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WA'S RURAL HEALTH HUB

CHARGING AHEAD IN THE NAME OF SUSTAINABILITY

The redeveloped WACRH has been designed to provide a modern learning environment, while taking the “Mediterranean-like” mid-west climate into consideration.



WA'S MID-WEST MEDICS

An educational facility that aims to improve rural, remote and Aboriginal health by promoting rural health careers has been redeveloped to meet the growing needs of the mid-west region of Western Australia.

Sean McGowan reports.

In 1998, the Combined Universities Centre for Rural Health (CUCRH) was established as one of 11 University Departments of Rural Health (UDRH) across Australia.

Supported by the University of Western Australia, the centre – now known as the Western Australia Centre for Rural Health (WACRH) – is the state's only UDRH.

As part of its charter to actively improve rural, remote and Aboriginal community health, it promotes health careers. It does this by creating rural-based placements for undergraduate and higher-degree students, while providing education, training and support relevant to rural and remote practice.

The WACRH also undertakes collaborative research and knowledge translation, with a particular focus on Aboriginal, public and population health, and service delivery.

Based in WA's mid-west coastal town of Geraldton, some 400km north of Perth, the WACRH complements the town's two major hospitals. The two hospitals support a local community of more than 35,000 people.

Locally known as the “A-frame on the hill” since its construction back in 2000, the original WACRH building served the centre well for over a decade. A combination of federal and state government funding was then made available for a multi-million redevelopment of the facility.

This redevelopment included a two-storey extension to the original building's eastern wing to accommodate a new education and simulation centre.

A purpose-built facility tailored specifically to meet the demands of rural health training, the EdSIM Centre provides students and health professionals with clinical education and training in a simulated environment.

In addition, the extension also provided for five customisable consulting rooms and two clinical demonstration emergency department bays, as well as education staff offices and student study areas.

KEEPING IT LOCAL

The redeveloped WACRH has been designed to provide a modern learning environment for students and staff, while taking the mid-west climate into consideration.

Often referred to as Mediterranean-like, Geraldton enjoys relatively mild winters where daytime temperatures average around 20°C. In summer, high-pressure systems entering the Great Australian Bight place the region under the influence of warm westerly winds.

As well as averaging a daytime summer temperature of around 32–33°C, the average number of days Geraldton experiences temperatures above 30°C generally exceeds 80 across the year. The region can also experience temperature extremes, with daytime summer temperatures known to reach 47°C and winter temperatures occasionally falling to about 0°C.

To provide a suitable air conditioning solution for the WACRH redevelopment, local Geraldton HVAC contractor Hallinan Refrigeration and Air Conditioning was engaged to design, supply and install the mechanical services for the facility.

Hallinan's brief was to provide a system that offered intuitive end-user control and independent modes of operation for each space. The ability to remotely log in to the system was also requested. Of course, achieving a comfortable indoor environment was also a goal.

“It is a mixed-use building combining offices, consulting rooms, meeting rooms and a practical lecture area,” says Donald Hallinan of Hallinan Refrigeration and Air Conditioning. “It was important to provide adequate temperature control as required

UNIVERSITY DEPARTMENTS OF RURAL HEALTH

The University Departments of Rural Health (UDRH) program encourages students of medicine, nursing and other health professions to pursue a career in rural practice by providing opportunities for students to practise their clinical skills in a rural environment.

The UDRH also supports health professionals currently practising in rural settings.

The WA Centre for Rural Health is one of eleven UDRHs around the country, and the only one in Western Australia. Other locations include Alice Springs, Broken Hill, Launceston, Lismore, Moe, Mt Isa, Shepparton, Tamworth, Warrnambool, and Whyalla.



The new facility has enabled the WACRH to continue its role of supporting remote communities in the mid-west region of WA.

for each area, depending on individual requirements and room occupancy.”

The multi-use nature of the facility combined with the building fabric presented Hallinan with a number of installation challenges.

For instance, the existing ceiling grids placed restrictions on the system layout and design. A careful approach to system selection and installation was also required due to a lack of adequate ceiling space and the redevelopment’s complex timber truss layout.

A VARIABLE SOLUTION

To overcome these challenges, Hallinan Refrigeration and Air Conditioning researched a number of products at the initial design phase. This led to the adoption of two VRF (variable refrigerant flow) heat-recovery systems, and a number of cassette-type fan-coil units (FCUs) with a total system capacity of 101kW.

This solution met the brief for cost-effectiveness, performance and functionality. These systems were also available for timely delivery – important in a remote rural location such as Western Australia’s mid-west coast.

The VRF heat-recovery systems were considered ideal for the multi-use nature of WACRH’s new EdSIM Centre, and Geraldton’s climate. They were able to provide simultaneous cooling and heating operations in multiple rooms or spaces serviced by an indoor unit.

For example, while heating might be required in staff offices and student study areas in the morning, cooling might at the same time be required in the practical simulation spaces where occupancy rates are higher and students are engaged in physical activity.

The energy-efficiency aspirations of the centre were also met by the VRF heat-recovery systems being able to draw heat from the room to be cooled and transfer it as energy to the rooms that are to be heated.

And, with multiple outdoor units connected, each compressor performs a sophisticated operation so

that all compressors operate at part load, distributing refrigerant to all heat exchangers. This improved the system’s overall efficiency.

To overcome the restrictions created by the redevelopment’s complex ceiling grids, limited ceiling space, and the truss positions, 12 compact cassette units were installed.

“ It is a mixed-use building combining offices, consulting rooms, meeting rooms and a practical lecture area ”

Providing high efficiency via a two-stage turbo fan, they distribute air evenly across the heat exchanger to produce two separate and quiet airflow streams. This made them the ideal choice for noise-critical areas such as the staff offices and lecture spaces within the EdSIM Centre.

A further nine standard cassette units were deployed where space constraints did not exist.

According to Hallinan, another benefit of the selected system was the simple process involved to interlock the indoor units with outside-air fans and motion sensors. This provided the high level of user control and energy efficiency the client desired.

WACRH staff members have also been provided with control of the air conditioning system via an intuitive touch-screen central control unit.

The TFT-LCD panel allows staff to easily manage the temperature of specific rooms and spaces, as well as distribute heating and cooling to different rooms simultaneously via individual control of the indoor units.

This system can also be accessed remotely or over a network via a desktop/laptop computer interface to provide a wide range of controls. These include energy saving management, indoor and outdoor unit control, and peak cut operation.

MEETING DEMAND

The redevelopment of the WA Centre for Rural Health facility was completed in early 2014, and was officially opened by dignitaries in April 2014.

According to Hallinan, the air conditioning system has performed to optimum levels in the two years since and continues to meet the demands placed on it.

Importantly, the new facility has enabled the WACRH to continue its role of supporting remote communities in the mid-west region of Western Australia by promoting the challenging and rewarding work of rural healthcare workers.

The function of the EdSIM Centre is important in this regard. It streams high-definition video sessions and live tutorials to people working outside of town, including in the remote communities of Mullewa, Three Springs, Mt Magnet, Morawa and Yalgoo. ■

WA CENTRE FOR RURAL HEALTH

THE EQUIPMENT

Cassette units: Fujitsu Australia

Controllers: Fujitsu Australia

VRF heat-recovery systems: Fujitsu Australia

THE PEOPLE

Client: WA Centre for Rural Health

HVAC contractor:
Hallinan Refrigeration & Air Conditioning