

1916–2009 NILSEN 93 YEARS

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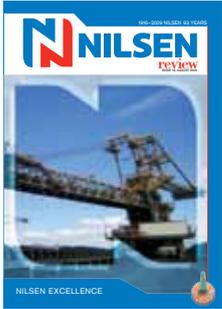


NILSEN EXCELLENCE



our review

In Review



Nilsen is doing its part to stimulate the economy. In this issue of the Nilsen Review, there are stories on major infrastructure projects.

- ❖ Western Australia continues to pull the Australian economy along, not only in Housing and Construction, but in mining iron ore **Page 4** and gold **Page 6**
- ❖ South Australia is also heavily involved in extractive industries including oil and gas and alumina production **Page 8**
- ❖ In the Northern Territory, Nilsen is working on a sophisticated helium plant **Page 10** as well as civic infrastructure projects.
- ❖ The Sugarloaf pipeline project will bring more water for Melbourne **Page 12**
- ❖ the new coal loading facilities at Abbot Point, close to Bowen in FNQ will expand coal exports by more than double the present tonnage passing through the port **Pages 14**
- ❖ Nilsen has been a trusted partner in various Defence projects, and has once again been involved in a major Defence Installation, namely new Army HQ facilities at Enoggera (full story on p 17), and a land-based Naval training facility in Williamstown **Pages 15**

Our website will always be a work in progress. Check it out at www.nilsen.com.au.



From the Managing Director



There are three very consistent themes in the world today; first, time passes more quickly than ever; second, the more we say we have entered a new paradigm of business the less likely that is so and last, the GFC that not one of us can go past in almost any part of our day.

At Nilsen we can do little to influence the first, except to ensure that we keep striving to update our systems and processes, and watch the critical timelines of our customers to ensure that we continue to deliver to the high standard we set ourselves. On the second, we need to continue to plan and run the business, not as if we have entered a new nirvana, but to keep focused on the long term sustainability of the business. To this end, no matter how tempting the distractions of so-called new business models, we kept focussing on the core values that are driving our

business today. This has helped us weather the changing fortunes across our business, by being diversified both geographically and in products, as you will see illustrated in the following pages.

The next 24 months remain a challenging outlook, but then since when hasn't the construction industry and its affiliates been challenging, regardless of the general business environment. It is this fact, which makes working across so many differing disciplines and opportunities with such a wide-range of customer and supplier bases, an exciting and rewarding challenge.

As always, we are very proud of our people, who have moved to new roles, undertaken training, worked on new initiatives and developed solutions for our customers. We aim to continue to develop our people and our systems to remain at the forefront of our industry.

We also are continuing to find new ways to deliver outcomes for our partners on some highly complex and very large projects by working together from the outset as part of the core team.

We look forward to working with your businesses over the next year on your short and long term opportunities and challenges.

As always, we value any feedback on this issue of the Nilsen Review.

Mark Nilsen
MANAGING DIRECTOR

Nilsen Networks

Nilsen Networks is a national Nilsen business unit that brings communications, lighting control and energy management technology to our contracting and service teams across the country. The Networks team also manages service opportunities to customers in every state and provides a national sales and process focus for our TEGG business. TEGG is a specialised maintenance service that guarantees the backbone of any power distribution network.

CISCO, Clipsal CBus, Clipsal VIEO (Nurse Call System) along with Current BPL and Smart Grid products are just some of the products supplied by Nilsen Networks. These products solutions allow us to provide very adaptable packages to upgrade retirement villages, nursing homes, schools and universities, and they are equally applicable for hospitals, shopping centres, office

buildings, public facilities and sporting complexes.

For buildings, venues or factories where running data cables is difficult or too costly or disruptive, our BPL products can transmit data over the power lines in most situations – an impressive solution.

Networks maintain a team of engineers and technicians who provide engineering, design and commissioning with all supplied products and help support the national service contracts business. This portion of the team offers a fully managed preventative maintenance and repair business service along with adds moves and changes to national customers. This includes full technical support in all electrical disciplines and a detailed admin and management plan for customers that include large shopping centres, commercial buildings, large sporting complexes, office buildings and industrial sites.

News from Western Australia

Nilsen (WA) adds another jewel to Claremont's Crown



Claremont some 9 kms to the west south-west of Perth's CBD is without a doubt deserving of a crown – it is, together with Swanbourne, a leafy town nestling by the banks of the Swan River. Nilsen (WA) has recently completed the electrical works for



a major development that will bring more business and visitors to Claremont.

The massive Claremont Quarter development, by joint venture partners Hawaiian and Brookfield Multiplex, consists of two stages totalling 30,000sqm of retail space plus upmarket residences.

A Coles supermarket, replacing the ageing outlet that has been there for decades and 65 luxurious apartments, anchors stage one of the retail precinct. Nilsen (WA) provided all the electrical services including the 11 kV feed-in.

Mens Sana in Corpore Sano



A healthy mind in a healthy body, so goes the ancient Latin dictum. Nilsen (WA) as sub-contractor to DORIC has completed the electrical works for the Curtin University of



Technology's Events Centre. The facility comprises of a large volumed sports hall with three multi-purpose courts, two gyms, a large multi-purpose aerobics studio, change room facilities, café/dining facilities, administration area and a link access way to the existing Dome Building. External works include beach volleyball courts, landscaping, maintenance store, compound, staff rooms and parking bays.

Nilsen (WA) carried out comprehensive electrical works including a high voltage substation, power and lighting, access and security, a complex A/V system and the installation of a motorised, retractable tiered seating system for some two thousand people.

In the lap of luxury

The Islands Luxury Apartment buildings are located in South Beach, and very close to Fremantle. The development comprises 100 exclusive residences including a mix of Apartments, Penthouses and Beach Houses. Apart from ocean views, and the ultra modcons that the discerning buyer would want, there is a cutting-edge lighting control for the apartments that has been designed by Nilsen Networks, based on the Clipsal C-Bus System.

