



BOVIS LEND LEASE
BRISBANE QLD

BRISBANE AIRPORT REDEVELOPMENT

Thirteen years after it first constructed the original Brisbane International Airport Terminal, Bovis Lend Lease has come full circle – contributing to the airport's expansion from a city airport to an "Airport City".

Brisbane Airport City is a 2700-hectare, 24-hour global trade and commerce hub.

There are nine master-planned precincts, in varying stages of development, each designed specifically for individual businesses and industries.

They include the signature precinct, Airport Village – an 80-hectare business and leisure zone with plans for a golf course, hotel, conference centre, shopping, office park, medical and childcare facilities. Other zones will cater for light industry, office and retail, passenger rail, general industrial, aircraft servicing and provide heavy maintenance bases for Qantas and Virgin Blue.

Bovis Lend Lease has designed and constructed the expanded International Terminal, building on the design philosophy of the original terminal to create an efficient and functional building which future-proofs the airport by being expandable to suit its growing needs.

The new terminal creates clear passenger flows from kerbside to aircraft and relies on a minimum of directional signs.

It is a commercially successful and efficient building with a balanced approach to its various functions – retail, service, operational and back-of-house. Most importantly, it is a space to suit the convergence of large numbers of passengers and is incrementally expandable to accommodate future growth.

The main terminal building has been expanded by sixty metres to the south, extending all four levels of the existing terminal and adding to the capacity of each level. It includes:

- The extension of the baggage handling area to provide suitable space for outward and inward baggage conveyors and the extension of the fully automated baggage handling and check-bag screening system.
- Redesign of outward immigration and security areas to suit changes to processing and increased queues.
- Two new check-in islands comprising 68 new counters and associated services.
- New offices, airline lounges, retail and processing areas.
- A new vertical transport zone with new lifts and travelators to all levels.



In addition, the northern concourse has been extended by 225 metres to accommodate all aircraft up to and including the new airbus A380.

The airport remained fully operational during the \$340 million development, placing significant constraints on construction which took place around secured barriers to ensure public safety.

Contingency plans were needed to counter the impact on development of any emergency or terrorist threat. The basement and existing concourse area had to be excavated without causing disruption to the apron or ramp.

Bovis Lend Lease is one of the world's leading project management, design and construction companies, operating in more than 30 countries and employing over 8,500 people, with regional hubs in Australia, the US and Europe.

Working in partnership with clients to maximise the value of their real estate development and construction projects, Bovis Lend Lease uses industry best practice to create high quality, sustainable property assets.

From iconic buildings to complex infrastructure to multi-site rollout programmes, the company is able to deliver practical and flexible solutions for its clients, having the capability to manage the entire property lifecycle from planning through to development and implementation.

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HEAT TRANSFER PRODUCTS AND SERVICES

Baltimore Aircoil (Aust) is a wholly owned subsidiary of the Baltimore Aircoil Company, the worldwide manufacturer and marketer of factory assembled cooling towers, closed circuit coolers, evaporative condensers and ice thermal storage products. BAC services air conditioning, refrigeration, industrial, process, and power generation customers. BAC is one of the AMSTED Industries, a diversified manufacturer of industrial components serving primarily the railroad, vehicular, construction, and building markets.

B.A.C. Australia primarily services Australia, New Zealand and the South Pacific Region through an experienced engineering representative force and wholly owned sales and service divisions under the Balticare brand.

The company's major clients are Australia's Top 100 Corporations including: Telstra, BHP Billiton, CSR, Newmont Mines Newcrest Mines, Rio Tinto, Bovis Lend Lease, Westfield, Dairy Farmers, Coca-Cola Amatil and the Fosters Group.

Key recent projects include Flinders Medical Centre – SA, MLC Building – NSW, Brisbane Entertainment Centre – QLD, Boddington Gold Mine – WA and ANZ Docklands – VIC.

With the combination of the latest technology and more than 60 years of engineering experience, Baltimore Aircoil products incorporate state-of-the-art materials providing modular solutions for commercial and industrial users.

Baltimore Aircoil manufactured and supplied six model RCT-2726 B.A.C. Rigid Composite Cooling Towers for the Brisbane Airport project. Pritchard Pacific as agents for B.A.C. installed the cooling towers and the low, mid and high level platforms, walkways and handrails to meet stringent Australian standards for access and maintenance. Equipment noise levels were critical to the project design and were overcome by the use of engineered low noise fans operating at optimum conditions to achieve the required levels. The project was completed well inside the time line required by the construction program with no lost time injury days.

