

FUTURE-MAKING AT NATHAN AND THE GOLD COAST

The staff and students at the \$150 million Griffith Health Centre and the \$40 million Sir Samuel Griffith Centre are well-placed to continue to create the research programs and tested outcomes which actively solve today's problems, and to develop and demonstrate new solutions for the future.

At Griffith University, leading-edge ideas have been given built form with the opening of two outstanding new buildings. At the Gold Coast Campus, the \$150 million Griffith Health Centre (G40 Building), which is the University's single largest investment in a single building in its 40-year history, and at the Nathan Campus in Brisbane, the spectacular \$40 million Sir Samuel Griffith Centre, Australia's first solar-powered, off-the grid teaching centre.

Constructed by Laing O'Rourke, the new 10-storey Griffith Health Centre forms a key part of the health hub being developed around the Gold Coast University Hospital, and is an important facility in terms of establishing the precinct's dedicated focus on study, research and medical employment.

All Griffith University's Health programs on the Gold Coast will be brought together in the new Health Centre, including the schools of medicine, psychology, dentistry and oral health, as well as multi-

disciplinary programs such as anatomy, social work, nutrition and dietetics. Hands-on learning opportunities for students will be a focus, with the Centre delivering a range of community health services like physiotherapy, audiology and oral and dental care, complementing and extending the services on offer at the GCUH.

Medical research has also been prioritised, with facilities for Griffith Health Institute's clinical trials program incorporated into the Centre, which will provide an appropriate and 'real-world' backdrop for the activities of researchers. The Centre was officially opened on Friday 19 July 2013, by Australia's Governor General, Her Excellency the Honourable Quentin Bryce AC CVO.

Sustainability was a clear priority for the design and construction team. The sustainability consultant recommended a range of measures, including comprehensive vegetation and fauna management plans and a site specific Environmental Management Plan developed by the builder and the design and construction managers.

In terms of sustainable materials and design, The Griffith Health Centre features recycled timber, recycled steel, shading on the double-glazed windows, low-energy lighting, low-flow taps and water devices, natural gas heating and an irrigation-free landscaping plan based on native and endemic drought-tolerant plants. All materials selected were low VOC, with E-zero board, carpets, paints and furniture used to ensure the best possible indoor air quality, and all outside air is being pre-conditioned to control and limit mould growth.

At the Nathan Campus, the Sir Samuel Griffith Centre is the literal embodiment of the principle of sustainability, an especially appropriate one given Griffith University was the first in Australia to offer a Bachelor of Environmental Science.

This Six Star Green Star building is Australia's first zero-carbon University building, and is powered entirely by renewable energy in the form of solar panels, integrated photovoltaic cells, and a breakthrough hydrogen-metal hydride storage technologies system which was developed partly by Griffith University Professor Evan Gray, leader of the principal node of the

National Hydrogen Materials Reference Facility (NHMRF). Based at Griffith, this is a state-of-the-art reference laboratory that focuses on hydrogen storage materials in order to resolve issues around the storage and distribution of renewable power.

Designed by Cox Rayner Architects and built by Watpac, the Sir Samuel Griffith Centre's interior is illuminated extensively by natural light and features extensive ventilation. The architecture allowed for materials use to be minimised, and has resulted in a building where the activities within are partly transparent to the world without.

Part of the thinking behind the Centre was developing a model which showcases the suitability of this off-the-grid power system for use in isolated buildings in remote areas including schools and other critical community facilities.

Efficiency of all systems was made a priority by the design team, which included a substantial powerhouse of engineering expertise both from Australia and abroad to resolve the multiple electrical, mechanical, structural and sustainability engineering challenges.

A digital electronic energy management system was developed and installed, which ensures the solar and hydride systems deliver power smoothly and in a manner which efficiently meshes with teaching and research activities.

The mechanical system uses excess energy generated during the day by the 1124 solar panels to chill water overnight for the main air-conditioning system to use the next day. A second air-conditioning system delivers precise levels on temperature and airflow to each individual workstation and desk, making for a highly-energy efficient solution.

Water efficiency has also been prioritised, and rainwater collected from the roof will be used for toilet flushing and landscape irrigation.

Along with the new Health Centre, the Sir Samuel Griffith Centre demonstrates the University's deep commitment to advancing the wellbeing of the community, both on a personal level, and on the planetary one.

With these outstanding facilities, their staff and students are well-placed to continue to create the research programs and tested outcomes which actively solve today's problems, and to develop and demonstrate new solutions for the future.

For more information contact Griffith Uni, website www.griffith.edu.au



SWITCHED-ON SKILLS WITH THE POWER TO SOLVE OUR CUSTOMERS CHALLENGES

Managing complexity and risk goes with the territory for Electrical Reticulation Design Services Pty Ltd (ERDS) when High Voltage Power installations are involved. These skills were invaluable for Griffith University, which had an expansion timeline to service the university's rapid growth and increased demand for facilities. Their Southport Campus expansion needed to provide teaching facilities and a new health centre quickly, which required an urgent and innovative way of modifying the standard facilitation of design and construct planning.