When the Hecto-Pascals are low, the rooftops are likely to go

Iron Ore mining in the Hope Downs region is made more demanding by the frequency of cyclones. The Bureau of Meteorology stats indicate that the frequency of cyclones in the region has diminished somewhat but on the other hand, the incidence of centre pressures lower than 960 Hecto-Pascals has increased. That is the sort of challenge that Nilsen (WA) faced in designing and supplying completed, cyclone-proof portable switch rooms for the Hope Downs and Brockman-4 mine sites.

Apart from structural damage there is the potentially disastrous ingress of moisture during storms that can cause havoc with electrical insulation. The switch rooms supplied by Nilsen (WA) have incoming supply at 33 kV, and provide various voltages down to 440 volt, three-phase. Apart from switchboards, motor control centres with smart relays are also part of the scope of supply as well as all mechanical services necessary for the hostile environment encountered at the remote mine sites.

Nilsen into Education



Kwinana Senior High School has undergone a transition and as such, from 2006, has not only experienced a name change (to Gilmore College) but also the development of a year 7-9 middle school and a year 10-12 senior school that encompasses an integrated learning environment with a TAFE profile that meshes with the requirements of Murdoch University.

Nilsen (WA) provided all electrical services to some thirteen individual new buildings including a gymnasium, arts block, metal and wood workshops and an administration building. One particular challenge was the requirement to carry out site works with a minimum of disturbance to the Orelia Primary School, which shares the site with the Murdoch College.



Rockingham Hospital Redevelopment



The overall redevelopment will see the hospital increase its bed numbers to 229 by late 2009, with plans already in place to transform it into a 300-bed hospital by 2015.

Phase 1 and 2 were completed by early 2009. This phase includes a new two-storey building and the refurbishment of the existing hospital ward block, incorporating four new operating theatres; surgical; day surgical; obstetric, geriatric, evaluation and rehabilitation units; chemotherapy unit, ambulatory care unit; and new consulting suites.

Nilsen (WA) was involved in extensive electrical works including disconnection and removal of two 500-kVA transformers (with the hospital running off a back-up generator) and installation of two 1 MVA transformers, and reconnection of HV cabling. Phase 2 encompassed the electrical installation of two new wards, the operating theatres, a recovery ward, mortuary, consulting suites, etc. The project absorbed some 22000 man-hours.



Hollywood Private Hospital

Hollywood Private Hospital is completing its stage 2 redevelopment program. The Hospital was founded in 1942, and has since then developed a large range of medical specialities including orthopaedics, urology,

cardiology, psychiatry and oncology. In 2007, the ambitious redevelopment was started. The electrical portion fell to Nilsen (WA), and the scope is considerable, comprising of a HV ring main to service three levels of

the new Wards Building, an extensive Emergency Warning and Inter-communication System (EWIS), PA, fire detection, nurse call, audio and Master Antenna TV system. Completion of the project is expected in September.

There's gold in them thar hills — and Business for Nilsen

Wiluna is a goldfield having produced approximately 4 million ounces of gold during its history. It is located 1,000 kilometres northeast of Perth and comprises mining leases covering approximately 50 square kilometres. Wiluna has been undergoing a vigorous refurbishing operation involving extensive electrical work.

The scope is considerable, including the installation of a substation and 3.3 kV switchgear, 160 kilometres of HV, LV, control and instrumentation cabling as well fibre-optic links. But there's more; for example two new turnkey switch rooms complete with motor control centres and the installation of six transformer enclosures complete with earthing mats and HV cabling.

Then there's the sharp end — that is the gold recovery. Nilsen (WA) refurbished the electrical plant for the existing crusher, milling and Biox-CIP/CIL plant. In order to enable the economic recovery of the refractory gold resources at Wiluna, a Biox processing plant was constructed which involves oxidizing the sulphide particles locking up the gold using bacteria. The gold is then leached out via conventional cyanidation (CIP/CIL) techniques.



Training hits the mark in WA

Congratulations to all the Project Managers and Supervisors at Nilsen (WA) who have successfully completed Project Management and Frontline Management Training.

The programs, developed in consultation with managers and staff, were developed specifically to increase project and management skills. The training organisation, Aspire Performance Training, added valuable direction on the development of the training programs as well as providing facilitators who were knowledgeable, experienced and were able to link learning opportunities to real work situations.

The training workshops were customised towards the Nilsen 'way of doing business' which added relevancy and generated discussion on possible improvements. The participants commented that it was an excellent opportunity to develop core skills and knowledge, but more importantly, to apply those new skills to current projects.

The frontline management program was particularly challenging for the Supervisors who were asked to develop their own continuous improvement plans and deliver presentations to their senior management team.

The graduates of the program have all received qualifications, which are nationally recognised.

CONGRATULATIONS GO TO:

Diploma of Project Management

Kevin Taffurelli
Manual Serrao
Martyn Cottington
Chris Anderson
Luis Querios
Michael Close
Jason Brown

Certificate IV in Frontline Management

Troy Mennell
Sean Brindley
Glenn Mears
John Mortlock
Daniel Jackson
Dave Walker
Steve Forte
Chris Piotrowski
Clive Dutton
Graham Barrett
Sean Gee

News from South Australia

The answer is in the soil (resistivity, that is)

Adelaide public transportation is undergoing a big improvement step – the electrification of the main corridors to Noarlunga, Outer Harbor and Gawler. There are also going to be purchased 50 new electric train sets. The rolling stock equipment will operate off 25 kV AC, on partially re-sleepered track. The planned 5.5 kilometres electrified, dual

track Seaford Rail Extension will cater for a sizeable proportion of Adelaide's forecast population growth in the outer southern areas of the city and encourage a large number of people to use the public transport system.