The economic challenges imposed on industry require it to significantly reduce the cost of plant design, construction and maintenance. B.A.C. provided the solution to these challenges with Rigid Composite Technology cooling towers. The RCT-2000 modular design dramatically reduces capital and on-going maintenance costs whilst improving the standard of quality and construction demanded by industry.



The factory assembled RCT-2000 allows flexibility not available with competing cooling towers. The benefit of the modular design dramatically decreases the on-site erection time by transporting the modules from the factory directly to site. The RCT-2000 reduces installation times to that of days rather than months. Considering today's stringent safety and industrial relation constraints, keeping on-site time down ensures simpler management of such issues. Project and capital expenditure budgets in industry are under greater scrutiny however its requirement for quality, strength and longevity has increased. The RCT-2000 characteristics exceed the capabilities of lesser designs by utilising pultruded structural components providing superior strength.

Beyond the construction of the commercial or industrial cooling plant lies the necessity to maintain equipment by the owner or the owner's sub-contractors. Regardless, the issues of on-going maintenance and the ease by which plant equipment can be maintained are paramount to the plant and its processes. Considering the fact that most cooling plants operate at full capacity, down-time or shutdowns create major issues. However, the solution is to install modular RCT-2000 cooling towers so that maintenance can be undertaken on-line with minimal disruption to cooling capacity by 'de-energising' individual RCT-2000 modules. Maintenance of its major mechanical components can be undertaken externally or easy access gained through large access panels allowing removal of; fill media, spray systems and drift eliminators.

Baltimore Aircoil has provided industry with sound engineering solutions achieving major overall cost savings without compromising quality.



Baltimore Aircoil



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SIEMENS SECURE BNE

The four global megatrends are changing the way we live – urbanisation, globalisation, climate change and demographic change. Siemens has focused its innovations in the eight solution areas of water, energy, environment, healthcare, productivity, mobility, safety and security, in order to meet the challenges of these global megatrends.

Security solutions are high on the agenda at Siemens with innovative technologies designed to protect Australia and New Zealand's people, assets and business continuity. Siemens recognises that security is one of today's highest priorities on a global, national, local and personal level. In particular, major infrastructure and entry points into our countries, such as airports, continuously require new technologies and innovations in order to maintain the highest possible level of security.

As cities grow, the need for secure and reliable infrastructure also increases. Security is a basic need that affects all areas of our lives and is instrumental to our quality of life. For companies to operate in a global economy, it is essential to safeguard against a wide range of threats. Siemens is one of the global leaders of security technology, with a strong portfolio of state-of-the-art integrated security solutions - as Brisbane Airport has recently implemented.

