



www.nilsen.com.au

SWITCHBOARDS





THE NILSEN TEAM

Founded in 1916, Nilsen has an unbroken record of excellence in electrical and communications engineering, contracting and maintenance services. A responsible corporate citizen, Nilsen maintains a strong ethical code in its relations with customers, personnel and suppliers. The rewards have come by way of major infrastructure, commercial, industrial, defence and other government projects and in the recognition received year after year by Australia's leading industry association, NECA.





COMMUNICATING WITH CLIENTS

'Fulfilling requirements'

We work with you to achieve the best technical and commercial outcome for your project. Our team of experts have covered the most demanding applications in stressful and hostile environments including operation in high dust and high temperature environments, on wash-down and high moisture level sites or in service areas such as marine and offshore platform locations.

Our experience in challenging applications is your guarantee that we will meet your needs. Attention to detail makes for the Nilsen difference – a difference that has seen us win awards for our products.



*Nilsen: Experts in
Power Distribution and
Motor Control Centres*



PROVEN DESIGNS

'Our Certification is your Assurance'

Nilsen switchboards and motor control centres have been extensively type-tested to relevant Australian and international standards, up to 100kA at 5000amps including arc fault containment and temperature rise testing. The Nilsen designs recognise priorities such as safety in accessing components, segregation and service considerations.

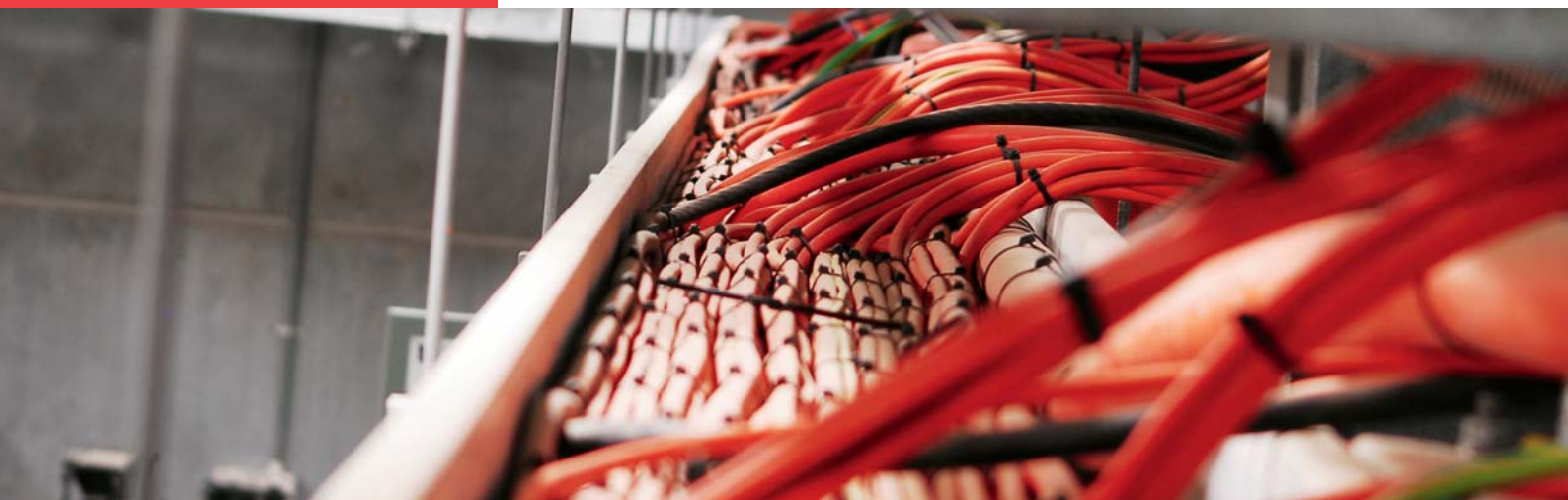
The range of Nilsen-registered, type-tested designs gives you the assurance that we are able not only to provide you with the ideal design for your application but also with verification of meeting the necessary standards. This is one of the many critical differences that make Nilsen your switchboard and motor control centre partner.

