

**St John's**  
**Retirement Village**

VICTORIA

C-Bus Control and Management System

*Case Study*<sup>9</sup>



# Australia's Most Energy Efficient Retirement Village

*St John's Retirement Village is located in the picturesque countryside of Wangaratta, North Eastern Victoria and is one of the largest Anglican retirement villages in Victoria. St John's asked Eastern Energy Ltd, their electricity provider, to investigate means by which they could reduce their annual electricity costs. An area identified for potential savings was in the floor heating.*

*Clipsal's C-Bus Control and Management System and Clipsal HomeMinder Automation System were specified to provide programmable timing options. The resulting energy savings dramatically reduced electricity costs with a payback period likely to be achieved in as little as 13 months.*

## Excessive Energy Consumption

Heating in St John's Retirement Village is provided by an electric storage floor heating system.

Eastern Energy engaged Ausheat Pty Ltd, electrical heating consultants, to carry out an energy audit on the electric storage floor heating system installed in the administrative wing, ninety bed hostel and the thirty bed nursing home.

The total floor heating load is 656 kW comprising 222 kW in the nursing home and 434 kW in the administrative wing and hostel.

St John's operate on a maximum demand electricity tariff, and at the time of the audit, the maximum demand was 848 kW with floor heating comprising 77% of the demand.

*St John's in Wangaratta, one of the largest Anglican retirement villages in Victoria.*

## Programmable Cycling Times

As floor heating stores heat energy in the concrete slab floor, it can be operated on a selective time cycle using power within timed cycles as required by the heating zone temperature control.

Ausheat recommended the installation of the Clipsal C-Bus and Clipsal Home Minder systems to provide programmable cycling times for the floor heating.

Clipsal HomeMinder and C-Bus could be programmed to cycle half of the floor heating load (328 kW) on for one hour, then the other half on for the alternate hour. In this manner the maximum demand could be reduced by 328 kW (38.5%).

The system could also be programmed to take advantage of the low cost tariff periods.

By installing a Clipsal HomeMinder controller and Clipsal C-Bus system, annual electricity costs could be reduced by approximately \$22,000, an estimated reduction of 17.5%.

With an estimated installation cost of \$24,000, the payback period is 13 to 14 months.

## Further Energy Savings

Additional benefits offered by the C-Bus system were:

1. To program and cycle the electrical hot water load (48 kW) with the effect of reducing the maximum demand by a further 24 kW.
2. To control the security lighting, eliminating resetting of time switches manually.

Based on the potential cost savings St Johns decided to proceed with the Clipsal HomeMinder and C-Bus system which was installed and commissioned during May to July, 1997.

## Cabling Installation

The installation was carried out by Steve Billett Electrical Pty Ltd and programming by Kay Wennagel of Smart Systems Pty Ltd.

The Clipsal HomeMinder central processor was installed in the administrative block and connected by Category 5 communication cable to 15 remote C-Bus stations, each comprising a four channel relay and temperature sensor.





Floor heating provided in nursing home, administration and hostel areas.

## The Benefits of C-Bus Control

Cabling to the remote stations was divided into three loops, each with a separate power supply. This cabling method provided system security so that if a failure occurred in one of the remote stations, communications to the rest of the system would remain intact.

Steve Billett was faced with a difficult installation, as the ninety bed hostel is divided into ten separate buildings connected by covered walkways. The nursing home is also a separate building and had to be cabled underground.

Features	Benefits
Programmable cycling times	Optimises low cost tariff periods
C-Bus stations divided into 3 loops with separate power supply	If failure occurs, rest of the system remains intact
Central control	Easy adjustment of settings
Significant energy savings	Reduced electricity costs

## Installation Data

Project	St Johns Retirement Village
Electrical Heating Consultants	Ausheat Pty Ltd
C-Bus Installer	Billett Electrical Pty Ltd
Clipsal Minder Programming	Smart Systems Pty Ltd
Energy savings per annum	\$22,00 or 17.5%
C-Bus and Clipsal Minder Installation costs	\$24,000
Estimated payback period	13 to 14 months

Steve said that, "only a single Category 5 cable for the C-Bus communications link was required," which simplified the installation. Kay also did on-site programming training with St Johns maintenance manager Chris Farrell and Steve Billett. The training gives Chris and Steve the ability to adjust and maintain the C-Bus system at a local level.

### Central Control

Chris Farrell likes the central processor concept that C-Bus provides. Chris can now program the heating, hot water and security lighting from his office. The program was structured so that Chris can easily adjust the temperature settings, turn units on and off manually and alter the times that the units operate.

Chris can see on the computer screen a layout of St Johns, showing which units are operating at any time as well as having a log of the times that the units turn on and off.

St John's Chief Executive Officer Greg Hynard said that he has been pleased with the cost savings achieved with the C-Bus system.

Greg also mentioned that he would consider using the system for energy management for the new 100 unit retirement village to be constructed on the site in the future.



Underground cabling in walkway areas required only a single Category 5 cable to provide a C-Bus communications link.



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