

NILSEN
REVIEW

2014 ISSUE 22

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NILSEN – AUSTRALIA WIDE

From the MD

It's been another 12 months since the last Nilsen Review, which up to then followed the printed format. This year, however, we are changing the format significantly by moving to our first all-electronic version which will be available on our website and also distributed electronically to our customers and suppliers throughout the industry.

As a business we have continued to work for our customers across a broad range of projects throughout the country and as you will see in the Review, have been involved in a diverse range of projects as in previous years.

We participate actively in Industry Awards for projects around the country and recognise the contributions our apprentices make to the success of our business. This year as in previous years we gained significant Industry Awards as detailed in the Review. We have secured a number of opportunities for work around the country based on our ability to provide consistency of delivery in service and quality.

Wherever your business is located we look forward to being involved in your project and assisting to make the outcome a success for all parties, whether it be a National Rollout or a local opportunity of a large or small size.

We thank all of our partners for working with us over the last twelve months and of course look forward to working with you again and also making some new relationships and opportunities in the years ahead.

Mark Nilsen, Managing Director

Welcome to our first Electronic Version of the Nilsen Review

We live the 'green philosophy' at Nilsen, in our alternate energy projects, in energy conservation in our buildings and workshops, and now in publishing the Nilsen Review on-line. We realise you are a time-poor reader so you will scan this 'copy' for stories of interest to you without having to physically retain a printed copy in case you need to refer to the publication later.

Collectively we save trees, water and other precious resources – and you can be informed, quickly and efficiently!





Left: Home of Nilsen in 1916. Above: Bert Newton hosting his 3UZ morning program.
Below left: Oliver John Nilsen (OJ). Below right: Nilsen's porcelain manufacturing division.



Nilsen makes a Century

In 2016, Nilsen will celebrate one-hundred years of important contributions to manufacturing, R&D, and electrical contracting and engineering. Making a Century in cricket is tough but Nilsen's record is without parallel, and its contributions to the electrical industry makes it an Australian icon. Founded in 1916 by Oliver John Nilsen (OJ to many of his employees and collaborators) as an electrical contracting company, it grew in depth and laterally, surviving two world wars, the great depression of the 'thirties' and bouts of post-war economic malaise.

Always at the forefront, Nilsen pioneered commercial radio broadcasting in the 'nineteen twenties' gaining the first commercial broadcasting licence for a Melbourne radio station with the call sign 3UZ. One of 3UZ's earliest characters was a singer, Herbert Henry (Smoky) Dawson, who was born in Melbourne in 1913. His career began in 1934 when he formed a western group and became a household name. In the late 1970s and 80s, ratings success was again to the fore with Bert Newton's hugely popular morning program.

Nilsen also led in product development. In its powder metallurgy plant, zirconia ceramics were perfected to be used as replacements in metal dies. The Company designed Australia's first smart meter, used its expertise in defence contracting on Collins-class submarines and the Jindalee over-the-horizon radar system, and engineered its own, state-of-the-art protection gear, modular switchboards and motor control centres. In fact, quite early in the Company's history it had developed the OJ15 direct-on-line (DOL) motor starter, which became so widely used that model number came close to being a generic term for a motor starter.

Nilsen's porcelain division manufactured transformer insulator bushings, insulators for Australia's 'poles and wires' electrical energy distribution networks, electric jugs, even toasters, and other household electrical products. However imports pressure saw this side of the business gradually disappear. Nilsen, however is in the unique position of a company that although having commenced when Australia had barely begun to shed its Colonial past, was able to adapt to the times.

At first Nilsen expanded its operations in a climate of economic isolation and protectionism. Yet when in due course it became increasingly exposed to the influences of world markets, and a floating currency, its farsighted management rather than focussing on negatives, steered the Company in areas of opportunity that has seen it thrive in its chosen field of commercial, mining, infrastructure, health industry, and defence electrical engineering.



1940's Nilsen sales brochure.



Sunshine Coast University Private Hospital.



