FANTECH

TECH TALK

Newsletter Number 64

April 2009

Fresh green start for TAC

The Transport Accident Commission (TAC) in Victoria has relocated to purpose-built offices in the heart of provincial city Geelong, 80 km south west of Melbourne.

The move is part of the Victorian Government's pledge to build regional Victoria and sees the TAC occupy an office complex awarded a 5 Star Green Star – Office Design V2 Rating by the Green Building Council of Australia (GBCA). The certified rating evaluates the environmental potential of the building and a rating of five green stars signifies Australian excellence.

The eight level complex is more than just a new headquarters for TAC. The ground floor has a retail component and includes a gymnasium, café, travel agent and newsagent; there are also three levels of fully enclosed carparking. All up the complex will have 16,285 square metres of net letable area (NLA).

Entire Mechanical Services Project Manager Garry Muscat said ventilating the 338 space carpark, split across three levels in the TAC complex, was made more difficult by the fact that the carpark was fully enclosed and that the ceilings were low.

"The FKP Property Group was keen to look at alternatives to the traditional carpark exhaust system which would have required a lot of bulky ductwork and in some places where space was limited, ducting made from load bearing Steel-Styrofoam panel," Gary said.

"Furthermore, the developers support sustainable energy efficient designs and wanted a cost effective system that had good performance figures. They liked the idea of using JetVent fans which had a low vertical height and were economical to run and install."

A carpark impulse ventilation system can help to minimise major capital costs in several ways. It reduces the time it takes to install and commission, eliminates the need for expensive ducting, and reduces the pressure requirements for the main supply and exhaust fans, which therefore has the potential to lower the cost of the fan. Deciding to use a ductless system early in the building design can also reduce the level of expensive excavation required for the basement.

On-going power consumption costs can also be reduced by using smaller fans and controlling the speed and usage of the fans based on the demand. Removal of most of the ducting could also drop the overall cost of maintenance and repairs.

Fantech engaged a computational fluid dynamics (CFD) consultant to optimise the design and ensure the mechanical design would comply with performance criteria set out in the Building Code of Australia.

Entire Mechanical Services installed 12 JetVent mixed flow induction jet fans (JIU-CPMF-50N) and a carbon monoxide sensor driven control system to deliver optimal energy consumption performance.

"The energy efficiency and space saving characteristics of the JetVent system were duly noted by the GBCA who awarded the developers additional points for innovation in their green star accreditation," Gary said.

Mr Muscat said the building was put into operation in January 2009 and the JetVent fans continue to perform well.

JetVent Mixed Flow Fan

Management take the lead

Chris Ogilvy & Jack Pirie

Fantech Managing Director Chris Ogilvy and Chairman Jack Pirie have set an excellent example by balancing work and play in an attempt to stay fit.

"It's one thing to work hard at your job, but you need to balance that with something outside the workplace, preferably a group activity where you get great camaraderie as well as the physical and mental health benefits," Chris said.

The two men swim regularly as part of a group of 50+ year olds, training at Fitzroy pool in the winter and, when the water warms up, at Brighton beach. Earlier this year they competed in the nib Lorne Pier to Pub swim.

With a short course of 1.2 kilometres from the Lorne Pier through Loutit Bay to the foreshore in front of the Lorne Pub, the event attracts over 4300 competitors, which makes it the world's largest open water swim.

Chris said he aimed to complete the course in about 20 minutes and in this seventh race came in at 21 minutes. Jack said, "I was disappointed with my final time, but there is always next year."

Jack said the event was brilliantly run with great support from the Lorne Life Saving Club volunteers, professional lifeguards and members of the Rotary Club of Highton.

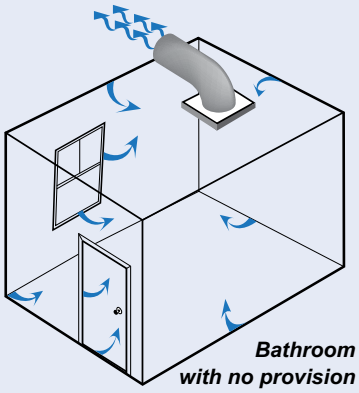
"Swimming is a terrific vehicle for a lot of fun and to keep yourself fit for life, I thoroughly recommend it," Chris said.