Nilsen (SA) has been conducting soil resistivity testing in order that earthing mat design can take place. Soil resistivity

testing is a procedure requiring skill, and a careful approach to the task, which involves the use of three- and four-terminal techniques. Earthing mat design and location are critically important not only from a safety point of view but for the operation of track signalling equipment.

Transformer blows up - Nilsen stays cool



Perhaps that is not entirely true since Nilsen (SA) had to do the necessary re-installation of a new 2.0 MVA–11 kV/415 V transformer, installation of new 11 kV feed cable, and field protection devices for its customer, Adelaide Brighton Cement in Adelaide's hottest days last summer. However, staying cool professionally speaking is something Nilsen (SA) understands. They were on hand immediately after the paper-lead cable feeding a transformer broke down and caused a transformer fire.



Nilsen unplugs Clipsal at Bowden and connects Gepps Cross

The move, electrically speaking took some eight months – and it was a complicated move that went extremely smoothly thanks to meticulous logistical planning on the part of Nilsen (SA). The manufacturing and despatch sections were moved first, followed by the head office, which houses Clipsal, Schneider and its TAC operation. This major contracting job, which employed over thirty electricians at many of the transition stages, is part of Nilsen (SA)'s submission to NECA for an Excellence Award.



Black Tip offshore oil and gas project

The Blacktip gas project in the Joseph Bonaparte Gulf, is a joint venture between Woodside and ENI. A pipeline across the Top End will be able to supply billions of petajoules of energy for mining projects and other purposes including exports. Required was: Two 2000A, single sided, 415V Boards and a 690V, back to back almost sixteen metres long, and a 4000A Motor Control Centre.

Clever interpretation of the design specification at the initial enquiry stage, allowed the client to in fact re-evaluate initial requirements. The introduction of process isolators, essentially fault current limiters, into the design reduced the fault level down to 50kA from the specified 80kA for much of the board. The use of a plug and socket arrangement for the module control cabling on a demountable design allowed Nilsen's offer to stand out against its competition.



Compressor substation part of aluminium production

Alcoa Aluminium, located in Portland in South West Victoria, is capable of producing approximately 352,000 tonnes of aluminium a year. The production process involves passing a high electric current through the pot at low voltage via the anodes thus enabling alumina solutions to split into its components of aluminium and oxygen. But that is obviously only part of the story, there being many facets to aluminium smelting, but here's where Nilsen comes to the fore with its broad experience in major projects. Thus when it came to upgrading Alcoa's compressor facility, Nilsen was awarded a contract to supply a 3.3kV Switchboard, five 3.3kV self contained change-over switches, a 3.3kV bus duct to connect the main switchboard to the transformer and an LV 415V control panel.



Cleaning up at Gove



Alcan's Gove Mine in Nhulunby has mined 150 million tonnes of Bauxite since the inception of the mine. One of the environmentally harmful results of alumina extraction from the Bauxite is

an alkaline waste that was pumped into clay-lined ponds until the early nineties.

In recent years the solid waste has been treated in such a manner that it can more easily be rehabilitated. However wastewater treatment resulting from the solid waste is also important, with one of the latest projects, the SLN neutralization (stands for Super-

Natant-Liquor) project allowing the return of wastewater to sensitive marine environments. Essentially wastewater resulting from the solid waste treatment plant is neutralized in a labyrinth using

seawater before being returned to the nearby sea.

Nilsen (SA) is constructing the electrical portion of the SLN project encompassing a massive 6.6 kV slurry pump, associated seawater pumps, motor control centres, as well integration with existing control systems – a complicated task, and carried out in climatically stressful conditions including tropical cyclones during the wet season.



Nilsen makes secure connections at Telstra's Waymouth Street Exchange

Telephone links with the outside world will be secure from power failure as Telstra upgrades its main Adelaide exchange power systems in Waymouth Street. The generators along with the power distribution boards are being replaced by Nilsen Contracting with the boards being supplied by Nilsen Switchboards, demonstrating the value of having these two important operations under one roof.

There are three new main switchboards being installed to replace the old one which had undergone many upgrades over the years to maintain its integrity,

but following a design study by the consultant firm SKM it was found to be a weak link in Telstra's "continuity of supply". The systems upgrade includes generator distribution boards rated at 8000A and the two further boards rated at 4000A (with dual incomer auto transfer control) and their associated motor-generator sets.

Temporary generators had to be employed and works had to be directed around maintaining power to the site as the work was undertaken, no mean task when the scope of engineering involved is considered. All the existing

cabling (MIMS) had to be re-routed and extended from the basement to the first floor where the new boards were being sited. Due to the physical size and weight of the boards they had to be designed for splicing in order to fit them into the goods lift.

The boards and cabling had to be installed and operational in conjunction with the existing systems allowing communication of control and alarm signals and to minimize the risk of power failure to the main exchange and ancillary equipment.

Patrick and Nilsen team up in Brisbane's Container Terminal – again!

Nilsen Switchboards SA has been awarded another contract for Berth 10 covering the design, manufacture, testing and delivery of outdoor stainless steel distribution boards for the Port of Brisbane's Fisherman Island Terminal, operated by Patrick. Patrick's Berth 10 is an extension of the Brisbane New Container Terminal (featuring automated

straddle carrier operations – a world first) and is part of the area reclaimed by the Port of Brisbane for Berths 8 and 9. Nilsen Switchboards was also the preferred supplier for Berths 8 and 9, Substations A and B, and substation G on Berth 10.