HOSPITALS & MEDICAL RESEARCH

Nilsen in the Health Care Landscape

Functionally and politically there is little more in the public eye than hospitals – the beds available, and that promised constructions come in on time. Nilsen plays an important part in delivering a broad range of technologies including communications, nurse call systems, emergency lighting, and standby power. Delivery on time and on budget is one of our main strengths. Numerous projects were completed in the last twelve months or are near completion, and some highlights are:

Sunshine Coast University Private Hospital

Sunshine Coast University Private Hospital (SCUPH), a three-level multi-storey Ramsay Health Care development opened officially to the public in February this year. The 200-bed hospital offers an extensive range of medical and surgical services. Onsite facilities include six state-of-the-art theatres, a cardiac catheter laboratory, an intensive care unit, a day chemotherapy unit and comprehensive pathology, radiology and pharmacy services. This hospital is important in accelerating service provision to the Sunshine Coast community prior to the 2016 completion of the main Sunshine Coast University Hospital on the neighbouring site. Nilsen's scope across the 14,000m² GF area included the Temporary Low Voltage Services Package, Generator System including 10,000L in-ground Diesel Tank, three 1500kVa Dry Type Transformers, General Light and Power, Nurse Call Package, High Voltage Substation, UPS System and Audio Visual package. Nilsen also installed the Security Package including Access Control & Intruder Detection System, Fixed Duress Alarm System and CCTV System as well as the Communications package which comprised of Cat 6A & Cat 3 Data and Voice and site-wide ICT and Wireless LAN. Nilsen received both individual and team awards for Safety on site during the successful execution of this project. The project was also nominated for Best Large Commercial Project at the 2014 NECA Queensland Excellence Awards.

Frankston Hospital

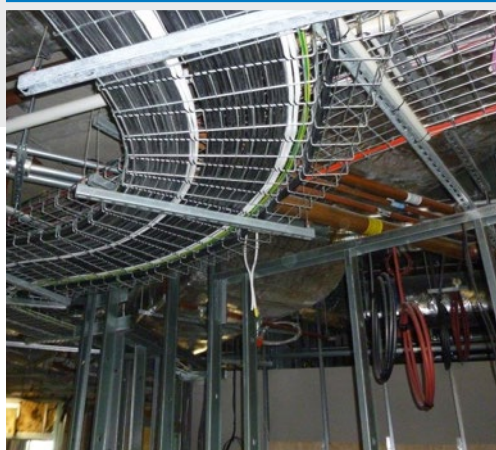
Frankston Hospital is a major teaching centre through affiliations with Monash University. The 340 bed hospital is the major provider of acute secondary and tertiary hospital services on the Mornington Peninsula. Nilsen is providing a broad scope of electrical services including a major extension of the emergency department including X-Ray and CT. New main switchboards, standby generators, communications, CCTV and nurse calls are also an important part of Nilsen's work.

The New Children's Hospital, Perth

The building now under construction will add significantly to the current Princess Margaret children's hospital. Virtually next to the Queen Elizabeth Hospital, it will use the energy back-up facilities installed there. A massive 850 kilowatt solar panel installation on the roof will help cut energy costs and be available along with three, 450 kW generators to provide emergency power. Nilsen is contracted to perform the entire electrical works including a supervisory control and data acquisition (SCADA) system, 12 transformers, 3 substations, 10 switchboards built by Nilsen, and 3 UPS systems as well as the fit-out of 12 operating theatres. The project is scheduled for completion in 2015.



The New Children's Hospital, Perth.



Completion of the Fiona Stanley Hospital

This was a huge project demonstrating the broad scope of Nilsen capabilities. Nilsen's contract covered the electrical, IT and communication systems for the largest of the five buildings, building B. The scope of the electrical works was huge, involving LV switchboards, UPS systems, distribution and reticulation, lightning protection, medical earthing and leakage protection as well as intelligent lighting control. An interesting feature of the installation is the ELVS installation, which integrates nurse call, duress and paging, IT and communications.