Technically Speaking Fan applications

Bathroom ventilation for private and commercial residential premises - Part 2

In the previous edition of Technically Speaking we discussed bathroom ventilation for private and commercial residential applications, emphasising that higher exhaust airflow rates than the minimum values outlined in the AS1668.2 Standard are necessary for effective condensation control. It also outlined that discharging from bathroom and toilet fans to outside rather than into ceiling voids is mandatory now that most roofs are sealed with sarking insulation material.

This article identifies some further key challenges relevant to the compliance and effectiveness of ventilation systems in homes and high-rise residential applications, such as insufficient make-up air, uncontrolled air inlets, outside air quality and acoustic concerns, and energy consumption considerations.



Bathroom with no provision for make-up air, draws air from uncontrolled inlets

The advent of Section J of the Building Code of Australia (BCA) and generally more energy sustainable design concepts means that Australian buildings are being made more air-tight, so the problems discussed below are likely to become even more prevalent.

Natural ventilation

The BCA allows for natural ventilation for bathrooms, toilets and laundries in homes and residential apartments. This is appropriate if sufficient openable windows and vents are provided. However, while appropriate in some situations this is less likely to be convenient where the extremities of weather occur, ie. northern Australia summer or Tasmanian winter.

Internal climate control and concerns over energy consumption during peak summer or winter conditions will lead people to close their windows. Also, noise control by residents in high rise city apartments and built-up areas, means windows are rarely left open.

Ventilation in tightly sealed buildings

Modern living and building design, and in particular the requirements set out in the BCA Part J, are resulting in more tightly sealed constructions for private and commercial residential buildings. In this situation where, for example, external doors and windows are closed, and often the internal bathroom and laundry doors also, make-up air for the exhaust system can only be drawn via cracks under doors, around windows, access panel frames and through minor imperfections in floor and ceiling trims. The result is likely to be an under-performing exhaust system as well as the formation of dust streaks and stains emanating from the gaps and cracks.

Make-up air intake

Without controlled inlets and/or ducted outdoor air into an apartment, exhaust ventilation will draw make-up air from uncontrolled locations such as ceiling voids, external windows, entrance doorways and even car parks. The quality of air drawn via these uncontrolled inlets is not envisaged by Clause 2.2 of AS1668.2:1991, which gives reference to location and arrangements for outside air intakes and the avoidance of contamination from various sources.

A note on laundry ventilation

The minimum exhaust airflow rate set out in AS1668.2:1991 (and 2002) from a residential laundry is 20L/s. Most clothes dryers now discharge 35 to 40 L/s of very moist air. It is quite apparent that whether a dryer dumps this air into the laundry, or discharges directly to outside via ducting, more adequate ventilation provisions would be necessary.

Clause J5.2(b)(ii) of the BCA could be interpreted to imply that mechanical ventilation must not exceed the Standard's requirements by more than 50%. In the case of the laundry, that is 20L/s + 50% which equates to only 30L/s, which may not be sufficient to avoid condensation on walls and possible mould growth. Even with 40L/s exhaust from a laundry, it is necessary to discharge clothes dryers directly into the building's exhaust duct, or at least very near the exhaust grille to prevent condensation forming on surrounding surfaces and resultant material degradation.

This therefore suggests that an alternative solution involving increased exhaust airflow from a laundry with a clothes dryer should be a consideration, especially if restrictions by the BCA Section J energy efficiency provisions prevent achieving the objectives of BCA Section F in relation to effective ventilation.

Consideration for the provision of adequate make-up air is essential also, especially given laundry doors are usually closed to keep the noise from disturbing the occupants.

No single solution

Despite the suggestions put forward previously not all buildings can be treated the same. For example free standing residential homes in quiet suburbs should not be bound by quite the same regulatory framework, as for accommodation in higher density areas, because openable windows are likely to be an effective option in the free standing buildings.

Conclusion

A mouldy bathroom fixture

The concepts being recommended in parts 1 and 2 of this article, suggesting higher air flow rates for bathroom and laundry ventilation than the Australian Standard specifies, are important considerations for the internal condition of the building and wellbeing of its occupants. However, the equal relevance of make-up air conditions, acoustic concerns and energy efficiency provisions means there is not necessarily going to be a single solution that some would desire from the Building Codes and standards.

We acknowledge Simon Hill of Professional Engineering Solutions for his assistance with this article.

Perth gets first 6 Star green rating for design

The Green Building Council of Australia (GBCA) awarded property developers Stockland six green stars for the design of Durack 2, a commercial office building in Perth's CBD.