Amcor Glass likes Nilsen's bottle when it comes to switchboards

Located near the Barossa Valley north of Adelaide, the Amcor Glass Packaging plant commenced production in May 2002. The plant incorporates two of the largest dedicated Glass manufacturing furnaces in the world and services the nearby wine industry of Australia and the more distant New Zealand market. Amcor Glass is currently producing approximately 1.01 million wine bottles a day, which is consistent with the plant's annual production capacity in excess of 400 million bottles.

Nilsen (SA) Switchboard division has been awarded the project for design, manufacture, works testing and delivery of the Main Switchboard and Essential Main Switchboard, for the Amcor Stage 3 Works.

The Switchboard is rated for a fault level of 75kA for 1 second with a 5000 Amp busbar system and 20 tiers of equipment with an overall length of 12.5 metres and will be

manufactured for front access and rear connection to Form 3B segregation.

The switchboard will comprise 4 x Transformer Incomers, 1 x Generator Incomer and a bus-tie each rated at 2500 Amp with remote control of the

power management via a Modbus network connecting to the site SCADA system. The switchboard also incorporates integral Power Factor Correction equipment for this section of the site.



Important projects in NT

Sophisticated Gas Plant requires sophisticated electrical installation

Nilsen (NT)'s Darwin Office is in the thick of installing the electrical machinery, control equipment and instrumentation for the first Helium plant in the southern hemisphere for BOC Gases. Helium is the first of the noble gases in the periodic table; has a large number of scientific, medical as well as commercial applications, including use in 'neon' signs, etc; and is chiefly extracted from natural gases. The main producer is the United States of America. So

this is an important first for Australia –and in particular for Darwin. BOC Gases derives its LNG from the nearby Conoco-Phillips Plant. The location of the Darwin plant is strategic as many of the markets are in South East Asia.

The installation job is multi-faceted, involving 22 kV, 3.3 kV and 415 volt switchboards and motor control centres manufactured by Adelaide, motor-variable speed drive combinations for the

various compressors with ratings to 450 kW, pneumatic and electrical/electronic instrumentation, limit switches and sensors, as well as PLC systems. The latter is a peer-to-peer arrangement of five PLCs connected via Ethernet. Nilsen (SA) is connecting the PLCs to remote I/O panels distributed throughout the plant, which in turn are part of a Profibus and Modbus industrial bus system.

Smoother Traffic Flow – and better illumination

The Tiger Brennan Widening Project involves construction of a new section of Tiger Brennan Drive from the existing T intersection at Berrimah Road to the Stuart Highway a length of approximately 7 km. The works provide for pavement, earthworks and drainage and includes a grade separated overpass at the intersection of Tiger Brennan Drive and Stuart Highway. But there's more! Not only is an extra carriageway being provided but also some thirty-eight lighting towers with high-pressure sodium lighting. Projects of this kind offer their own particular challenges in that the work has to be undertaken with a minimum of disruption to the flow of traffic.



Royal Darwin Oncology

In January of this year the foundations were laid for the building of an oncology wing for the Royal Darwin Hospital. The new wing will treat and take care of four

hundred patients a year. Nilsen has been chosen to install not only the electrical power and lighting but also virtually all the other requirements including MATV

for patient diversion and entertainment, nurse call systems, as well as security.

No crosstalk in The House

Just think of it! One hundred and eighty kilometres of Cat 7 data cabling in NT's Parliament. Nilsen has completed this massive upgrade recently – and yes, there might be some cross members but the data cable laid expertly by contracting virtually eliminates the chance of crosstalk – individually shielded twisted pairs, housed in a shielded outer sheath. But that is not all as there were three thousand data outlets to be installed as well as new power and light cabling spread over five floors. "A job to be proud of" says Nilsen's Manager, Danny Jansen.

Making light of communication

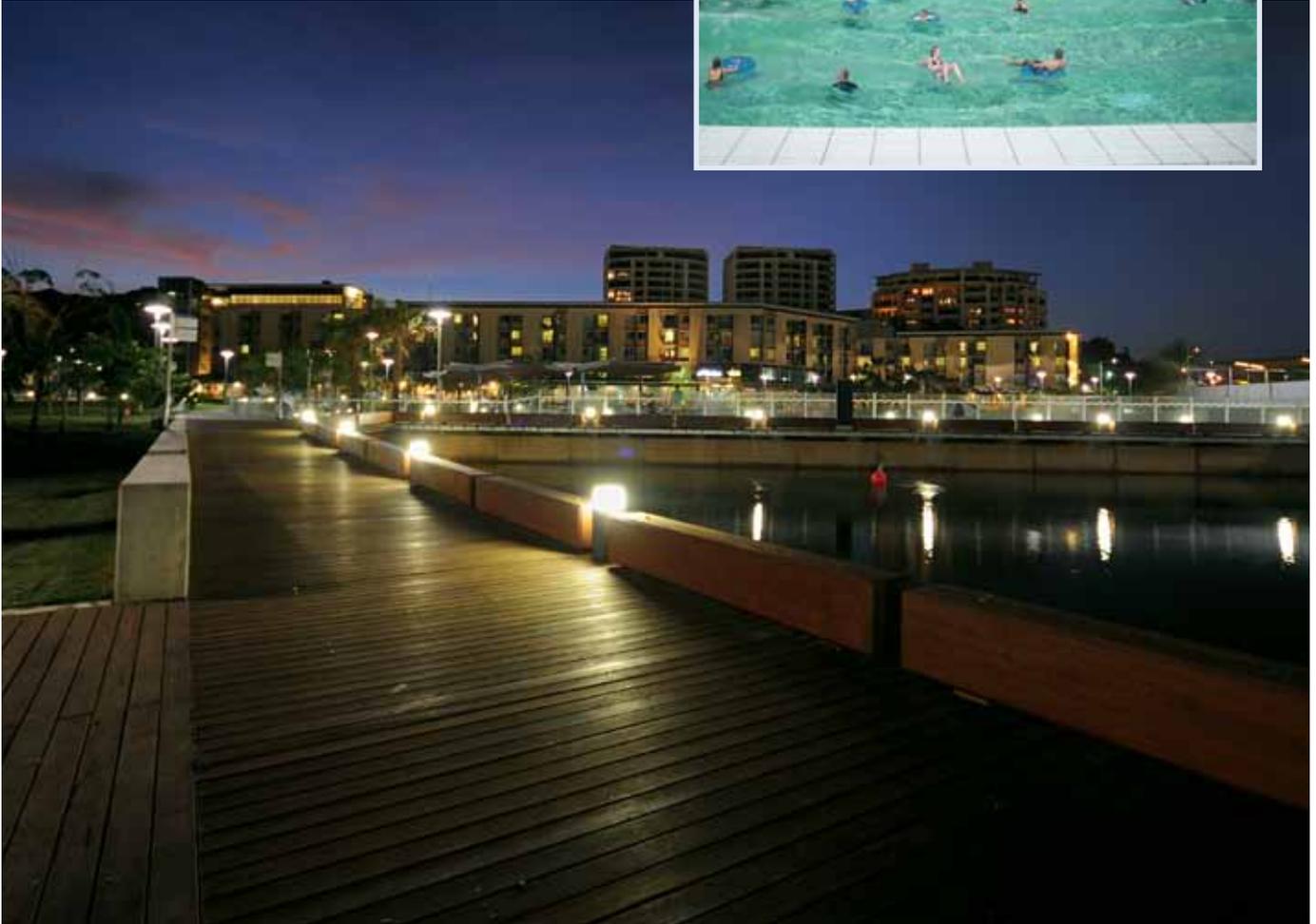
Darwin Power and Water, or PAWA as it usually referred to, has some seventy kilometres of fibre optical cable. Nilsen (NT) takes care of the regular