Bendigo Hospital

Nilsen's strong performance in hospital projects are well illustrated by the Bendigo Hospital Project. When completed, there will be a category-1 hospital for Bendigo, designed to survive major disasters. The seven-storey complex with basement and roof plant rooms will have an aggregate 7 megawatts of standby power provided by two diesel generators with rotary UPS, and two gas turbine tri/co generators. Nilsen is responsible for six LV switchboards, some 200 distribution boards, hospital communications system, CCTV, nurse call, emergency management and entertainment systems, as well as an extensive metering and energy control network. In addition Nilsen will be installing state-of-the-art, LED lighting controlled by digital addressable lighting interface (DALI) using protocols to allow the maximum use of daylight and the operation of emergency lighting. Nilsen is also installing medical panels including those used for cardiac monitoring.

Major 800-bed Hospital for Adelaide

The new Royal Adelaide Hospital project, due for completion in April 2016 also includes two high voltage switchboards, multiple ring mains and two data centres utilising copper and fibre backbones. New 3-D technology is being used by Nilsen to realize the complex electrical design. Nilsen engineering personnel are on site and checking the most detailed parts of the electrical installation using three-dimensional models of the buildings and special surveying instrumentation to 'pace out' where main switchboards, risers, control panels, etc. are going to be placed. And the complexity of new Royal Adelaide hospital is huge. There will be eight substations, sixteen transformers, multiple ring mains, twenty main switchboards, six-hundred plus switchboards, two data centres, and over fifty floor sub-distribution panels.

HOSPITALS & MEDICAL RESEARCH

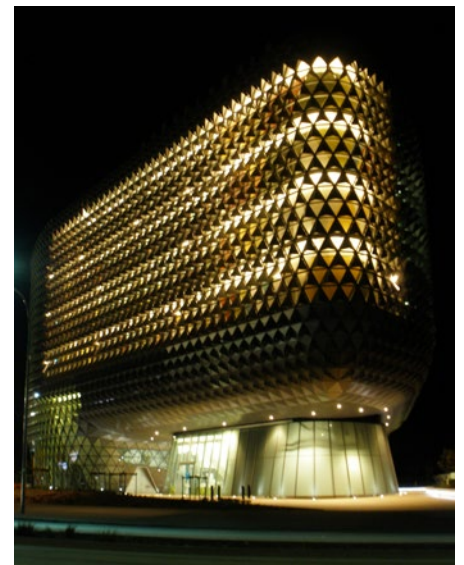


Above & below: South Australian Health Medical Research Institute (SAHMRI) building.

South Australian Health Medical Research Institute (SAHMRI) – Nilsen gains two NECA Awards

Nilsen was chosen for this prestigious institute by virtue of our solid reputation built up in major hospitals. Now completed, the challenges included special procedures for installing switches and light fittings requiring complete chemical and atmospheric isolation in laboratories where specialised investigative procedures are being carried out. As is typical for these types of projects, stand-by generation, auto-transfer switching and UPS systems were part of the scope of works.

Nilsen earned a big tick for its work at SAHMRI earning two South Australia NECA awards, one in the Large Commercial category, and one in the Perpetual Category, with the latter putting Nilsen in the finalists for consideration for the NECA National Awards on the 27th of November.



Telstra Data Centre.

MORE AWARDS

The Telstra Data Centre in Clayton is a project that earned Nilsen the appreciation of its client. Close attention to detail, intelligent design of the sixteen switchboards and associated equipment provided Nilsen with a Victorian NECA award for large projects. Again Nilsen is a finalist for NECA National Awards on the 27th of November.

Nilsen – undisputed leader in switchboard development

Nilsen is an undisputed leader in the field of switchboard development. A good example is the switchboard complex designed for the new Royal Adelaide Hospital. A novel approach was taken by the design team who cleverly engineered a system with a highly economical footprint, providing IP55 protection, the required segregation level and the various distinct reticulation functions. The term 'complex' is no exaggeration as the essential services, general power and light, and power factor correction functions are essentially combined in one structure answering to the various requirements. The space saving while providing for the electrical requirements is highly significant.



Artists impression of the new ANSTO facility for isotopic medicine.



