



Shane Carmichael.

MOVE OVER MOULD AND MILDEW

Without an effective exhaust or ventilation system in place, condensation can cause detrimental issues within apartments or buildings, warns SHANE CARMICHAEL from Air Change. An effective solution was found for the Campbell Street apartments in Canberra.

Many apartment buildings are now being built under strict guidelines to be tightly sealed. This is because current building codes and regulations for multi-storey apartments require the building to be thermally insulated with minimal air infiltration to maximise energy efficiency. In conjunction with strict fire codes, mechanical ventilation systems need to be carefully considered by designers, builders, facility managers and homeowners as, in the absence of an effective exhaust or ventilation system, condensation can cause detrimental issues within apartments or buildings.

Conventional bathroom and toilet exhaust systems used previously are facing an industry-wide problem, as there is no way for make-up air to infiltrate

these tightly sealed buildings. As a result, conventional exhaust systems are no longer functional or effective.

Late in 2010, Peter Carrington, principal of Peter Carrington and Associates, discussed with Air Change an appropriate ventilation system solution for the Campbell Street apartments in Canberra. The apartments required a system that would supply enough outdoor air and extract exhaust air in order to eliminate condensation and prevent any subsequent problems, such as condensation, mould and mildew.

TAILORED SOLUTION DEVELOPED

Although our existing products do provide solutions to these issues, the smaller capacity and nature of this

project required the development of a unit specifically for this type of application. Important aspects that the design team considered when designing the ventilation system for the Campbell Street multi-storey apartment buildings were:

- noise levels had to be kept to a minimum for residents living within the apartment building
- spatial restrictions for an in-ceiling installation were restricted to a height of around 200 to 300 mm
- convenient access to filters and fans for easy maintenance was required, and
- the ability to easily modulate the air flow for either a one- or two-bedroom apartment was necessary.

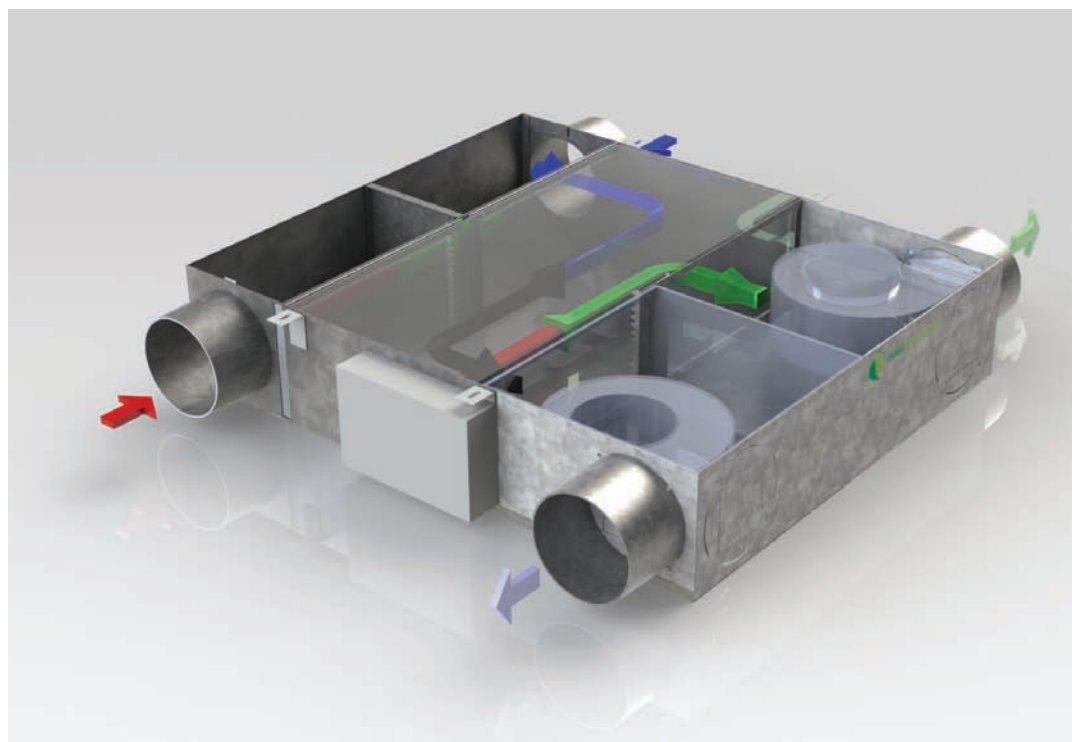
The in-ceiling energy recovery ventilator (ERV-IC 70) concept evolved from Air Change's standard range and adhered to these design specifications. A design that suited apartments and multi-storey residential buildings, and ensured efficient reduction of condensation and optimal indoor air quality, was created.

SENSIBLE ONLY DESIGN VITAL

The ERV-IC 70 was under development in R&D for approximately six months, with engineers testing the effectiveness of its airflow, performance and functionality, as well as its noise levels. Throughout the new design process, specialised features were added; for instance, EC (electronically commutated) motors and backward curved fans, which allowed for a low-profile design and ensured that energy efficiency and airflow was maintained.

In addition, in-built, air-to-air heat exchangers were incorporated to enable the ERV-IC 70 to offer an energy saving of up to 80 percent

below: The ERV-IC 70 utilises the conditions of the bathroom extract air to precondition the incoming outside air, but does not transfer any of the moisture between the airstreams.



compared to conventional extract systems. Other features include built-in fire retardant filters and low pressure drops – even at high air flows. Furthermore, the unit can also be optioned with integrated electronic control with carbon dioxide sensors.

The ERV-IC 70 utilises the conditions of the bathroom extract air to precondition the incoming outside air, but does not transfer any of the moisture between the airstreams. This is achieved through the sensible heat exchanger, which permits temperature only to exchange. The sensible only design was vital in preventing condensation and the subsequent effects of indoor moisture build-up.

The installation of the ERV-IC 70s into the Campbell Street apartments was undertaken in May 2011 by King Air, with completion due by the end of the year.

FUTURE INSTALLATION

Peter Carrington and Associates was also responsible for designing the

mechanical systems for the Aurora residences, a multi-storey luxury apartment building that has been proposed for the shores of Lake Burley Griffith in Canberra. The company has specified ERV-IC 70s for each apartment to ensure optimal indoor air quality and to prevent condensation and subsequent mould or mildew problems. The units are due for installation early next year.

The aim is to attain a minimum energy rating of 6 Green Stars for all Aurora residences. The design of Aurora places leading sustainable principles at the forefront. The building design uses sustainable materials, incorporates the use of grid interactive solar power and will offer tenants an EV (electrical vehicle) ready basement. **FM**

Shane Carmichael is the New South Wales and ACT state manager for Air Change Australia, having more than six years of experience in air-conditioning with energy recovery technology. He is an active

member of AIRAH (the Australian Institute of Refrigeration Air-conditioning and Heating). In 2010, he received AIRAH's prestigious Future Leader Award and has recently been elected as the president for its New South Wales committee. He is also involved with other industry bodies, such as the Green Building Council of Australia, and takes a personal interest in the green building movement. He has completed a bachelor of engineering mechatronics, which was awarded with honours, and is currently undertaking a master of business management at the University of Technology Sydney.

More information
Air Change
www.air-change.com

above: Conventional ventilation systems are facing an industry-wide problem. There is no way for make-up air to infiltrate the tightly sealed apartment buildings that are being designed to be more energy efficient.