maintenance of the fibre network. It is a highly specialised activity, particularly in the area of cable terminations and splicing. But these electricians are a

resourceful team, and are relied on by PAWA to keep the communications channels working smoothly – and they have done so for the last decade!

Making Waves

Nilsen is hard at work making waves – literally – at the Darwin Waterfront. The Darwin Cove Consortium was formed in 2008 with the aim of transforming this important tourist precinct. Nilsen's involvement included running in 11 kV cabling for the wave-pool motors and also providing power and lighting wiring for bollards and lighting towers. The associated parklands are now brought out to their full beauty even when the tropical night falls – and during the day? Well, Nilsen is making waves!



Making more than a splash – new developments at Lake Leanyer

Lake Leanyer Park has something for everyone – a Water Park with a swimming area, three water slides, water playground, places to skate and ride bikes and a basketball court. Making more than a splash for a water tower can mean, and it thus in this case, a 90 kW pump-motor, driven by a variable speed drive. But that's not all because there is a large number of pumps involved ranging down to 15 kW. Nilsen has this project well under control and as usual there is more than just the bare essentials to pump water. In addition, lighting towers, and a PA system are being installed – time for cooling off and relaxing will come later!

Daylight Harvesting makes the Roseberry Primary and Middle School environmentally responsible

The Roseberry Primary and Middle School will be teaching some eight hundred students when completed next year. Meanwhile Nilsen is in the middle of the electrical installation, which is extensive as it covers the installation of switchboards, lighting and security systems, wireless data and wired data cabling, as well as audio-visual systems. One of the interesting features of the new school complex is its daylight harvesting system. Basically a large PLC system governs the overall lighting system utilizing sensors strategically placed in classrooms, indoor sport facilities and offices. The interaction between the sensors and the lighting control provides maximum energy efficiency. The project will be finished by the middle of 2010.

Important projects in Victoria

All hands to the pump — that is: the Sugarloaf Pipeline Project Pumps (and much else)

Nilsen (VIC)'s Contracting Division is hard at it, completing the ambitious Sugarloaf Pipeline Project as contractor to the Sugarloaf Pipeline Alliance. The electrical scope of work will be completed by December requiring the sort of skilled manpower that only a large electrical contractor can provide.

The Sugarloaf Pipeline Project is an ambitious initiative of the Victorian Government, which when completed, will provide some 75 gigalitres per year to Melbourne's water supply. The civil and mechanical engineering work encompasses the construction of 70 kms of pipeline and pumping stations that will transfer water from the Goulburn River into the Sugarloaf Reservoir in the Yarra Ranges.

Nilsen (VIC)'s scope of work as contractor to the Sugarloaf Pipeline Alliance (a consortium of Melbourne Water, John Holland, Gutteridge Haskins Davey (GHD), and Sinclair Knight Mertz (SKM) includes electrical installation for three pumping stations and two outlet control valves (Sugar Loaf Control Tank Storage and Pipeline Outlet situated on the north side of the reservoir).

Infrastructure projects of this kind of magnitude involve high voltage, medium and low voltage, control voltage, DC for instrumentation, as well as fibre-optic cabling for the long distance control backbone. The switchyard of SP Ausnet's 66/22 kV substation is the source of energy for the Goulburn River Pump Station some 7 kms to the north and also for the Sugarloaf, hi-lift, pump station 3 kms south of Yea.

Nilsen has provided the installation services for a 22 kV XLPE cable running in PVC pipe and buried to a depth of 1.5 metres to the pumping stations. At the pump stations transformers, again supplied and installed by Nilsen, provides 6.6 kV for the 12-pulse variable speed drives main pumps. Both 690 volts and 415 volts Nilsen N Series motor control centres supply power to various motors and auxiliary pumps. The pumping stations are controlled by PLC systems and this is another area where Nilsen (VIC) has wide experience, with hierarchical systems. For the control of the two valve stations, Nilsen (VIC) is installing approximately 24 kms of single-mode optical fibre, again illustrating the capacity of the Company to undertake multi-faceted infrastructure projects.