Nilsen works at ANSTO

Australian Nuclear Science and Technology Organisation (ANSTO) develops nuclear medicines, and nucleotides for diagnostic purposes. For example, ANSTO supplies Technetium-99m (Tc99m), a decay product for imaging of the liver, lung, bone, kidney and heart. Nilsen is supplying the electrical contracting services for a new facility which will be used for the manufacture of molybdenum-99 (Mo99) which decays into Tc99m. In addition to light and power, etc, Nilsen is also installing instrumentation and control.

ENGINEERING SERVICES

Asahi future-proof its production facilities

Nilsen helped Asahi future-proof its production facilities at Laverton by significantly upgrading Asahi's electrical assets. The scope of works included a considerable civil component and a substantial kiosk with a 2 MVA rating plus an extensive expansion of the low voltage reticulation. Another very important feature of the future-proofing component was the installation of a large power factor correction system.

Stocklands Wendouree Shopping Centre Upgrade

Nilsen's ability to smoothly fit in with client operational requirements was again demonstrated by the switchboard upgrading needs of the Stocklands Wendouree Shopping Centre. Utilising two auxiliary generators, the cut-over to these proceeded smoothly and in the short time frame of 24 hours, new protective gear was added and the cut-back to supply took place with no one noticing anything.

Nilsen in Mining and Exploration



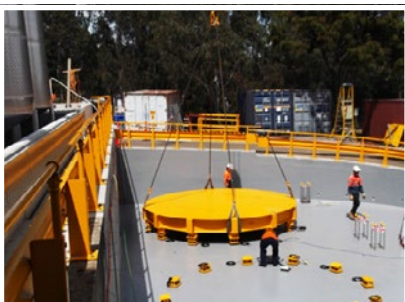
Rio Tinto's La Granja copper pilot project.



Solvent extraction room.



Agglomerator stage.



Leach tank installation.

An unusual mining project gains a high commendation for Nilsen

A large-scale industrial pilot plant had to be developed to test a copper extraction process, called heap leaching, on ore mined from Rio Tinto's La Granja copper project in Peru. There were fewer than five similar facilities throughout the world and due to project time pressure, Rio Tinto allowed only 12 months in which to design and build the plant.

Nilsen had a crew of highly experienced electricians with hazardous wiring qualifications who completed work in the solvent extraction room, containing a kerosene-like fluid as part of the copper extraction process. Nilsen very deservedly was awarded a Certificate of Commendation for a complex task involving modifications to the main switchboard so as to power the pilot plant, cabling to variable speed drives, their control cabinets, close to 500 sensors and transducers linked by Ethernet, optical fibre connections to the control room, installation of an extensive earthing grid, plus electrical controls for a conveyor and spiral elevator loading system for crib tanks.

Nilsen's expertise wins project

Nilsen's expertise in transportable sub-stations and switchboards as well as motor control centres is one important reason why we continue to be selected as the contractor for major mining projects like Rio Tinto's Hope Downs-4 iron ore mine in the Pilbara and at the Cape Lambert Port. The Hope Downs iron ore mine where we are currently engaged produces well over 200 million tonnes per annum.

Nilsen supplied 10 transportable sub-stations, switchboards and field marshalling boxes. For the Cape Lambert Port, Nilsen manufactured motor control centres and transportable switch rooms including GIS high voltage switchgear. The switch rooms weigh 120 tonnes and were transported some 1700 kilometers from Perth to Port Hedland.



Transportable sub-station setup.



Transportable sub-station on the move.

Nilsen at Wiggins Island Coal Export Terminal

Nilsen has been involved in the installation of 11 kV network primary and secondary switchgear and high voltage earthing systems for the Wiggins Island Coal Export Terminal. This is a huge development project in which eight coal miners are participating. Upon completion at the end of 2014, the export terminal will have a capacity of loading 27 million tonnes of coal annually.

INFRASTRUCTURE PROJECTS



Darwin's Leanyer Substation

Nilsen was engaged to add capacity to Darwin's Leanyer substation. The works encompassed the fit out of the new 66/11 kV zone substation at Fitzmaurice Drive, Leanyer. The scope of works included the installation of cable management systems, installation of protection, SCADA and communication panels, inter-panel control and protection cabling, installation of 11 kV cable, installation of 66 kV switchgear, and installation of 66 kV flexible bus. Nilsen's experience in high voltage work makes the Company eminently suitable for infrastructure projects.