ERDS were engaged to resolve this unique challenge. ERDS designed the Electrical Distribution Substation enclosure and HV cable / conduit layouts for the new facilities. The overall plan included temporary and finalised civil design parameters which catered for the numerous number of construction activities on site.

The construction schedule required that the substation enclosure had to be designed, built and energised well before the completion of the main building works and associated bulk earth works for the surrounding landscape area. Therefore, ERDS produced separate designs for both the temporary and permanent cable routes throughout the construction phase, so as not to conflict with work crews, concrete batching plant, cranes and other services.

Of the final substation and cable/conduit design, only the cable pit at the entry to the substation enclosure was built initially, and a temporary conduit system designed which traversed the site along a route which ERDS determined would not impact the other works. ERDS worked closely with the electrical contractor (CLM) to ensure constructability, especially given the route involved changes of grade of up to three metres at various points. The resulting design was installed within six weeks, with Energex using the conduit system to commission the substation. This enabled building works to be completed months before final earthworks.

The design of the substation required ERDS to work closely with all the other consultants and Energex to get an acceptable outcome. Because the substation required the installation of dry type transformers, a number of challenges had to be addressed including equipment, personnel and cable access to the enclosure, ventilation, and earthing of the ultimate installation. The substation enclosure was built to comply with the requirements of Energex Substation Standards, AS2067 and AS3000.

The permanent conduit system has been designed to include a bank of nine conduits and a series of cable pulling pits to suit the ultimate arrangement. This delivers a degree of future-proofing, by allowing for extension of the conduit system to service future installations if required.

ERDS Senior Planning Officer David Zemek and Senior Design Officer Charlene Margetts worked to ensure the successful negotiation, design, approval and subsequent construction of the project's HV electrical infrastructure package. ERDS personnel worked closely with Energex, Laing O'Rourke, Fredon (building electrical contractor) and CLM (a rated electrical construction service provider) to ensure all key stakeholders needs were addressed, and programming and constructability issues successfully resolved.

This project fell under the auspices of the Energex Large Customer Connection Policy as the supply to the site was greater than 1MW. This meant Griffith University could choose whether to procure the design and construct of the supply from the Network Service Provider (Energex), or from an External Service Provider. In this case, the University chose the NSP, however ERDS were engaged to design the staged civil works which would enable Energex to make supply available.

ERDS has been servicing the private subdivision and construction industry at large, electricity supply industry, regional councils and transport authorities in Queensland and New South Wales since 1997. The company's team of designers and engineers also provides lighting designs for public space amenity lighting, road and pedestrian lighting designs and sports fields; and designs for traffic signals and Intelligent Transport Systems.

ERDS delivers hundreds of projects each year. ERDS capabilities include designing electrical distribution networks for between 240 and 33,000 volts; design for large customer connections of loads over 1MVA; designs for residential, rural residential, commercial and industrial subdivisions; and designs for alternative energies including solar, gas and wind. One recent alternative energy project ERDS has just completed is the design of the electrical connection assets for Landfill Gas Generation at Willawong in Brisbane.

The company's team of electrical and civil engineers also provides lighting designs for public space amenity lighting, road and pedestrian lighting designs and sports fields; and designs for traffic signals and Intelligent Transport Systems.

"ERDS has almost 200 years of design experience in the Electricity Supply Industry and over 100 years in design of Public Lighting and Traffic Signals. Our technical services are considered as industry leaders with recognition as "A" Rated consultants on a wide variety of services for supply authorities in Queensland and New South Wales," said ERDS Director, Merv Roseler.

"ERDS's recent reappointment to localbuy procurement contract for Engineering Consultancy Services will ensure that we will continue our long-term relationships with many Queensland Councils as a Preferred Service Provider of engineering consultancy services, through their panel memberships."

Due to their diverse skills and capabilities, ERDS has developed a solid client base including State Electrical Supply Authorities in NSW and Queensland; Local Councils; State Government departments; road authorities; construction companies; property developers; engineering, architecture, and urban development consultancies; the mining sector; and embedded generation and renewable energy projects.

For more information contact Electrical Reticulation Design Services Pty Ltd (ERDS), Unit 7, 505 Lytton Road Morningside QLD 4170, PO box 578 Morningside 4170, phone 07 3899 6299, fax 07 3899 4299, website: www.erds.com.au



ENLIGHTENED ENGINEERING ILLUMINATES BRIGHT MINDS

As a University which nurtures future genius, it's logical Griffith University uses innovative products like the Light Beams in the new G40 building's lecture theatres. Designed, manufactured and installed by Lin-Eng in association with Mike Arnott, these clever electronically-controlled fixtures do away with the need to erect scaffolding every time the lights require maintenance or inspection.