Durack 2 is the first West Australian property to receive six green stars from the GBCA. The Six Star certified rating signifies 'world leadership' in the environmental potential of the design of commercial offices (base buildings).

West Australian Mechanical Services Project Engineer Daniel Hunt said the building takes into account all aspects of sustainability to get the six star rating. Elements such as the building location, efficient building orientation and façade design play a vital role. The use of sustainable materials, highly efficient building services, water catchment and water recycling and use of innovative strategies and technologies were all considered and used.

"The building has a lot of mass so that it can contain its thermal inertia, but the hot afternoon sun can be an issue," he said. "To help solve this problem a fully automated louvre system on the western façade has been incorporated. The automatic louvres respond to the movement of the sun and can reflect the heat away from the building while maintaining natural lighting and views."

The mechanical design uses an active chilled beam system. Daniel said this type of system is becoming more popular because of the apparent savings in energy use.

The building's ventilation equipment and attenuation for the mechanical services was supplied by Systemaire, Fantech's branch in WA. This included toilet and change room exhaust, carpark exhaust, the tenant exhaust systems, substation ventilation and the outside air ventilation systems.

Daniel said three wind turbines had been installed on the roof to take advantage of the diurnal sea breeze, known locally as the Fremantle Doctor. This will allow the structure to generate its own power for a proportion of the building, and at times to put green energy back into the grid.

"A growing number of property developers around Australia are committed to adopting green building practices, so there are more buildings gaining Six Green Stars accreditation for design," Daniel said. "However, putting all those environmental designs into practice is not easy, so a building that gets six green stars in the 'as built' category is a real achievement."

Fans by Fantech
Product Selection Program

Tip No.4

Creating a fan schedule (Part Two)

Once a schedule of fans has been created (as described in TechTalk #62), the schedule can be printed in the default format by clicking the 'Schedule' button in the 'Print' area of the screen. A print preview of the schedule will appear, which can then be printed to paper or converted to a PDF file.

Creating a schedule with a customised list of data in Microsoft Excel worksheet format is achieved by ticking the 'To Excel' box in the print area of the screen before clicking on the 'Schedule' button.

A prompt appears with a list of data that can be included in the Excel schedule. The 'Add' and 'Remove' buttons build the format for the schedule, while the 'Up' and 'Down' buttons re-order the data. Once this is complete, click 'OK' and a prompt for a filename will appear. The saved file can then be opened in Excel.

The schedule can also be copied to the clipboard and pasted into any existing Microsoft Excel, Word or other compatible document using the 'To Clipboard' box in the print area.

Uniair opens new office at Coffs Harbour

Uniair Distributors has recently opened a new office at Coffs Harbour to better service its northern New South Wales customers.

"The new office/warehouse is located just off the Pacific Highway in Coffs Harbour South, so it is ideally positioned to service our customers on the mid-north and far north coasts as well as those in the New England area," Managing Director Tim Lockwood said.

Uniair will employ a branch supervisor to run the Coffs Harbour office and give the company a stronger focus in the region.

Tim said the branch supervisor would be able to deal with any issues that arose a lot faster than if somebody had to travel up from the Newcastle office. He will also be helping to promote the general Fantech range and other associated products including Arena air conditioners, Camfil Farr air filters and Mitsubishi Heavy Industries air conditioners to potential new customers in northern NSW, he said.

The new office can be found at Unit 5 8-10 Industrial drive, Coffs Harbour.
Tel: (02) 6652 9435.

Product News

With Kerry Dumicich

New look Vogue

set to impress

Fantech's Vogue series of ceiling/wall mounted fans has been redesigned with a new modern look and easy to use features. While the current Vogue series is attractive and extremely functional, we are always on the look-out for ways to improve the design and efficiency of our products.

Reducing production costs while continuously improving quality has always been a priority with the Fantech range, so we have chosen to manufacture the fan housing from ABS (Acrylonitrile Butadiene Styrene) plastic rather than galvanised steel. ABS plastic has a good balance of tensile strength, impact and abrasion resistance and surface hardness.

Plastic can be moulded to any shape or size to maximise the efficiency of its design. The injection moulding process has enabled us to create a superior smooth, aerodynamic inlet bell mouth for minimum noise and maximum airflow output. Plastic can also be recycled to help minimise its impact on the environment.

The change in manufacture process has provided an opportunity to review the appearance of the fan and this has resulted in a more stylish ivory coloured grille. The smooth finish of the new grille means it can be easily cleaned while installed, or readily removed by taking out the screw and giving the grille a simple twist and pull.