Nilsen – the power behind the Urban Superway

The Urban Superway is 4.8km section of roadway, 2.8km of which is elevated, linking Adelaide's main northern freight route to the main north – south corridor. The elevated section of the Superway travels over a number of bottlenecks in Adelaide's north providing more efficient freight and passenger vehicle movement and is part of a wider plan to build a nonstop north-south Corridor. Nilsen installed a total of 5.6km of cable ladder within the 2,200 individual internal segments of the Superway providing light and power along its length. Important features include dimmable LED lighting, traffic information systems and internal lighting used for maintenance on the structure.



Superway under construction.

Letting the Sun do the work



Bankstown Library and Knowledge Centre

Bankstown Library and Knowledge Centre

The Bankstown Library & Knowledge Centre has a large 60 kilowatt solar panel array on its roof supplying power to the mechanical services for the building. Nilsen was not only responsible for the complete electrical fit-out of this ultra-modern four storey complex but also for the solar energy installation involving extensive DC wiring and three-phase inverter. With the advent of more and more economical lithium-ion batteries, Nilsen's experience in green power will find a large number of projects in the near future.

South East Water Sewage Treatment Plant Upgrade

South East Water has a sewage treatment plant upgrade at Mt Martha, Victoria. The sludge handling process is being upgraded to ensure it will meet projected demand in the area. This involves the construction of solar dryers replacing ageing equipment as well as modifying pumps and pipe work. Nilsen has performed the electrical contracting and installation and commissioning of the instrumentation control boards, completing the project in October.

Commercial Projects



Tight time lines no problem – Westfield Garden City, Mt Gravatt



Nilsen works well under commercial pressure and the Westfield Garden City Development at Mt Gravatt is an excellent example of a huge project completed in record time and on budget. Only six months stood between the awarding of the electrical works and the opening date for the Myer Store located at the huge shopping complex.

The scope of works for Nilsen was extensive and not only included the switchboards, distribution boards, light and power but also the Westfield Garden interactive shopping guide kiosks. Nilsen's competence in managing ambitious projects shone through and we were also awarded an extensive ambience lighting project throughout the entire complex.



The new shopping centre adds to the attraction of Mt Gravatt.



State of the art office building for Townsville

The construction of 12-level Five Star Green Star office tower in Townsville CBD. Project consists of ground floor lobby, retail, café and parking, 3 car parking levels, 8 office levels. The external façade features solar glazing in aluminium frames and extensive sun screening thus achieving a 5 Star Green Star Office Design rating. The building will be 90% tenanted by Queensland State Government departments. Key elements of Nilsen's work include two standby generators, power factor and harmonic correction, data communications, fire and emergency systems, access control utilizing CCTV.

The Verde Townsville project also won Best Large Commercial Project at the 2014 NECA Queensland Excellence Awards.



The new Verde 12-level Five Star Green Star office tower in Townsville CBD.



Smooth upgrade for Jupiter's Casino

Casinos cannot tolerate power interruptions and this provided a challenge to Nilsen when the UPS system for Jupiter's Casino on the Gold Coast required upgrading. The unique scope of works included two new UPS systems and extensions to the battery room. Reconfigurations were also required to the chilled water circulation and sprinkler system. To further reduce the chance of power interruptions, the entire install was also completed using MIMS cable (mineral-insulated copper-clad cable). Our performance was highly appreciated and will stand in good stead for future projects for the Casino Managers, Echo Entertainment.





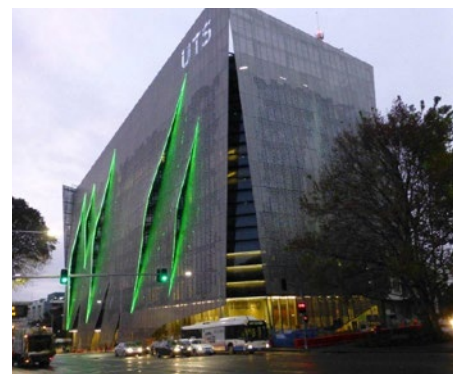
New Faculty of Science, University of Technology, Thomas Street.