Copenhagen or not, Nilsen is 'greening' Australia

Nilsen (VIC) is in the first phase of a major contracting project for NAB's Data Centre, in Melbourne's suburb, Knox. NAB's aim is to be a Carbon-Neutral organization by 2010 and Nilsen (VIC) will complete a large, 6 MVA Trigenation plant to furnish power to the Bank's Data Centre. The Trigenation plant comprises gas turbine-alternator plant with a total 6MVA capacity. The generator plant is mains-synchronised and runs on a 24/7, N+1 redundancy basis, and is thus capable of 'lopping off' peak demand that would otherwise have to be supplied by energy supplier SP Ausnet. The exhaust gases from the turbine installation are used to cool the computer via absorption chillers that provide cold water to cool the stabilized data centre floor. Unlike conventional refrigeration, which requires compressors (and thus electricity consumption), absorption refrigeration keeps the coolant cycle of gas-liquid-gas going by means of heat from hot exhaust gases. The energy savings for a large data centre can be as large as 30% since more than half the energy required goes into cooling services alone.

Nilsen (VIC) is providing and installing 11/22 kV step-up transformers (the generation plant provides 11 kV), and an optical fibre link to the 66/22 kV Knoxfield Area Substation, 11 kV and 22 kV switchboards, 415-volt switchboards, providing system logic design, installing and commissioning associated PLCs, as well as carrying out an overall network protection study.

Big Electrical Contractor installs reticulation for 'One-Stop' Big Retailer

The brand new, 11-floor Head Office building for Myer, in Melbourne's Docklands Precinct, is taking shape, and Nilsen (VIC) is the one-stop electrical contractor for the prestigious project. The scope of work includes the manufacture and installation of main switchboards, power factor correction, sub-distribution boards, complete floor electrical fit-outs, fire and security and – not to forget the data side of things, cat 5 cabling throughout the building.



Austin Hospital Electrical Upgrade stage II

The Austin Hospital electrical upgrade stage II is part of an ongoing renewal project at the hospital facility. This includes the restructuring of the 22KV high voltage ring main system and the low voltage power distribution throughout the hospital. The upgrade also includes the HV generator system and LV generator system, the individual HV and LV controls and overall SCADA systems as well as the upgrading of the uninterruptible power supplies. An important part of the new reticulation is the installation and commissioning of power factor correction units. As a result of the limited space available around the hospital and the fact the operating theatres are located directly above the substation, there is a requirement to line the substation ceiling with EMF shielding to limit the possibility of electrical interference to the life saving electronic equipment housed within the operating theatres.

Nilsen (VIC) Morwell stacks up when it comes to coal

Coal is one of Australia's chief exports and Nilsen (VIC) at Morwell has more than a nodding acquaintance with the subject of coal mining and handling so it really doesn't come as any surprise that the Morwell Office should be deeply involved with a major coal loading facility in Far North Queensland. Morwell is doing the electrical design, supply, installation and commissioning of the electrical machinery and control systems of four stacker/reclaimers for the Ports Corporation of Queensland's Abbot Point coal loading facility. The project will be completed by end 2011 but a significant portion of the design will have been completed by October this year.

Situated about 25 kilometres north of Bowen, the Port of Abbot Point is Australia's most northerly coal port. Some 12 million tonnes of coal are loaded annually – all from the Gregory Coal Basin. The Abbot Point Coal Terminal comprises a rail in-loading facility, coal handling and stockpile areas. One of the stacker/reclaimers being supplied is replacing older equipment. The other three machines will increase the throughput to 50 million tonnes per year. Coal is then transported via conveyor connected to a berth and ship loader, located 2.75km off-shore. The terminal is being expanded with the addition of a second wharf and ship loader as well as our additional onshore stacker/reclaimers.

Stackers/reclaimers were originally manually-controlled manned machines with no remote control. Modern machines are typically fully automated with their parameters (for stacking or reclaiming) remotely set. Nilsen Morwell is doing the complete electrical design for these

behemoths with a boom length 60 metres, a reclaiming bucket wheel diameter of almost 11 metres capable of 8000 tonnes per hour, and an elevator conveyor/tripper of 60m and 30m length respectively. Total length of each machine is approximately 150 metres.

Nilsen Morwell is part of a consortium comprising also of the stacker/reclaimer representative company, Mecrus, and the German manufacturer, FAM, of the stacker/reclaimers. Nilsen has a team of four engineers, an engineering assistant, a draughtsman, a supervisor and project manager working on virtually all phases of the electrical reticulation, all schematics and wiring diagrams, all PLC programming, human interface programming, and all documentation and manuals.

The scope of the work is truly impressive. It all starts with an incoming supply of 11 kV complete with an HV isolator. From there a trailing cable supplies the on-board 11kV to 433V, 2500 kVA transformers that are mounted on each stacker/reclaimer. The trailing cable has a length 650 metres and is of composite construction consisting HV cores, 12 control cores and 24 fibre-optic cores. The total travel length of the stacker/reclaimer is 1200 metres (i.e.: the cable is paid out and retrieved from the centre



point of the track). Bus ducting takes the secondary voltage to a motor control centre.

The rail travel of the machine is via 36, 11 kW travel drives driven by 6 variable speed drives. The slewing motion is realized via 3, 22 kW drives driven by a single variable speed drive.

Luffing (raising and lowering of the boom) is via an 110 kW hydraulic power pack.

The bucket wheel driven by a hydraulic power pack by means of 2, 200kW drives.

The boom conveyor is reversible for stacking and reclaiming and driven by a single 400 kW DOL motor. The elevator conveyor for stacking is driven by a 400kW DOL motor.