A prime consideration in the design of the new Vogue series was to make the fan simple and quick to install. In the past you had to undo a number of screws to remove the grille and then fix the unit to wood in the ceiling or wall. Now the grille can be easily removed, and quick fitting swing locks have been added to keep the fan in place in suspended ceilings or plasterboard walls and ceilings, while extra holes are provided for fixing to brick or concrete.

The new Vogue series features an aerodynamic axial flow fan driven by an enclosed motor suitable for 200-240V single-phase 50Hz electrical supply.

The Vogue fan has passed testing for the Regulatory Compliance Mark (RCM), ElectroMagnetic Compliance (EMC) and has been approved for safety to Australian Standards. The housing is fire retardant and the grille/guard complies with regulations concerning its safety features and strength.

Like its predecessor, the new Vogue series can be mounted at any angle in wall or ceilings and can be used as an exhaust or supply fan. Standard sized ducting can be easily fitted using the optional duct adaptor. The fan is pre-wired with a lead and three-pin plug. Two-speed and variable speed control switches can also be used with the Vogue.

The new series will be available in three sizes – 200, 250 and 300mm diameter.

Fantech will continue to offer the existing Ring Plate should an all metal ceiling/wall mounted fan be required.

New Minitube

now easier to install

Almost three decades after its introduction, the Minitube series of duct-mounted axial fans has been updated.

Like the new Vogue series, the new generation of Minitube fans are being manufactured from ABS plastic. This has made the manufacturing process more efficient. Minitube fans are one of Fantech's most sought after products and it seemed timely that we introduce a more stream lined, user friendly unit.

ABS plastic has good resilience, which means that if the fan suffers a minor bump it would automatically revert to its original shape. Installers will also appreciate the new tapered ends where standard flexible duct simply slides on. The engineering team was pleased with the result which had surpassed requirements in the design brief.

The new generation Minitube will be supplied pre-wired complete with a three-pin plug and lead for a trouble-free installation.

The original version of the Minitube will also continue to be available if an all metal version is required.

SPEC builder now on net

Compiling a specification draft has just got easier with a new and improved version of SPECbuilder available online from NATSPEC.

NATSPEC is a non-for profit organisation whose main service is to provide, and update, a comprehensive national specification system.

The software allows designers, architects and engineers to put a specification draft together quickly and efficiently in the correct order without duplication or error.

"SPECbuilder Pro was launched in 2007, however the introduction of Microsoft Vista and Word 2007 have led to IT problems worldwide," said NATSPEC Chief Executive Officer Richard Choy. "To overcome these hiccups, NATSPEC will launch SPECbuilder Live, an online version which will make NATSPEC information more readily accessible to subscribers."

Richard said the development of the program had been assisted by product partners including Fantech as well as the support of the industry as a whole.

Designers, architects and engineers will need to subscribe to NATSPEC to access SPECbuilder Live; however branded WorkSections (including Fantech's) are freely available from www.natspec.com.au

JetVent Impulse Ventilation...

JetVent Centrifugal Fan SCG Loading Dock

Upgrading the Victor Trumper Stand at the Sydney Cricket Ground was an enormous task, made a little easier by Austral Air Conditioning's decision to utilise JetVent impulse ventilation technology in the loading dock and road access tunnel.

The flow of traffic associated with a loading dock means high levels of pollutants like carbon monoxide, nitrous oxides and various fumes from the vehicle's fuels are produced. A good ventilation system is vital for providing fresh air and ensuring these harmful pollutants do not accumulate.

Traditionally carparks and loading docks are fitted with ductwork which carries exhaust air out and fresh air in. However, impulse ventilation systems use small strategically located high velocity Jet Fans (also known as induction fans) mounted directly beneath the ceiling in place of ductwork. The fans provide a constant air flow that mix the air, ensuring pollutants do not accumulate in dead areas and directing them towards the main extraction fan.

Fantech's New South Wales Sales Engineer Peter Hanna said the decision to eliminate distribution ductwork could save hundreds of thousands of dollars on some projects.

"The induction fans operate on well-proven tunnel ventilation principles," he said. "Essentially a volume of air is thrust out of the fan at great speed. As it travels forward, the surrounding air is carried forward, or entrained to the next fan, ensuring a constant flow of air and continual air movement in a particular direction."

Image Courtesy of SCG Trust/Hamilton Lund

... a match winner at the SCG

Peter said further savings could be made by using smaller extraction fans.