MAJOR TERTIARY EDUCATION PROJECT

Nilsen demonstrates its expertise in a wide range of technologies

Nilsen recently completed the very ambitious and complete electrical installation of the Faculty of Engineering and Information Technology at the Broadway Campus of the University of Technology, Sydney (UTS). The scope of the works included tristate generator plant, a substation, main switchboard and power factor correction equipment and fit-out of lecture theatres, laboratories, faculty offices, boardrooms, etc. Some idea of the size of the project is given by the physical layout involving a 17-storey building, and 45,000 square metres of floor space.

In addition Nilsen also has completed the expansion project at the UTS Thomas Street site in where the new Faculty of Science has been constructed. The new building has 8 storeys, and 3 basement levels and has a total floor area of almost 14000 square metres. In addition to teaching and research facilities, there is a large library with automatic retrieval systems. Nilsen was responsible for audio-visual, lighting control, diesel generator and UPS systems.



Faculty of Engineering and Information Technology, University of Technology, Broadway Campus.



GOVERNMENT PROJECT

Northern Territory Secure Facility

Nilsen recently completed the electrical and communications requirements for the Northern Territory Secure Facility. The scope of works was considerable comprising of fibre optic backbone cables for the security, government, engineering services, prisoner learner and information and fire services systems. The extensive communication system included provision of data patch leads and the various communication cabinets. Nilsen demonstrated its knowledge based on wide and deep experience to successfully complete the project.

DEFENCE PROJECT

Modernising the Defence National Storage & Distribution Centre

The Defence National Storage and Distribution Centre at Moorebank, NSW was extensively modernised with Nilsen being selected because of its expertise in strategically important projects. The scope of work was impressive – 5 kiosk transformers, high voltage reticulation, main switchboard, communication backbone and LV power and lighting. Add to this now an extensive fibre optical network, which together with the upgrade at Wallangarra Defence Communications provides a barcoding system permitting a highly sophisticated inventory management system and the tracing of materiel throughout Australia – yet another excellent example of Nilsen expertise and flexibility.





Sungard Data Centre

COMMUNICATION PROJECTS

Nilsen's vital role in Data Centres



Nilsen is a vital part of Telstra's new cloud-computing centre now nearing completion in Clayton, Victoria. The datacentre will be integrated into Telstra's Next IP and Next G networks. The new Telstra Centre will have absolutely secure power via diesel flywheel-static UPS (DRUPS) technology, and 2N+1 redundancy provided in part by 2, 10 MVA feeders. Nilsen's scope of the project is huge comprising of 4 DRUPS plant rooms, 2 stand-by generators plant rooms, 6 main switchboards, 2 generator switchboards, 16 UPS output switchboards, supervisory control and data acquisition (SCADA) systems, lighting, communication, and security systems.

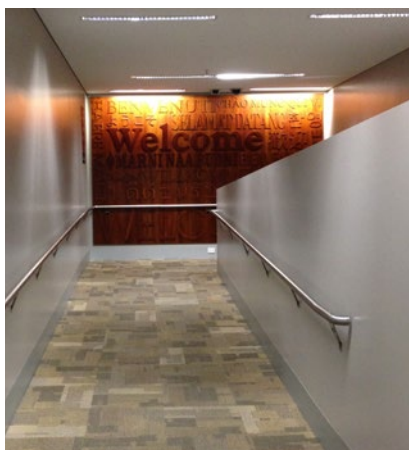
Nilsen's expertise in communication projects is also evidenced by projects such as two data centres in Adelaide, the Lonsdale Data Centre which is the Modular Hub Facility for NBN Co. In Melbourne, Nilsen switchboards are being delivered to Equinix delivering private, high-speed access to 175 other cloud and IT services providers.