Nilsen (VIC) Switchboards Division in Heidelberg is building four large motor control centres to be housed in purpose built switchrooms mounted on the stacker/reclaimer – another example of the synergy, which works so well when major infrastructure projects are involved.



All Hands on Deck – a simulated one that is

British Aerospace Engineering is building a training site for Navy personnel in Williamstown – but it is not for landlubbers. The people who go to sea to make us secure also require training on land – hence the need for a land-based simulator.

The Land Base Test Site (LBTS) has to also provide a facility to simulate the electrical services on board naval vessels and therefore has to be completed to marine standards. Nilsen (VIC) is responsible for the scope of supply, which includes the installation of a High Voltage 50Hz reticulation network and a 60Hz, 6.6 kV/415 volt 300kVA transformer and switchgear, low voltage distribution and mechanical power supply systems, and general and emergency lighting and power distribution, as well as the integration of a security isolation and access (including the communications system and the required cabling systems to support the LBTS network).

NECA Apprentice of the Year 2009

Each year NECA Victoria (National Electrical and Communications Association) hold the Apprentice of the Year Awards. This year Nilsen nominated three apprentices, two working in the commercial sector and one in the industrial sector.

All three nominated apprentices were nominated and received awards:

We congratulate Richard, Peter and Sam on their efforts and thank them for representing the Nilsen name with such distinction.



Above: Richard Ryan was awarded the State Winner for the Commercial sector.



Above: Sam Zivalj was awarded Third place in the Industrial sector.



Right: Peter Georgiadis as State Runner Up for the Commercial sector.

Important projects in NSW

Aldi shops at Nilsen for electrical supplies

Aldi Foods operates a chain of discount grocery outlets in New South Wales, Queensland and Victoria. In recent years, Aldi has been expanding its Australian operations through the construction of supermarket outlets and distribution centres. Aldi's distribution centre at Minchinbury has already met its optimum capacity and a new distribution centre is being built at Prestons on an 11.8 hectare site approximately 5km west of Liverpool. Nilsen (NSW) was chosen for the electrical work comprising of an 11kv

Substation, main switchboards, sub-mains, diesel powered generator, power monitoring, an automatic C-Bus lighting control system, comprehensive structured data and voice communications system, as well as an AV system with inductive hearing loops and general light and power reticulation. The work will shortly be completed.



Orange Hospital Project gets Green Light

Orange is an important regional centre and with a population of 54,000 in the city and immediate vicinity, medical and health facility needs are significant.

The construction of the new Orange hospital was commenced on the already existing grounds of the Bloomfield hospital site south of Orange. It consists of a new building structure with four levels of wards, and operation theatres, engineering services as well as a helipad. It also includes the

refurbishment of existing heritage-listed buildings on the site.

Nilsen (NSW) is one of the major contractors on site and has been responsible for the completion of 2.5 kms of high voltage reticulation in the external zone and the internal reticulation of approximately 1.5 kms on the hospital site. In addition, Nilsen (NSW) is supplying and installing two 1500 kVA and three 750 kVA substations, a 1650 kVA and two 275 kVA generator

sets, security system, nurse call system, 24-cabinet communications room and external car park lighting in both the new and existing hospital.

Currently there is a team of 24 staff comprising of tradesmen, apprentices, trades assistants, supervisors, project managers and administration personnel, on site. At the peak of the project staffing will increase to 50 people.



Queensland News

An army marches on its stomach — and that's when electricity comes in handy

New messing at Enoggera

The new mess facility for one of Australia's largest Army Barracks will feed and sustain some 3000 personnel, if needed even with field rations. Extensive, new electrical reticulation is called for and Nilsen (QLD) has the job!

The scope of works includes supply and installation of a new HV service comprising Ring Main Unit (RMU) and two freestanding 1500kVA transformers. The Low Voltage side of the transformers will be connected to a new Main Switch

Board (MSB), split for both new feeders with Bus Tie capabilities.

From the MSB power is distributed to 13 new distribution boards throughout the Mess Facility and to LV feeders for the existing LV network.

A C-Bus control system with colour touch screens, incorporating multiple modes to defence requirements, controls the lighting throughout the Mess. The lighting control system conserves energy through passive infrared detectors, switching off power in areas of little or no traffic.



Seventh Brigade Head Quarters (HQ7BDE)

HQ7BDE commands the 7 BDE units in Enoggera and throughout SE Queensland. They provide aid in cases of natural disaster and to remote communities along with overseas deployment.

The electrical installation project consists of the provision of reticulation for the office facilities and storage areas including a new HV Service and Kiosk type 500kVA transformer feeding five distribution boards.

A new lighting system provides full control of all external and internal lighting. The lighting control system has been designed by Nilsen (QLD) and Nilsen Networks.

All is sweet at the Millaquin Sugar Mill

Bundaberg's Millaquin mill is located at its original site when it was established in the 1880's on the bank of the Burnett River in Bundaberg. The mill is an integrated site at which cane is crushed, raw and refined sugar is produced. Nearby, alcohol is distilled and rum is bottled.

Co-Generation has become essential to commercial survival for many sugar mills, the more so because of downward pressure on sugar prices. The principle is simple enough. Burning bagasse in the sugar mill boiler provides heat to produce high-grade steam, from which some energy may be extracted for power generation in a turbine. Much of the heat is retained by steam exhausted from the turbine, and this lower-grade steam (at 120°C) provides process heat needed in the sugar mill. Nilsen (QL) was able to provide essential construction and commissioning services for the Millaquin co-generation plant when requested to do so with virtually no prior notice.