"Fully ducted systems typically require a larger extraction fan with the capacity to generate higher static pressure development to overcome the high level of resistance within the ducts," he said. "Because impulse ventilation systems have reduced the need for, or completely eliminated ducting, we are able to use smaller fans that consume less energy."

Austral Air Conditioning saw the value in using impulse technology for the SCG loading dock and long access tunnel for amenity services after Peter had several discussions with Austral Chief Engineer, Remy Logel about the savings associated with the system.

To confirm that the technology would work well at the SCG, drawings and specifications were provided so that computational fluid dynamic (CFD) modelling could be performed.

"The CFD software was used to predict the flow of air around the loading dock, meaning we could very accurately select and place the right fan for the job," Peter said.

"Based on those results we quoted the job using three JISU-CPC-100N JetVent centrifugal induction fans, plus a variety of other axial and PowerLine in-line centrifugal fans."

Air Design expands next door

Air Design, Fantech's branch in Queensland, has expanded its warehouse capacity to include a new purpose built building next door. The move in January came about after it outgrew its current facility at 45 Nestor Drive, Meadowbrook.

The expansion will give Air Design an additional 850 square metres, giving it a total floor space of 2850sqm.

Air Design General Manager Jim Godwin, said, "The decision to expand came as a result of Air Design's ongoing efforts to improve production efficiency."

"The additional space is essential as we continue the national expansion of the air handling business, as well as reduce product lead times for clients through an increase in local stock holdings."

Jim said the new facility would be used solely as a warehouse with the original building continuing to be the centre of their manufacturing operations.

"The layout in the original building has been changed as a result of the move next door which allows us to be more productive with the assembly of fans and air handling units," he said.

Grosvenor keeps its focus on customers

Grosvenor Engineering Group began with three university friends looking out for one another and 15 years later, the company has built a strong reputation looking after the needs of its clients.

Nicholas Lianos, Peter Souflias and Arthur Vergopoulos all studied engineering at the University of New South Wales. Peter and Arthur formed a mechanical contracting business, while Nicholas, with his electrical engineering degree worked for Lincolne Scott and later went off to do an MBA.

In his postgraduate studies Nicholas came across Grosvenor Air Conditioning, a company looking to sell its HVAC maintenance contracts. Remembering his university friends, he suggested the three of them buy the contracts, and in May 1994 the Grosvenor Group of companies began.

"It was a business experiment that worked out very well," Nicholas said. "I was able to work on the business while Peter and Arthur worked in the business.

"The appointments in 2000 of Stephen Gallagher as General Manager and Neil Hodgson as Service Manager were a key turning point for the company. At that time, Arthur left the business to pursue other interests and Chris Vassos, our first employee in 1994, accepted the role of HVAC Construction Manager."

Today the company employs over 130 full time staff and operates throughout NSW.

Nicholas Lianos, Grosvenor Group Managing Director

Nicholas said from that very first day, the Grosvenor Group had focused on providing innovative services to its customers.

"We differ from most HVAC (Heating Ventilation and Air Conditioning) companies in that our growth has come primarily from focusing on maintenance and 'whole of life' asset management rather than 'wet concrete' Air Conditioning installation work," he said.

Rouse Hill Town Centre

"We have developed a lot of intellectual property in asset management, employing tradespeople, mechanical engineers, IT engineers and software developers to design and use remote monitoring and energy management software and hardware to wrap around traditional maintenance contracts. Our approach enables us to minimise unforseen Air Conditioning problems and costs whilst lowering building energy consumption and carbon emissions thus enhancing building sustainability."

Recently the company secured a contract for the maintenance of Rouse Hill Town Centre, an urban development with retail shops, community areas, public transport hub and public spaces. "Over the years we have developed specialised tools for auditing HVAC systems and this has become another key area of expertise. At Rouse Hill we were able to conduct an in-depth audit once the facility was completed and identify faults before the warranty period expired," Nicholas said.

The maintenance at Rouse Hill is also based on hours of operation of each asset rather than a fixed amount of maintenance. This means the client can match maintenance costs with income thus not paying for unnecessary maintenance. Grosvenor's innovative approach fully complements the sustainable operation of this development.

Fantech would like to congratulate the Grosvenor Engineering Group on their 15 year milestone.

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- ☐ Please send me a copy of the Fans by Fantech Product Selection CD.
- ☐ Please send me a copy of the 2008 Fans by Fantech Catalogue.

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