The Light Beams are made of a specially designed aluminium extrusion. This is suspended by stainless steel cables which attach to a diversion assembly and back to a hoist machine located on the gantry at the front of the theatres and above the false ceiling. This allows individual light beams to be lowered easily via the operating panel, eradicating at-heights maintenance work.

In the large lecture theatre, 11 light beams were installed, comprising 5 traverse beams ranging from 12m to 22m long, which fit into recesses in the ceiling and 6 beams ranging from 5 to 10m long, located down the side walls and concealed in pelmets. A walkway down the centre of the theatre above the ceiling gives maintenance access to the hoist assemblies. In the small theatre, 3 light beams 15.5m long and one at the front 9m long were installed.

"The side wall lighting beams in the large theatre created a challenge with long horizontal distances for hoist and power supply cables, due to the fact all the drive machines and power cable supply reels had to be located on the gantry level at the front of the theatre above the false ceiling," said Mike Arnott.

"In addition, two side wall beams had to follow the double contour of the ceiling profile. We have designed and installed similar equipment in four other lecture theatres on the campus – G26, G30, G39 and G52. Each project is specifically designed to suit the architectural and client requirements, with discussions as the concept design stage to ensure coordination with architectural and structural elements."

Lin-Eng is an experienced engineering and fabrication company with a wide range of specific expertise including custom fabrication projects,

specialist hoisting equipment, hydraulic power units, manufacture of parts for washing machines, and supply and installation of cooling towers.

With their combination of substantial trade skills, and smart design and planning, Lin-Eng ensure clients like Griffith University can rely on timely manufacture of engineer-certified products, and an installation process which efficiently meets program milestones and delivers an A-Grade result.

For more information contact Lin-Eng, Unit 4/37 Blanck Street Ormeau QLD 4208, phone 07 5540 7126, fax 07 5540 7103, email: expoell@bigpond.net.au



ANOTHER MILESTONE JOB FOR HVAC LEADERS

Triple M Mechanical Services have extensive experience in the health sector, where their integrated design, construct and install capabilities enable them to maintain excellent quality control. This is crucial for spaces dedicated to health, like the new Griffith Health Centre (G-40) at Griffith University.

The \$150 million health centre is the largest investment in a single building the university has made, and has been designed to achieve optimum sustainability. Mechanical services are a major component of any building's energy use, so the systems Triple 'M' supplied and installed needed to be efficient, while also delivering high quality air and ensuring a comfortable indoor climate.

Triple M supplied and installed 370 Sinko Exposed Fan Coil Units (FCUs) as part of the G-40s mechanical services. These are a low-static chilled/heating water FCU, and suitable for the variety of spaces in the building, which include clinical spaces, lecture theatres, offices, and research laboratories. Each space has individually-variable HVAC depending on use, making the system as a whole highly energy-efficient.

Previous major health sector projects Triple M has completed include design and construct installations at Liverpool Hospital, Macquarie

University Private Hospital, Blacktown Hospital, Prince of Wales Hospital, Randwick Private Hospital, and the Douglas Building at Royal North Shore Hospital. They have also undertaken extensive work across the research, Close Control and pharmaceutical sectors, including GlaxoSmithKline, the CSIRO Research facility, the Garvan Institute, AstraZeneca, Merck Sharp and Dohme, Pharmaxis, Baxter Health Care and Pfizer.

What gives Triple M an edge in the highly competitive HVAC industry is their broad range of expertise and capabilities, including in-house design and engineering, ductwork manufacturing, and installation facilities using directly employed labour for piping and sheetmetal.

With offices in New South Wales, Queensland and Western Australia, Triple M have the capacity to provide the full lifecycle suite of services to projects, from full design and construct packages through to service and maintenance.

For more information contact Triple M Mechanical Services, 56 Overlord Place Acacia Ridge QLD 4110, phone 07 3272 1177, fax 07 3272 2199, website www.triple-m.com.au



ONE-STOP SHOP FOR JOINERY / CARPENTRY & PROJECT MANAGEMENT

INTELLIGENT SOLUTIONS FOR MOVING PEOPLE

A Tertiary Institution like Griffith University exists to push the envelope in terms of design and engineering, and so does Innovative Lift Consulting (ILC, formerly known as International Lift Consultants). As the preferred Vertical Transportation Engineering Service Providers for all major Queensland Universities, they were responsible for the design, engineering, tendering, project management and certification of the six new lifts and two new escalators installed in the new Griffith University Health Centre.

