

The Design and Construction of Low Energy Housing

Summary

The project involves a 'Housing for the Elderly' development of 32 units, built by the Blenheim Borough Council, BBC, under a Housing Corporation sponsored initiative. The initiative is aimed at providing affordable rental accommodation for the fastest growing section of the community: the elderly. The council sought a new housing design which catered specifically to the needs and resources of elderly tenants. Comfortable and affordable rental accommodation linked with low maintenance were foremost considerations in the project. Solar design was considered an ideal alternative to more conventional forms of design as it provides lower energy and maintenance costs, as well as better comfort conditions.

Highlights

- Target savings
 - 70% space heating
 - 60% water heating

The Principle

Each self-contained single bedroom unit is cosy and sunny, functional and ideally suited for the elderly. The 6500 x 7000 mm unit is spacious with an open plan kitchen/lounge area. With four units per cluster, the whole development takes on a community feeling. As easy access is essential, there is only one small step leading to the entranceway and likewise off the ranchsliders in the rear of the unit.

The project was completed in three stages. Initially, eight units were built, oriented to the sun, but without solar features. The second stage of twelve units was built with a range of solar features including 'Trombe' walls. The third and final stage of twelve units is of similar design to the second stage with four units having solar hot water systems installed.

This comprehensive development by the BBC enables precise monitoring of

energy savings and resulting comfort levels.

With the publication of the results of energy efficiency housing for the elderly, it is hoped that a larger-scale adoption of solar design in Blenheim and elsewhere will follow.

The Energy Research Group, School of Architecture, Victoria University of Wellington, will manage the one year monitoring programme, with the day to day work being carried out by Blenheim Draughting Services.

Weekly readings of the electricity meters and water meters will be taken to determine the savings achieved, and the energy 'produced' by the solar water heaters. The resulting comfort conditions brought about by the passive solar design features will also be determined.



Economics

Passive solar features; no additional costs (within budget set by the Housing Corporation). Active solar features: NZ \$2,300 per solar water heater unit.

Savings of 70% on space heating and 60% on water heating over conventional designs.

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* IEA: INTERNATIONAL ENERGY AGENCY
OECD: ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

IEA

The IEA was established in 1974 within the framework of the OECD to implement an International Energy Programme. A basic aim of the IEA is to foster co-operation among the twenty-one IEA Participating Countries to increase energy security through energy conservation, development of alternative energy sources and energy research development and demonstration (RD&D). This is achieved in part through a programme of collaborative RD&D consisting of forty-two Implementing Agreements, containing a total of over eighty separate energy RD&D projects.

The Scheme

CADDET functions as the IEA-Centre for dissemination of information on end-use technology demonstration projects for all IEA-CADDET member countries.

This project can now be repeated in CADDET member countries. Parties interested in adopting this process can contact National Team or CADDET. Demonstrations are a vital link between R&D or pilot studies and the end-use market. Projects are published as a CADDET 'Demo' or 'Result' respectively for ongoing and finalised projects.

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