

Beverly Hills Cinema complex with AC system visible on the roof.  
Inset: Engineer George Kyprianou checks the temperature control.



# Movies with a breath of fresh air

Sydney's Beverly Hills cinema complex has undergone a massive renovation recently, including the installation of six Air Change reverse-cycle rooftop units to deliver fresh, outside air into the building.

In a cinema complex, with theatres of varying sizes and continually varying heat loads, to find an air conditioning system that will not only cope but also deliver energy savings is a welcome change indeed.

Air Change, an Australian company that developed a unique, lightweight, air-to-air heat exchanger, is becoming recognised for the highly efficient air conditioning of cinemas and other mass-audience commercial buildings where air quality and energy savings are paramount.

In the latest installation commissioned, six Air Change reverse-cycle rooftop units are air conditioning and ventilating the new Beverly Hills cinema complex in Sydney as part of a \$4.5 million redevelopment.

Alex Tsagias, general manager of cinema complex owners D&G Cinemas, says the benefits of the new system are already obvious. "The air quality in all six cinemas is excellent and we are able to save energy

because of the technological advances the Air Change system incorporates," he says.

"Our cinemas range in size from 70 to 155 seats and can accommodate a total of 750 patrons at a time. The biggest advantage with this separate unit per cinema system is that moviegoers in every theatre enjoy oxygen-rich outside air at all times – as much as 100 per cent if necessary.

"Using an integral Siemens controller we can provide just the right amount of outside air at the optimum temperature at all times. This level of control is important because audiences can fluctuate in size from a few movie buffs to a full house and we need to provide a constantly high standard of air quality for their comfort and health."

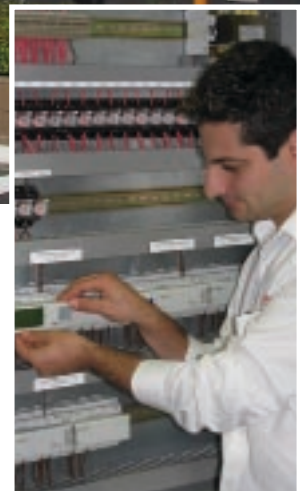
Tsagias certainly knows what moviegoers want. His father Jim, a developer, purchased the run-down Beverly Hills cinema, then called the St James Theatre, in 1982, intending to convert

it into a function centre. He then decided to re-instate it as a cinema/theatre as it had a stage area. Alex's mother, Jane Tsagias, ran the cinema until handing over to him five years ago.

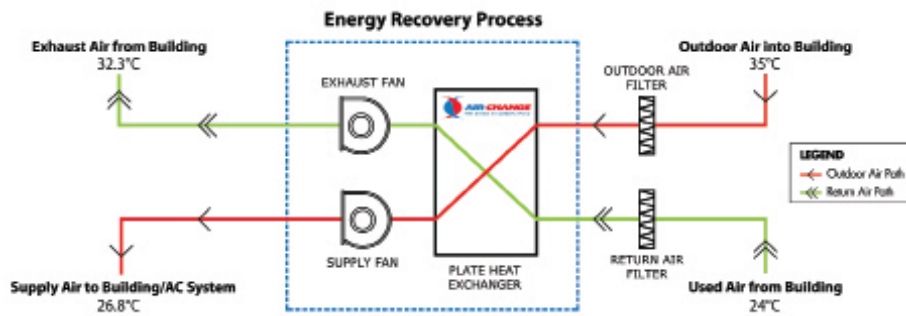
"Originally it had only one screen but in 1988 Dad converted it into a twin cinema," Tsagias says. "Last year we began a complete redevelopment to provide a six-screen cinema complex that opens seven days a week. We screen all the latest films shortly after their Australian release but we also project classics and art movies for movie buffs in our smaller, more intimate cinemas.

"The energy saved by the integrated Air Change system and its overall versatility are remarkable. We can shut down the air conditioning in cinemas not being used, hold empty ones at optimum levels or boost full cinemas when necessary."

Shane Carmichael, the NSW/ACT sales manager for Air Change Manufacturing, says



## Case Study



A simple schematic of the Air Change principle

the high-performance six-unit system installed at Beverly Hills was designed to maximise efficiency and fully comply with Section "J" requirements of the Building Code of Australia for energy-efficient mechanical systems.

"The key to better air conditioning quality is the use of large amounts of outdoor air," Carmichael says. "Instead of re-circulating stale or polluted air, our Enthalpy brand heat exchangers provide an economical method of delivering very high levels, up to 100 per cent, of fresh, outside air into enclosed buildings.

"Air Change systems provide the required volumes of clean, filtered air and eliminate stale air and air-borne contaminants such as bacteria, smoke, fungal spores and dust without the danger of cross-contamination of air paths through the heat exchanger."

Carmichael says the company's patented, counterflow, plastic-framed heat exchanger features two separate air paths and works on a very simple process. One air path takes in hot outside air, whilst the other takes used cool spill air from the cinema. Inside the heat exchanger, this spill air will then "precondition" the hot outside air, resulting in more than eight degrees of cooling at design conditions.

"As the units are a packaged type, this preconditioned air then passes through our DX heat pump system to a nominal 13 degrees supply," he says.

The Air Change Group's Australian-made products are available from 100 l/s to 12,000 l/s in roof-mounted cabinets made from 50mm BHP Colorbond-polyurethane sandwich panels with leak-proof polymer seals and large access doors for ease of maintenance.

The reverse cycle equipment installed on the roof of the Beverly Hills cinema complex includes one 32kW, single stage heating and

»| "The most popular movie ever shown at the Beverly Hills Cinemas was 'Crocodile Dundee', playing to packed houses for 14 months" |«

cooling unit, one 36kW unit, two 45kW dual stage units and two 65kW dual stage units. All use Danfoss scroll compressors and their three-phase fan motors need no pulleys or belts being direct-coupled and have ramped starting to prolong their life and eliminate power spikes. Airflow is simple to adjust with a variable control.

The whole system is operated from the cinema's office using a Siemens controller that is capable of accepting remote control by computer or even distant commands by telephone.

The system was designed and installed by mechanical services contractor Robert Mann Pty Ltd of Kirrawee, NSW.

George Kyprianou, the mechanical engineer from Robert Mann who, with John Budd from HBA Consulting Engineers, of Crows Nest in Sydney, designed and project managed the installation, said it went without a hitch.

"The cinema complex's builders, EDGA Holdings, precisely constructed the platforms to take the rooftop Air Change units," Kyprianou said. "A crane was used to lift the units from the cinema's car park and interface them neatly with the already installed duct work.

"We were very careful to comply with stringent certification requirements throughout the project. The run-up and commissioning was virtually fault-free and all six units are performing efficiently, precisely as expected."

The cinema complex's owners are so pleased with the results that they intend to install another Air Change system at their Cronulla cinema complex later this year.

"We will provide salt-resistant cabinets and components for the Cronulla project because of its proximity to the ocean," Shane Carmichael says. "There also will be coalescing filters to remove salt from the air entering the heat exchanger units and system spaces."

Shane Carmichael (left) and Alex Tsagias enjoy the view

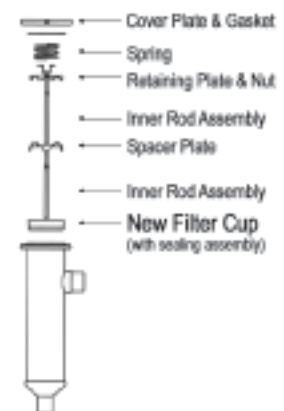


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