Brisbane Airport Redevelopment

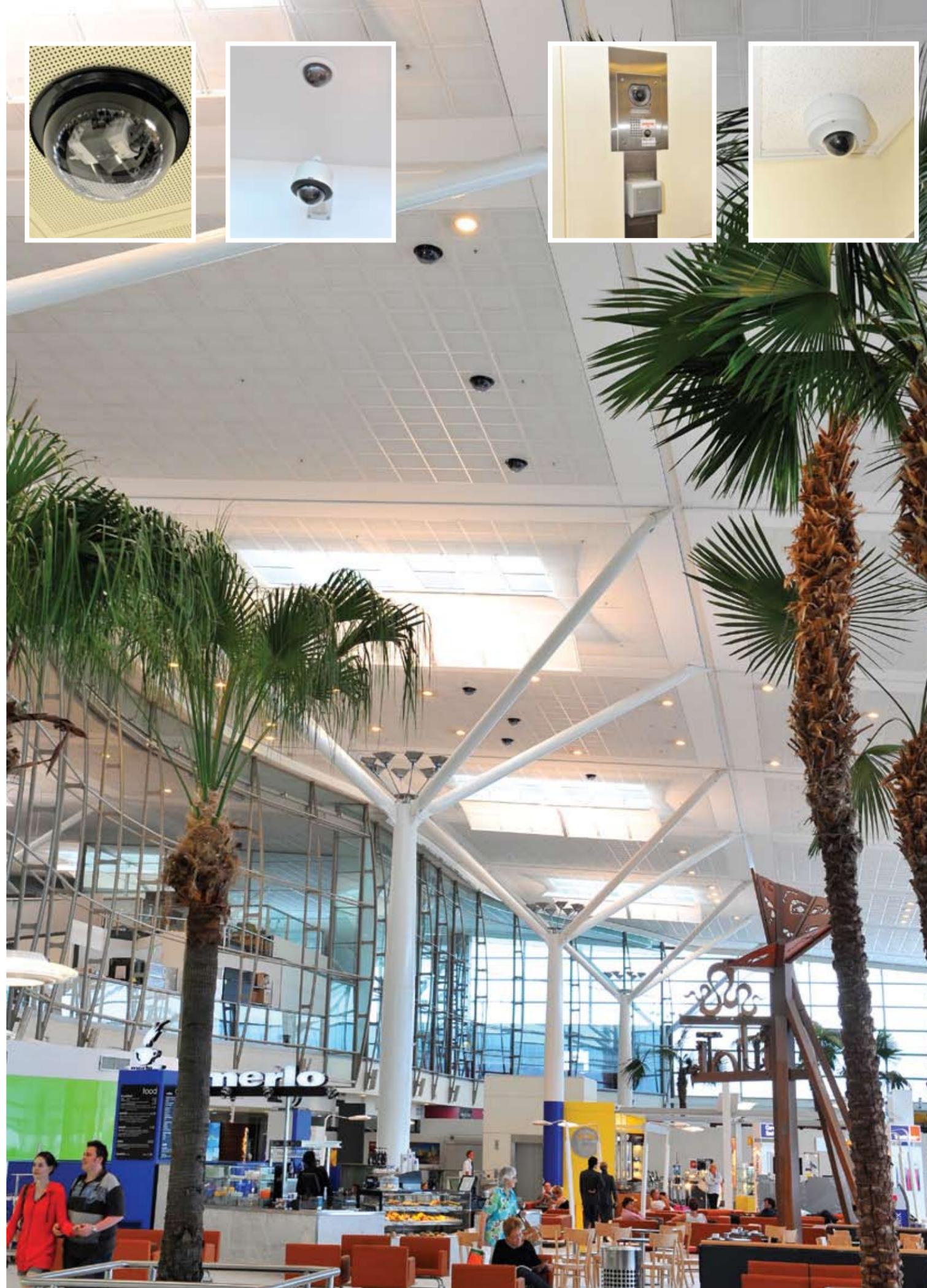
For the \$2.2 billion Brisbane Airport Redevelopment project, Siemens - the leader in electronic security systems - was contracted to provide a range of innovative solutions.

Siemens has been creating and applying innovative technology solutions in Australia and New Zealand for more than 135 years and with a research and development budget of \$9 billion, the company offers the world's best technology in electronic security systems such as access control, video surveillance and intrusion detection.

The company has extensive experience in developing customised solutions to meet the highly specialised needs of specific facilities such as the requirements of the Brisbane Airport Corporation, where Siemens implemented a fully customised security system entailing surveillance and access control system as part of the security upgrade.

Siemens installed integrated access control and Close Circuit Television (CCTV) within both the domestic and international terminals, crossing both landside and airside territories. The total system across airports includes over 1000 cameras and 300 access control points, currently and the number is growing along with the airport expansion.

All the previous analogue systems in the International Terminal building were migrated over to the new digital system to enable integration across the entire airport. This included fibre optic cabling throughout and the use of the latest technology in IP digital cameras.



Video Surveillance is an extremely valuable and economical means of improving security and the Siemens systems feature network recording systems, IP cameras, lenses, housing and mounts, monitors, pan and tilt telemetry, digital video software, and transmission equipment.

The Siemens access control products and systems such as the SiPass incorporate state-of-the-art features including high configurability, extremely high reliability, are easy to install and maintain and provide full control over your access control requirements.

Siemens integrated the new customised solution into the Brisbane Airport's security framework and developed an effective solution to overcome the main obstacle which was the migration from the analogue system to the new digital system.

This required Siemens to lay additional fibre optics throughout the existing section of the airport and install around 65 of the latest IP cameras within these sections to ensure that the entire airport was integrated.

