

TITLE:

Adding Value to Teaching & Learning Through Designing a Carbon-efficient Building

DATE:

April 2007



INSTITUTION PROFILE

HE

20,000 FTE students

4,500 staff

Urban

150 buildings on 8 sites

SUMMARY

Southampton University wanted to bring together its building designers, the wealth of knowledge of its academic departments and its end users to create a building that not only met the needs of the users from the outset, but which allowed them control of their own environment to provide the best compromise of comfort and minimal carbon footprint.

EAUC COMMENT

Going carbon neutral is an ambitious goal for a university, and this case study outlines the benefits of identifying in-house staff and student expertise to help assess its current carbon footprint and research and present a way ahead for the whole institution. Driving the process is a powerful new high level dedicated sustainability body bringing a new and dynamic cross institution platform for Estate and Academic staff and students.

PROJECT PARTNERS

Southampton University Estates and Facilities Department; Nicholas Hare Architects; Hoare Lea Mechanical and Electrical Services Engineers; Bluestone Building Contractors; Southampton University Professional Services Building staff and end users; University of Southampton Sustainable Energy Research Group

THE PROBLEM

Southampton University was about to spend £4 million on a new building. They wanted to break with the construction industry norm and build a facility which would be fit for purpose from the start – rather than having to fit additional equipment later on. There would be cost savings in doing it this way, as well a reduction in running costs and carbon emissions when the building was finished.

It was the job of the Project Co-ordinator to achieve this and, Southampton being one of the leading research institutions in the country, he enlisted the help of the University's own Sustainable Energy Research Group.

THE APPROACH

The project team included representatives from the estates and environment teams, as well as academics, designers and, crucially, the ultimate users of the building.

The designers and users spent time together getting to know and trust each other. Compromise was encouraged and the specification for the building was agreed based on the mutual goal of a minimal carbon footprint.

Choices about things such as PC equipment were made on the basis of heat output and energy use – meaning any cooling system for the building needn't cope with such high temperatures.

Linking the activity to education at the university was key, so academics' research skills were also used to influence the building. They designed user-satisfaction questionnaires and advised on low-energy designs, particularly related to handing back control to the users.

GOALS

- Create a building with the smallest carbon footprint which also met the needs of the user from the start
- Provide the opportunity for and encourage users to take responsibility for the operation of the building in a way that would provide the optimum balance between comfort and low carbon emissions
- Utilise the skills of academics and provide a way for them to input to the process
- Provide opportunities for academic departments and students to undertake research on a 'live' project

OBSTACLES AND SOLUTIONS

- Designing a building with as small as possible a carbon footprint which still meets the needs of the people who will use it
- Entrenched attitudes about what people – both designers and users – needed from the building
- Designers' fear of criticism of the final specification of the building
- Build users' awareness of the impact of their choices – especially technology – which can make a vast difference to the energy, and therefore carbon, use of the building
- Spend time building both groups into one team, working towards the same goals and encourage open discussion and negotiation
- Encourage both designers and users to take ownership of the specification

PERFORMANCE AND RESULTS

Users of the building are pleased to have been involved in the design process and feel they 'own' the building – this positively influences the way they use it.

The efficiency of the building has been measured and has been found to be good compared to similar buildings. Energy usage and the associated carbon emissions is less than 60 per cent of that of a typical building of this type.

Teaching staff have been able to use the building as a case study on their courses and students have been able to visit it and see for themselves the carbon-saving measures which have been incorporated.

LESSONS LEARNT

It is important to start the team-building process of as soon as possible. It takes a long time to break down barriers and establish enough trust for designers and users to negotiate successfully towards shared goals.

The estates team need to stay involved with the building once it is occupied. It is important that users understand how the building works and what they need to do to optimise its performance.

Educating people about energy-efficiency and carbon impacts is key to helping them use the building properly. Some users were worried because, having agreed not to have air conditioning, they had to use desk fans through the summer. They didn't realise the difference in energy usage - the carbon footprint of using a fan for an hour is 25g but for air conditioning it is 650g!

FURTHER INFORMATION

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This Case Study has been funded
by the Carbon Trust.



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