AIRPORTS

Domestic to International Gates at Adelaide Airport

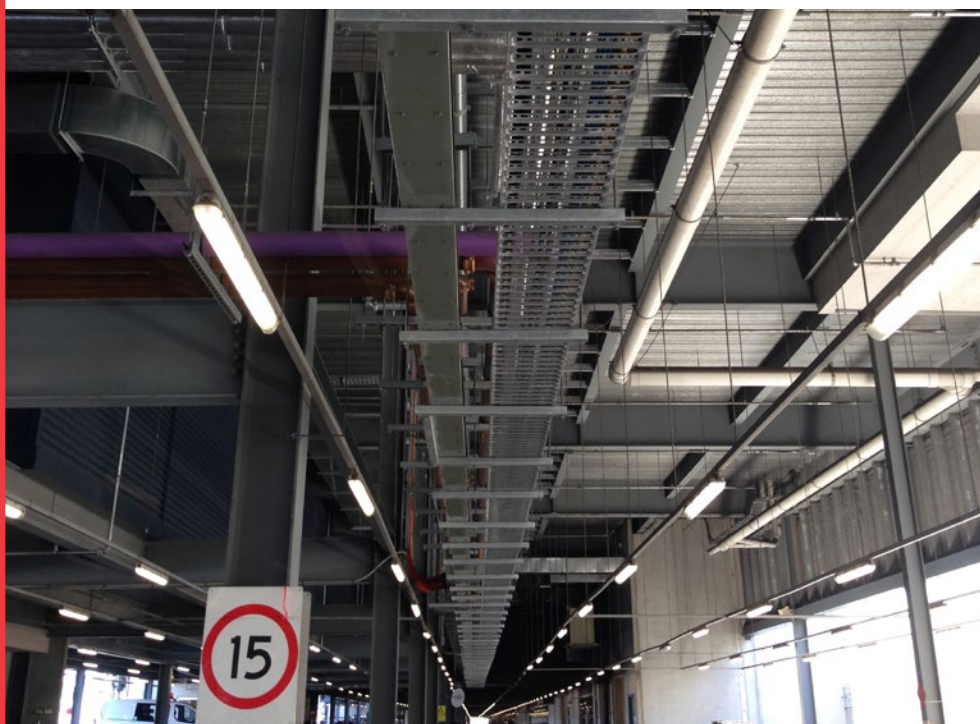
ANZ Data Centre UPS upgrade.

Changing gates over from domestic to international service is quite a job as the requirements for international boarding procedures and associated safety measures are more demanding than for domestic travel. Changing the function of gates 18 and 19 at Adelaide Airport, and putting in the appropriate electrical changes without impacting airport operation required very careful planning. Nilsen had to make extensive changes including the electrical safety controls required during refuelling, cutting over from the old to the new wiring without power interruption. That sort of work in busy periods of airport operation presents the sort of challenge that Nilsen has much experience in.



ANZ Data Centre upgrades its UPS

The project required extensive loadbank testing of the newly upgraded UPS systems. Obviously no additional load could be placed on the existing, 'live' facility, thus requiring two generators to be brought on site for the purpose of powering the UPS, which in turn was connected to the loadbank. Nilsen's work was of outstanding quality so that the project was entered in the NECA medium commercial project category.





New grandstands at Adelaide Oval.