As the Brisbane Airport redevelopment project continues, Siemens future works will include the installation of new perimeter surveillance.

For this part of the project, Siemens plan to install the revolutionary new automated wide-area surveillance solution, SiteIQ. This system will enable Brisbane Airport management to monitor the entire facility in real-time and respond to possible security breaches before they occur.

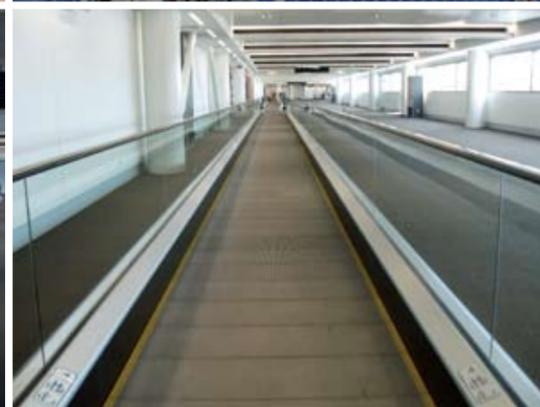
This system will work in tandem with new infrared and additional IP cameras which will be installed at the facility along with Thermal Imaging technology to ensure that the airport maintains the highest level of security and safety possible.

Remaining at the forefront of electronic security, anticipating potential threats and developing effective solutions, requires commitment, experience and innovation.

To ensure they remain at the top of the industry, Siemens has introduced the Innovation Forum, an initiative which engages, inspires and challenges participants to develop innovative solutions for tomorrow's challenges.

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INTELLIGENT TRANSPORTATION

Visitors to Brisbane International Airport will be welcomed by a variety of ThyssenKrupp Elevator Australia's vertical and horizontal transportation equipment, which provides superior freedom of motion throughout the Airport.

ThyssenKrupp's Queensland branch was contracted by Bovis Lend Lease and the Brisbane Airport Corporation to provide the equipment for the \$340 million Brisbane Airport International Expansion project, which is further recognition that ThyssenKrupp Elevator develops intelligent solutions in terms of mobility, technology, and aesthetics.

Once again, ThyssenKrupp's ability to offer a diverse range of products was the driving force behind securing the deal. The project involved the installation of 5 Passenger Boarding Bridges, in conjunction with its colleagues, 11 Orinoco Moving Walks which includes 5 x 39m Horizontal

Units at 1400 mm wide, 4 x Velino Escalators, 3 x 2000kg Evolution MRL Elevators and 3 x 1350kg Evolution MRL Elevators.

These new units are in addition to the recently completed Brisbane International Airport Multi-Level Car Park project which comprised 3 x 2000kg Evolution MRL Elevators.

Embedded in ThyssenKrupp products is the most economical operation, highest possible individuality, modern and pioneering design, maintenance-friendly construction and the fulfilment of strict safety standards.

The new ThyssenKrupp Velino escalators are far slimmer and more elegant in form than comparable models. For the Velino the ThyssenKrupp designers came up with a completely new escalator appearance with striking flowing lines, rounded features and ergonomic

styling. Even the lighting under the handrail and in the skirt contains a wealth of innovative engineering. With the many options for individualisation, each escalator becomes a fascinating eye-catcher, tailored precisely to the client's specific requirements.

An independent machine room is not required any more with the ThyssenKrupp machine room-less elevator solution. ThyssenKrupp type Evolution and TE-MRL feature maintenance-friendly, gearless high-performance drive with minimum space requirements; ultra-smooth and comfortable ride with no jerking; energy saving and oil-free machine protecting our environment as well as long life due to use of high-quality materials and a small number of wearing parts.

Also installed at Brisbane International Airport is the ThyssenKrupp Orinoco, an extremely versatile conveyor which provides a comfortable and practical means of overcoming distances that would otherwise have to be walked.

With an excellent range of products and the ability to provide varied services to the Brisbane International Airport Terminal Expansion, ThyssenKrupp Elevator Australia's Queensland branch has been awarded the vertical and horizontal contract for the Cairns Airport Domestic Terminal Redevelopment, which further advances the company's position in the thriving North Queensland market.

The Cairns redevelopment project involves 5 x 630kg Evolution MRL Elevators, 1 x 1250kg Evolution MRL Elevator, 1 x 2000kg Evolution MRL Elevator and 2 x Velino Escalators. Again, the varied range of products shows the ability of ThyssenKrupp Elevator Australia to adapt to the ever changing needs of the construction industry.