The design involved complex traffic algorithms, to ensure the lifts would meet the movement requirements of clinic users, staff and students to clinical spaces, classrooms, lectures, large auditoria, theatres and laboratories. The lifts ILC designed for the project include a goods lift with a capacity of 3000kg/40 persons, a 2000kg/26 person internal passenger/goods lift, a dedicated public/disabled Main Entry lift with 26-person capacity, and a Group of three centrally located 26-person capacity lifts providing the Primary Circulation for the public, staff and students. All were manufactured to ILC's specifications by International Firm Kone Elevators (Kone), and incorporate Kone's highly energy efficient, MX Gearless Machine Room-less Traction Drives.

"All the equipment is the latest technology, highly energy efficient and with low power consumption, delivering the optimum in 'green' footprints" explained ILC Principal, Bryan Fulcher.

"Other features of these lifts include smooth and quiet riding characteristics, accurate floor levelling, efficient linear door operation, invisible 3D light ray door protection systems, LED lighting including

LED illuminated lift buttons, indicators and screens. All 6 Lifts have full DDA compliance, full stretcher capacity, hands-free automatic connecting emergency lift car telephones, and UPS battery emergency passenger release systems in event of a power failure."

ILC also designed, specified and project managed the manufacture and installation of two semi-weather exposed escalators between levels three and four, which each have a maximum capacity of 9000 persons an hour, moving them at .5m/second. These 30 degree incline escalators feature 1000mm step width, are automatic reversible and have mullionless clear glass balustrades.

ILC Principal, Bryan Fulcher, has more than 34 years of Vertical Transportation Engineering Experience, and holds qualifications including mechanical engineering, business management, data processing, Quality Assurance auditing, and Project Management.

Under his direction, ILC have completed a vast number of projects for Queensland Universities including Griffith, QUT, USQ, Southern Cross, Bond, Sunshine Coast and UQ, and also a wide range of commercial projects across Australia and internationally. Their expertise is highly sought-after by clients seeking engineered vertical transportation systems which will deliver optimum standards of operational excellence, energy-efficiency, and end-user safety.

For more information contact Innovative Lift Consulting Pty Ltd, PO Box 100 Sanctuary Cove QLD 4212, phone + 61 417784245, email: bfulcher@ilcpl.com.au

Having a combination of hands-on trade skills, design expertise and state-of-the-art equipment gives Australian Joinery Products the ability to deliver multifaceted excellence in joinery and carpentry both onsite and offsite. For Griffith University's G40 Health and Teaching Facility, their scope included the design, manufacture and install of a diverse range of joinery items, and onsite carpentry works in both the large and small auditoriums.

The remit of off-site manufactured items included kitchen benches and cupboards; stainless steel sinks and benches; serving counters and benches; laminated workstations including benches; credenzas; pigeon holes; vanity benches and cupboards; reception counters; white boards and pin boards. Australian Joinery Products also manufactured and supplied all the shelving and storage including fixed wall and strip shelving, chemical storage cupboards, lockable storage cupboards; in addition to all the FF&E items and some special joinery items.

The on-site carpentry scope included all joinery installation, in addition to timber tiered seating framing involving approximately 5000lm LVL joists and bearers, timber tiered seating trusses, timber stairs, approximately 600m² of acoustic Tasmanian Oak timber and fabric backed wall linings, approximately 100m² of tongue and groove flooring and freestanding Tasmanian Oak timber batten screens.

"There was a large amount of design and construct elements to this project, utilising our very skilled and professional workforce," said Australian Joinery Products General Manager/ Director, Scott Euler. "A noteworthy feature was we were able to manufacture the acoustic timber fabric backed panels up to 6.4m off-site, and then hang them into position. This required very detailed workmanship, as no two panels were the same, with variations from

curved to raking." All the timber used on the project was FSC-certified, and low VOC adhesives were used throughout, in keeping with the client's high ESD standards for G40. In excess of 25 Australian Joinery Products employees worked on the project, including supervisors, cabinetmakers, carpenters, apprentices, machine operators and assemblers. Australian Joinery Products also subcontracted a team of sheet metal workers for manufacturing and installing the stainless steel laboratory grade benches and reagent shelving.

"Our successful completion of this project and others is testament to our good name," said Scott. "We also successfully completed a \$4 million contract for joinery works at the Gold Coast University Hospital for Lend Lease, and are currently completing joinery works at the Sunshine Coast University Private Hospital for John Holland, where our contract value to date is just over \$3 Million."

Australian Joinery Products have the capabilities to project manage and deliver a variety of works in a single program package. The company's workshop is equipped with the latest technology including beam saws, panel saws, CNC's and edgebanders, and there is a bona fide architectural drawing division. Australian Joinery Products ensures excellent results through a focus on systems, procedures and stringent quality control measures.

For more information contact Australian Joinery Products Pty Ltd, 41 Production Avenue – Molendinar QLD 4214, phone 07 5563 3183, Jim Parsell – Managing Director, Scott Euler – General Manager/ Director

