

THE UNIVERSITY OF ADELAIDE

ENERGY INITIATIVES CASE STUDY

CONTROL OF ROOM AIR CONDITIONERS

“Window Rattlers”

“Room Air Conditioners” are separate stand alone air-conditioning units usually installed in walls or windows.

Historically, room air-conditioners have been used in domestic type applications, however the University has also installed many units over a number of years, as an immediate solution for areas in older buildings that were not designed to incorporate more efficient centralised air-conditioning plant. In 2006 the University had over 800 room air-conditioners on the North Terrace Campus alone.

Room air conditioners create a number of technical problems aside from the obvious aesthetic and noise issues; they connect to electrical infrastructure that was not designed for such additional electrical loads, they are ‘user initiated’ and so can not be controlled, and there is a chance that they will be left on when not really required, and they are most likely to be all operating during periods of peak demand in extreme hot weather, when electrical infrastructure is least likely to cope with the additional electrical demand.

Controlling Influence

The University has investigated possible methods of providing at least some control over room air conditioner, pending their imminent future replacement in favour of more efficient and appropriate plant that will include central control systems.

Eventually it is proposed to provide external control of the electricity supply outlets to which the room air conditioners are connected, using a Building Management System being installed and networked over the North Terrace Campus. Other campuses will follow suit with this strategy, tracking the progress of the Management System.

The system is proposed and planned to have the following affect on the operation of room air conditioners:

- Automatic switching ‘off’ at various times of the day, with user operation required if the systems are still required. Initiation will be proposed via the power ‘no volt release’ button, which already forms part of each existing room air conditioner power outlet.
- Automatic switching of room-air conditioner on a cycled basis during periods of high electricity demand. This will reduce the maximum electricity demand of the electricity supply system. Similar schemes have been successfully trialled by ETSA Utilities in the community, with no noticeable affect to users occupying the space.

The first buildings to be installed with these systems will be the Benham Building and Hughes Building, with further planned installation after a period of monitoring.

Project Facts

- The North Terrace Campus presently has around 800 room air conditioners.
 - First buildings to be centrally controlled are the Benham and Hughes Buildings, a total of around 60 room air-conditioning units.
 - Initial project implementation cost \$25,000
 - Initial project implementation by September 2006.
 - Anticipated energy saving, approximately 200kWh/annum x 60 units – 12,000kWh per annum. This is equivalent to around 12 tonnes of CO2 emissions.
 - Future implementation into a number of University Buildings, including the Engineering Buildings, Hartley, Medical School South and Napier.
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