The ThyssenKrupp New Installation Project Team secured these Airport projects, worth a total of approximately \$10 million, with exceptional documentation and working closely with all parties to ensure they were involved and fully informed throughout the process.

ThyssenKrupp Elevator Australia has built strong relationships throughout the industry and these projects further strengthen the Queensland's team position as a developing market leader in that state.

As well as new installation products, ThyssenKrupp Elevator has a large line of modernisation products designed to suit any requirements a building may have.

ThyssenKrupp Elevator is one of the world's leading elevator companies with a wealth of technology to draw on from factories located around the globe and sales of approximately \$7.66 billion and almost 40,000 employees at over 800 locations.

ThyssenKrupp Elevator Australia has offices located in Sydney, Melbourne, Brisbane, Canberra, Perth, Adelaide, Darwin, Hobart, Auckland and Wellington.

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PAINTING FOR PUBLIC PLACES

AF Sarri painters has 26 years experience as painting and decorating contractors in the new construction and commercial market. The company specialises in painted finishes and texture coatings, specialist finishes for the construction industry, public art projects and sculpture refurbishment.

AF Sarri employs over 70 full time qualified painters and works on over \$8 million worth of projects every year.

A full range of services is available including:

- Painting to major construction projects
- Texture and decorative coatings
- Spray painting
- Painting new work
- Repainting
- Specialist coatings
- Wall papering and vinyl wall coverings
- High pressure water blasting
- Decorative finishes

Manager, Frank Sarri said the company delivers its product to the highest standards of expertise and safety.

"The nature of our work necessitates particular emphasis on capability, product delivery, service and compliance," he said.

"This includes workplace health and safety and environmental protection. We achieve this by using high quality materials and equipment which are used by fully qualified applicators. And the company strives to improve and facilitate consultation between our clients, employers and employees for their continued partnership," he said.

Recent major projects include Brisbane's Millennium Arts GOMA & State Library building, M on Mary Apartments and the Iceworks Apartments, the SW1 Southbank Office buildings precinct and Springfield Tower.

AF Sarri was the major painting contractor on Brisbane's new airport terminal project, using Taubman's paints to Bovis Lend Lease's specifications.

"The main challenges were the large high void atrium and travelator areas," Frank Sarri said. "Much of the work had to be carried out in high density public areas and high security areas," he said. "All our staff were required to be inducted and obtain security clearance to be authorized to work in high security specific areas."

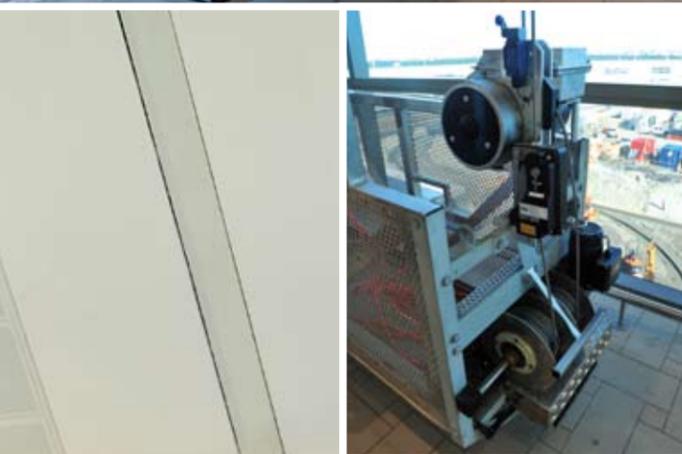
AF Sarri's staff comprises a dedicated, loyal team. "Unlike many of our competitors, AF Sarri employs its own workforce, as opposed to using sub-contractors," Frank Sarri said. "This means that all team members have a genuine interest in the success and growth of the company."

A F Sarri Pty Ltd was established in 1982, to continue the family tradition which originated in 1951, and earned a reputation for providing high quality professional work.

"A F Sarri has been providing its services to the satisfaction of major construction companies, large commercial organizations and government departments since its formation," Frank Sarri said. "We have a commitment to the painting industry and are a longstanding and active member of the Master Painters, Decorators Association of Queensland."

