



## THE ATRIUM

These briefing papers describe sustainability actions at the University of Bradford as part of the development of our Ecovercity programme.

These papers are developed through The Sustainable Education Directorate together with University staff and students featured inside, and are part of our commitment to improving communication around Ecovercity.

Comments and feedback are welcome and should be sent to: [ecoversity@bradford.ac.uk](mailto:ecoversity@bradford.ac.uk)

## How does the Atrium contribute to Ecoversity?

It might not be obvious at first sight but the Atrium was designed with two ideas in mind. The first was to improve facilities and services for students and staff and provide social and communal areas for meeting, chatting and hanging-out. A large part of Ecoversity is to improve wellbeing and the social side of being a student and staff member. The second was to design it in an innovative way using light-weight, eco-efficient materials as a demonstration of environmental-led construction.

## When was it built?

The Atrium opened in 2006. Those who were here before then might remember the old visitor car-park it replaced and the very run down facilities on D and F Floor.

## What is it made of?

The Atrium is a steel frame construction with an EFTE (ethyl tetrafluoroethylene) membrane that is inflated to create an insulated cushion supported by a light weight aluminium frame. EFTE is a material that is becoming increasingly used in wide variety of settings. The decision was inspired by the Eden project in Cornwall which used EFTE to create the spectacular domes that house their exhibits and educational facilities. The raw material is a class II substance (admitted under the Montreal Treaty) called chlorodifluoromethane. The raw material is not a petrochemical derivative.

Glass has traditionally been used for atriums and roof lights to admit natural light but has certain limitations for large structures. Glass is brittle and has low elasticity. In a structure like the Atrium - exposed to high winds and attached to existing structures, there was a need for a material capable of withstanding significant stresses. EFTE is very light and much more flexible in comparison. EFTE cushions are approximately half the cost of glass equivalent and is highly efficient cladding technology for two reasons. The materials are between 25-100 times lighter than other transparent roofing materials. Overall the embodied energy is between 50-200 times less per square meter than alternative. Secondly, because the quantity of materials is small, the transportation costs are about 10% of glass or other material. The EFTE has a life span of around 20 years- comparable to modern double glazing systems.

## Why is the membrane slightly milky?

The Atrium sits on a southerly facing aspect hence receives direct sunlight many days of the year. The milkiness of the membrane results from a treatment that reduces the transmission of UV radiation by approximately 60%.

## How is the Atrium cooled?

One of the biggest issues facing the Atrium has been to balance the heating and cooling. Essentially a large greenhouse, the Atrium has experienced overheating on sunny days. A chiller unit provides cooling to the Atrium and in the past year the doors to Richmond Road have been used to provide a flow of cool external air when needed. During Autumn 2009 the Estates and Facilities Department is installing eight automatically opening window vents above the fire exit doors. These window vents will be linked to the Atrium's Building Management System and will open in conjunction with the high level smoke vents to allow fresh air to be moved through the building.

## Do people like the Atrium?

Everyone seems to have an opinion about the Atrium. There is no doubt that the majority like the facility and forget how limited the previous facilities were. In a recent survey of students the Atrium was stated as the 'most liked place' on campus. On sunny days the glare can be a problem and there is a need for constant monitoring to avoid overheating. The noise of heavy rain on the EFTE or the vibration of the structure on very windy days can be slightly worrying or exhilarating depending on your outlook.

## Further Information

For further information or communication on Ecoversity or this briefing paper email [ecoversity@bradford.ac.uk](mailto:ecoversity@bradford.ac.uk)

For more detail on Ecoversity:  
[www.bradford.ac.uk/ecoversity](http://www.bradford.ac.uk/ecoversity)