshness of the external climate by harnessing our natural resources minus the less favourable aspects like, rain and traffic pollution and airborne contaminants.

A good example of the way light and natural airflow are being innovatively introduced into a shopping mall is at the Touchwood Shopping Centre in Solihull.

PREVAILING WIND

Natural ventilation at the mall relies entirely on elliptical roof ventilators to capture the prevailing wind over a 360° range and deliver it into the arcades below.

The design was developed by our team, led by general manager Kevin Root. It is based on the innovative concepts of consultant Bob Hudson.

The elliptical turrets are made up of individual controllable faceted panels using a high-performance weather louvre system. The panels have the additional feature of being damped to regulate the flow of air, without the external appearance

being altered when the units are fully open. The louvres modulate between the open and closed position to control air velocity into the building.

The turrets are internally divided into four sections with splitter plates, which allow the air to be drawn down through the ductwork preventing cross contamination of inlet and extract air.

The middle of this duct contains a highly reflective light tube that extends from the ceiling level inside the mall at Touchwood to the roof of the turret to provide natural daylight into the malls below.

The top of this tube terminates in a polycarbonate dome and allows natural daylight to shine into the shopping areas.

The result of using these specialised architectural louvre products together with innovative ventilation and lighting systems is a state-of-the-art town-centre shopping mall which relies entirely on natural ventilation and daylight.

This intelligent use of outside resources has created a fresh, natural and healthy environment for both shop staff and their customers without the unpredictability of Britain's changeable weather.

Touchwood can rightly claim to be the first contemporary shopping mall to utilise a completely naturally ventilated enclosed system, using both intake and extract via the pressure differentials within the same unit as well as introducing natural light. But its design evolved out of similar successfully completed projects elsewhere.

BLUEWATER

Europe's biggest shopping centre at Bluewater in Kent also utilised our expertise under Bob Hudson's management in designing initial concepts for ventilators and seeing them through to practical completion.

The desire for a system that combined natural ventilation with low energy consumption led to us being commissioned to design and build the first omnidirectional wind tower for inlet-air purposes.

Bluewater was not only ground-breaking from a technical standpoint — it also attracted architectural plaudits because the wind towers mimicked the form of a traditional Kent oast house.

In the case of Bluewater, the design team wanted a tried and tested format that could easily be replicated and simple to produce.

The oast-house design was adopted because these landmarks scattered around the Kent countryside rely on external wind pressure to turn their pivoted tops away from the direction of the prevailing wind. This allows warmer indoor air to exhaust under negative pressure and offers a degree of weather protection. The oast house's movement is achieved by combining wind forces with the aerodynamic performance of the cowl.

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