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CRADLE CONTROL

Building Maintenance Units Australia (formerly Cradle Runways Aust. Pty. Ltd.) was established in 1966 and with a current staff of 11, has developed expertise in the field of high technology mechanical hoist equipment.

BMUAUST specialises in the design, manufacture, installation and servicing of building maintenance equipment for high rise buildings and was contracted to supply and install the internal maintenance cradle inside Brisbane Airport's terminal complex building.

The maintenance cradle is used to provide easy access for personnel to reach the internal glazed walls for cleaning and maintenance.

BMUAUST supplied one cradle in 1995 when the new International Terminal was built. This unit was suspended from an I Beam monorail fixed to the ceiling and traversed via a custom built support trolley.

With the decision to expand Brisbane Airport, BMUAUST were asked to supply an extra four maintenance cradles with motorised traversable support trolleys.

Unlike the original hand-pull traverse maintenance cradle installed in 1995, the new extension required a motorised traverse.

This feature was achieved by using a 24 volt DC to 240 volt AC power supply in the cradles thus eliminating the need for a continuous external power supply while traversing.

The longest travel distance is over 100 metres and follows the profile of the ceiling which has an incline and decline of five degrees. Hence the monorail trolleys operate on both up and downhill slope.

The five special maintenance cradles are designed to carry two men plus materials and are fabricated out of aluminium sections. The overall cradle length is 2800mm and use Skyclimber brand "compact" model 240 volt electric hoist winches. The cradle is also fitted with SKYLOCK overspeed fall arrest devices for the secondary safety ropes.

One of the requirements of the project was that a pair of cradles remain permanently parked at ceiling height when not in use, creating access problems. BMUAUST solved these problems by making the hoist winches radio controlled. The cradle (unmanned only) can be controlled by remote control from the ground to raise or lower it as required to its ceiling park location.

Overall the complete cradles, monorail trolleys and monorails work well and service their intended design purpose and BMUAUST is very proud to have provided this installation for the Airport Terminal Expansion.

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TOTAL ECLIPSE

Hawker Siddeley Switchgear manufactures their own range of medium voltage switchgears. The company also installs, services, refurbishes and retrofits current and heritage products.

Established in 1964, the company has 40 staff and specialises in the manufacture and supply of MV switchgears to electrical lines companies, primarily in the industrial and commercial sectors.

Hawker Siddeley's roots can be traced back to 1888 when Charles Francis Brush established the Brush Electrical Engineering company in Loughborough, England and to South Wales Switchgear, established 1941 in Treforest, South Wales.

Hawker Siddeley Switchgear Australia (HSSA) has been operating in Australia since 1964 and has developed extensive experience in the field of Medium Voltage (3.3KV to 38KV) switchgear.

Hawker Siddeley Switchgear supplied and installed a total of 36 VCB panels to the Brisbane Airport International Terminal from its range of magnetic-actuated maintenance-free Eclipse Switchgear. These were for three switchboards of 11kV & 3.3kV voltages for the existing terminal substation and for two new substations at the new northern end of the terminal. After decades of supplying switchgears to BAC, this project represented the first Eclipse switchgear installation for the airport.

The Eclipse is a practical and cost-effective choice for today's substations as more people realise the high total lifetime cost of operating traditional switchgears, and the dangers posed by regular service and maintenance. With the Eclipse's maintenance-free feature and small footprint, incorporating this switchgear into substation design represents significant cost savings and minimises danger.

Hawker Siddeley Switchgear has supplied thousands of switchgears and panels to customers for applications as diverse as power stations, mines, utilities, hospitals, private industry, airports and shopping centres. The company is constantly updating and improving its products through advances in both quality and design.