Broad Spectrum, a Mt Gravatt engineering consultant firm, also based in Mackay, contacted the Nilsen Engineering services team in early May requesting commissioning services for a Nulec HV Switchboard and a 4 MW alternator that had been procured from the Northern Territory. The Nilsen Engineered Services team was prepared, the challenge being that its team had to be on site with only days to spare—and not only that, but to deliver a whole bus section, one bus tie to another substation and two feeder panels in the space of three days. 'The impossible we go today—miracles take a little longer' seems to be the modus operandi.



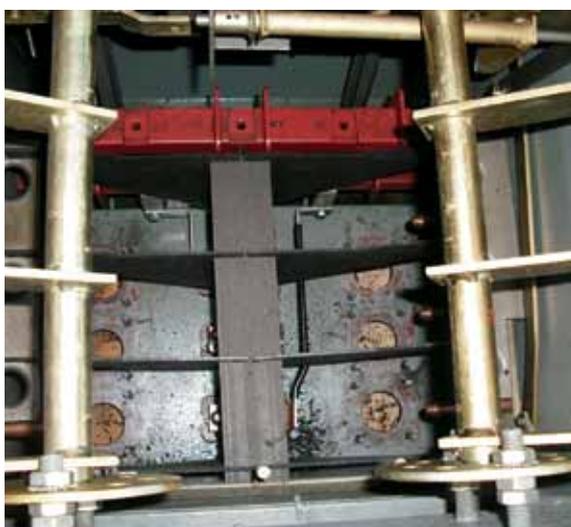
Tarong retrofit goes smoothly

The Tarong Power Station is a coal fired power station with a maximum generating capacity of 1470 megawatts provided by four turbine-generator sets. Recently Nilsen QLD Pty Ltd worked on a program of retrofits for the Unit 2 turbine-generator set requiring the retrofit of the exciter ACB. The existing unit was removed and the new one installed within the week.

The copper alone weighed in at 1.8 tonnes and was removed painstakingly, piece by piece and then cut and carried down two flights of stairs. The new switchboard was built, tested then disassembled and freighted to site where it was put together again and tested.



Costly and potentially hazardous breakdown avoided in the Port of Brisbane



The Port of Brisbane engaged Nilsen Engineered services to carry out de-energised maintenance on all the 11 kV high voltage equipment on site. There was, however, a significant problem, namely that major changes to the 11 kV ring main limited the continuity of supply in the event of de-energised service being carried out. It was suggested that the client consider looking at Nilsen's TEGG Energised service. There were some hazardous issues one being that an oil filled ring main unit had an imperfection in the bushing gasket and the oil was leaking into the cable termination pitch box causing the pitch to start breaking down. Additionally it became evident that the oil level in the switching unit's tank was low to the point that contacts were no longer immersed. Operation of the unit under such circumstances could be extremely hazardous.

Using ultrasonic instrumentation, discharge on the cable termination at one of the transformers was detected, which if left untreated would cause major transformer problem.

The ring main switching unit was stripped down, cleaned imperfections corrected, sandblasted, resprayed, new gaskets, and placed back in service within six working days.

Uninterrupted surgery at Queen Elizabeth II Hospital



Nilsen (QLD) recently installed a New Main Switchboard and 900 kVA Caterpillar Generator and an uninterruptible power supply at Queen Elizabeth II Hospital in Brisbane. The installation took place over approx 6 months by means of a number of overnight and weekend shutdowns of various sections of the Hospital without affecting the overall operation of this important public hospital.

At the same Nilsen completed a significant number of works within the

hospital including: refurbishment of Outpatient Department in two stages to allow them to function while works were in progress; refurbishment of the day surgery department including a new operating theatre with the six existing theatres being kept operational at all times; replacement of distribution boards in all wards along with upgrading the bed head power; a new communication backbone and the installation of a wireless emergency lighting system through the entire hospital.

Vacuum breaker rebuilds for SunWater

Since the Nilsen move to new premises in Thynne Rd, Morningside, a new workshop has been established there to facilitate more efficient service and operations such as the minor rebuilds on

vacuum circuit breakers for SunWater. SunWater has so far had six of their breakers provided with vacuum bottle changes, as well as functional testing and timing checks on breakers. Highly

professional service has seen to it that Sunwater now sends its LV circuit breakers to the workshop for overhaul.

Student comfort in South Brisbane

Southbank Student Village is a 14 storey residential complex on the corner of Merryvale and Tribune Streets, South Brisbane. The building consists of 712 self-contained units, housing all students for the local TAFE and University precinct at South Brisbane. Construction is due to be completed by December. Nilsen (QLD) is sub contracting to John Holland Group, and is responsible for all of the electrical power and lighting, communication cabling, access control and MATV for the entire building.

Nilsen (QLD) outgrows its Cannon Hill premises

Getting bigger, business-wise that is, is not a problem provided there is building space to expand into. The Queensland business has been growing at an unprecedented rate – some 30% year on year. Thus when the opportunity came up to build a warehouse, workshop, and office on land available for purchase from the then owners, the Port of Brisbane, Nilsen (QLD) made use of the opportunity to construct a building some four times larger than the one previously occupied in Cannon Hill, to allow for continued expansion of business activities.

Nilsen practises what it preaches when it comes to ecologically sound

construction and its brand new facilities comply with 6-star, Green-Star building requirements. Green initiatives include solar hot water systems, rain water harvesting for use in gardens, toilets, etc, as well as intelligent lighting and HVAC controls.



Transformer oil refill maintains XXXX brewery filling operations

Transformer oil testing, draining, refilling and overhaul procedures are an important as well as onerous task. Nilsen Engineering Services was called in to perform the transformer oil change,

maintenance and oil change for two ring main units consisting of eight isolators and five fuse switches and two oil circuit breakers. In addition there was the testing of all the associated protection

relays, fuses, coils and motors within six hours. It's all in a day's work – but a strenuous day.

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