ENTERTAINMENT AND SPORTS PROJECTS

The Adelaide Oval gets face lift

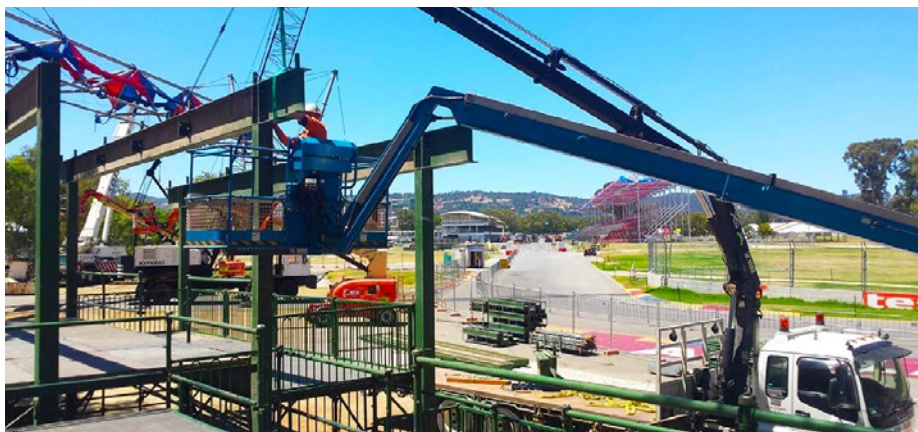
Nilsen recently completed extensive works at The Adelaide Oval. These historic grounds dating from 1871 have a long, eventful history. Nilsen played an important role in its ambitious redevelopment, commencing in 2011. The old Bradman and Chapell stands had to be removed and new Southern and Eastern Stands built. The new Southern Riverbank Stand has 19,000 seats and the Eastern Stand 14,000 seats. An additional 3,000 seats in front of the Northern Mound takes the stadium seating to 50,000 with additional standing room available on new timber decking under the Moreton Bay fig trees. Nilsen performed the electrical contracting work including high voltage reticulation, five substations, light and power for the stands and corporate entertainment areas, and extensive cable support systems.





Speedy performance from Nilsen

The Clipsal 500, V8 super cars is one of the major tourist events in Adelaide circulating through Adelaide's Central parklands. The project involves the erection of a temporary pit structure housing corporate, media and officials and the electrical reticulation around the circuit. It's the sort of contracting work that has to be performed under severe time pressure.





Nilsen (SA) Pty. Ltd.

100 Regency Road, Ferryden Park, SA 5010

Phone: +61 (08) 8440 5300

Fax: +61 (08) 8347 0347

Email: nilsensa@nilsen.com.au

Nilsen (VIC) Pty. Ltd.

43 Sheehan Road, Heidelberg West, VIC 3081

Phone: +61 (03) 9450 1300

Fax: +61 (03) 9457 5261

Email: nilsvic@nilsen.com.au

Lic. No. REC 6

71 Princes Drive, Morwell, VIC 3840

Phone: +61 (03) 5136 9500

Fax: +61 (03) 5134 4631

Email: nilsmwl@nilsen.com.au

Nilsen (WA) Pty. Ltd.

12 Efficiency Way, Bibra Lake, WA 6163

Phone: +61 (08) 9434 2311

Fax: +61 (08) 9434 2322

Email: nilsenwa@nilsen.com.au

Lic. No. EC000982

5/1 Halifax Drive, Bunbury, WA 6230

Phone: +61 (08) 9726 0800

Fax: +61 (08) 9726 0866

Email: nilsenby@nilsen.com.au

Nilsen (NSW) Pty. Ltd.

Unit 26/38 South Street, Rydalmere, NSW 2116

Phone: +61 (02) 9898 9355

Fax: +61 (02) 9638 0343

Email: nilsensw@nilsen.com.au

Lic. No. 186489C

Nilsen (QLD) Pty. Ltd.

379 Thynne Road, Morningside, QLD 4170

Phone: +61 (07) 3899 8866

Fax: +61 (07) 3899 8766

Email: nilsenq@nilsen.com.au

Lic. No. 66226

Gladstone

Unit 4/12 Bassett Street,

Gladstone, QLD 4680

Phone: +61 (07) 4972 5207

Fax: +61 (07) 4972 5294

Email: Gladstone@nilsen.com.au

Townsville

Unit 2/719-725 Woolcock Street,

Bohle, QLD 2814

Phone: +61 (07) 4774 3485

Fax: +61 (07) 4774 2306

Email: townsville@nilsen.com.au

Nilsen (NT) Pty. Ltd.

41 Berrimah Road Berrimah NT 0828

Phone: +61 (08) 8947 1134

Fax: +61 (08) 8947 3173

Email: nedarwin@nilsen.com.au

Nilsen Networks Pty. Ltd.

Unit 4/3-5 Gilda Court, Mulgrave, VIC 3170

Phone: 1300 734 766

Fax: 1300 735 466

Oliver J Nilsen (Australia) Ltd

Unit 4/3-5 Gilda Court, Mulgrave, VIC 3170

Phone: +61 (03) 9271 3900

Fax: 1300 735 466

www.nilsen.com.au