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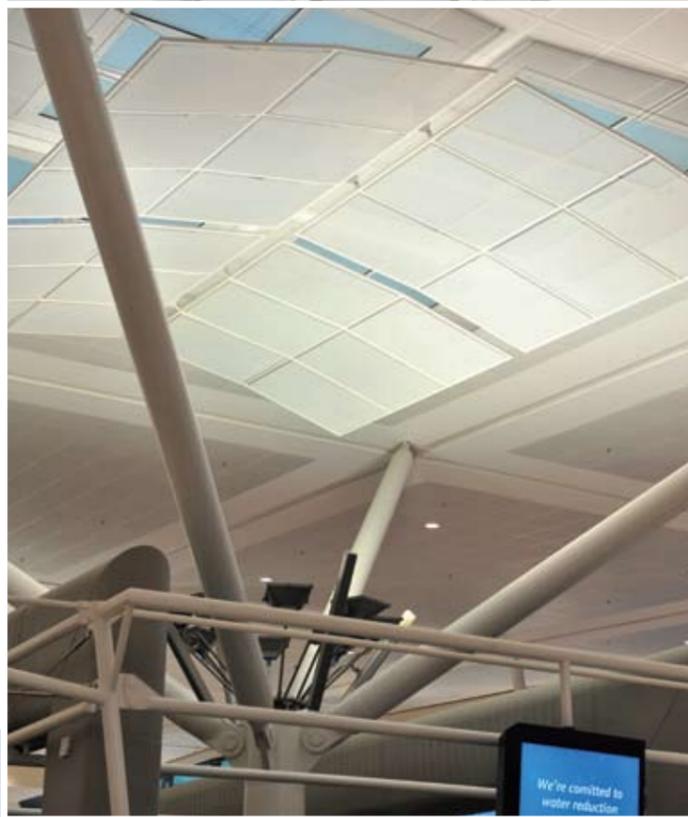
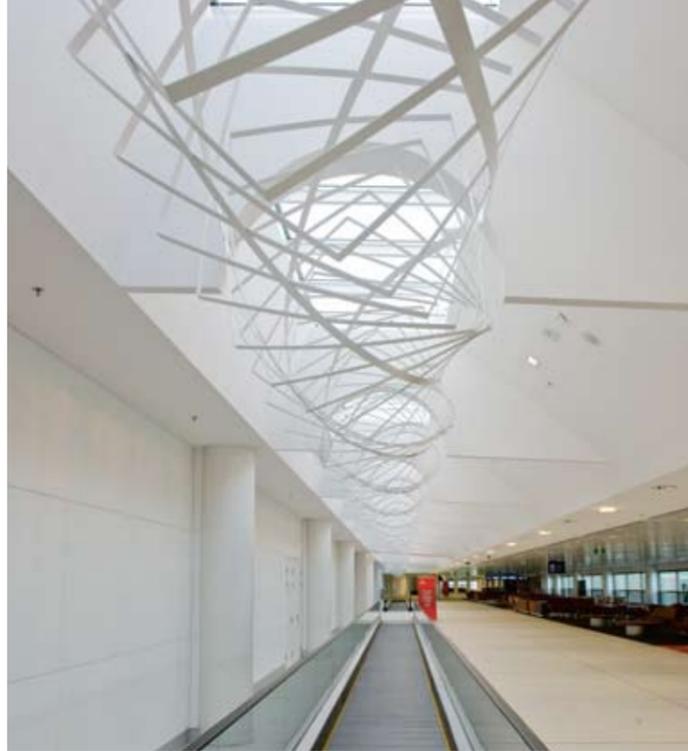
LIGHT YEARS AHEAD

As the lighting design consultant on the first stage of the International Terminal, completed in 1995, LDP was pleased to return to this project.

The principal lighting design objective has been to maintain continuity with the established and successful style of lighting of the original check-in and departures hall, thereby creating a seamless visual transition from the existing areas to the new extension. Additionally, the current project has afforded good opportunities to gain value from the improvements in lighting technology and energy efficiency which occurred in the years that separate the first and second stages of development.

The departures hall lighting design enables a fusion of natural and artificial light, filtered and reflected through a purpose designed, roof level, perforated metal canopy system, supported by the structural 'trees' which also support the main roof. The overall result is a pleasing distribution of soft natural light during daylight hours and, at night, an indirect reflection of artificial light into the large check-in hall and the adjacent, lofty, departures hall. The overall design objective has been to complement the architectural statement, whilst providing a high degree of visual comfort and the necessary levels of light for the mixture of activity which takes place in a busy air terminal. A sophisticated control system detects the reduction in daylight levels and progressively introduces the necessary levels of artificial lighting.

LDP is a leading international architectural lighting design consultancy based in Sydney, Auckland, Singapore and Shanghai. Other airport work includes all airside areas of the recently completed Terminal 3 at Changi Airport, Singapore; Terminal 2 at Sydney Airport and Norway's national and international airport at Gardermoen.



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