OUR EXPERIENCE

'You name it – we have done it'

We provide our switchboards and motor control centres to a broad market including:

- Telephone Exchanges
- Defence
- Water treatment and storage
- Municipal projects
- Mining, beneficiation, and smelting
- Stacker/reclaimers
- Shipping terminals
- Refrigeration plants
- Abattoirs and food processing
- Cranes
- Heavy industry
- Automotive industries
- Commercial developments
- Shopping centres
- Apartment complexes
- Data Centres
- Roads and tunnels
- Electricity generation
- Hospitals





THE HUMAN ELEMENT

'Highly qualified and highly trained'

Nilsen people are among the most highly qualified and trained in the industry. Training in our companies is embedded in the most fundamental way. It is our personnel that is our competitive advantage and we are generous in the allocation of resources to achieve effective training in areas such as safety, project management, as well as technology developments and negotiation skills.

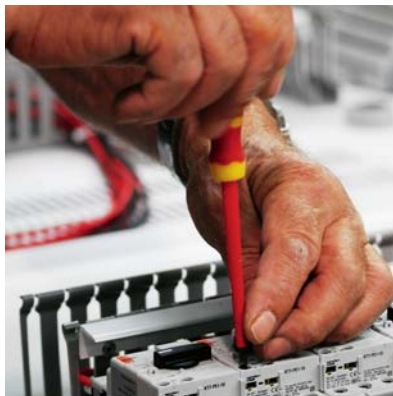
We are award winners in Health, Safety and Environment, and continuously drill our operative personnel in both procedures and behaviour. It is all part of the professional approach that infiltrates everything we do.

RIGHT FOR THE JOB

'All aspects are considered'

Nilsen provides switchboards, motor control centres and control panels complying with specific customer requirements and using its N-series board building concepts, can engineer customised packages meeting demanding type testing and segregation requirements.

- 415 V, 690 V, 3.3 kV, 6.6 kV, 11 kV and 24 kV switchboards
- Type testing to AS3439 and AS2086 including arc fault containment Annex AA
- Arc proofing in accordance with IEC 60298 app. AA
- Earthquake tested to AS 1170.4 Cat 1, 2 and 3
- Fully demountable starters and feeders to AS 3439.1 (Forms 1 to 4)
- Segregation to form 4B
- Safe access including Class A (criteria 1 to 5)
- Single sided, back connected, and back to back options
- Generous busbar zones, sleeved or unsleeved busbars
- Fixed, demountable and withdrawable switchboards and motor control
- Transportable switchroom packages



*Nothing escapes
our attention*



DESIGN CONSIDERATIONS

'Type testing to 100 kA'

Nilsen switchboards are designed for maximum fault levels to 100kA for bolted faults. The busbar structures are designed to carry the forces of sustained faults as well as the associated temperature rise limitations.

'Arc fault containment'

The incorporation of metal-clad switchgear places more emphasis on arc fault containment. Nilsen has particular expertise in this area so critical to safe operation of switchboards. Internal arcing fault containment is specified in an appendix to AS3439.1, and Nilsen's very rigorous testing of its designs to this specification, for limited and unlimited arc fault containment is your assurance of performance.

'Busbar selection'

Nilsen applies additional derating factors to the derating tables of AS3000. Although adding to copper cost, the payback in terms of energy savings through reduced losses in the board can be as short as half a year or even shorter.

'Busbar jointing'

Temperature rise depends on the rate of heat dissipation from busbar joints. The effect of oxidation on contact resistance can also derate a switchboard. Nilsen carries out a series of tests on its switchboards using four-terminal low ohm measurements to assure you of reliable long-term operation of the busbar joints.





'Safe access'

Nilsen design for the safe access and intelligent layout requirements including easy front and rear cable access to cells, generous cable ways along the entire board length, multiple cable gland plate entry positions as well as allowing for unfettered access for future extensions.

'Environmental'

Because of the broad range of applications, we are experts in tailoring our switchboards and motor control centres to tough environmental conditions. This can involve special engineering for access, ventilation, chimneys, fan placement and the study of natural convection paths. Many applications also involve outdoor use, particularly in remote mine site locations.

'Motor control centres'

Nilsen motor control centres incorporate a highly cost-effective manufacturing strategy, providing high component density, yet safe clearance distances to safeguard against tracking, and reduced operating temperature. Nilsen expertise in control options includes not only PLCs but also industrial bus architecture and hierarchical control schemes with human interface panels.

PROTECTION OF YOUR ASSETS

'Nilsen maintenance provides maximum return'

Switchgear and busbar are the most important areas for regular inspection and maintenance. Inspection for heat sources can reveal faulty busbar joints, cable terminations, etc. We perform joint resistance tests also for circuit breaker contacts. In addition arc chute inspections are carried out, and protection relays examined. This latter area (coordination or grading) is important to you because without these types of test, the shift in relay characteristics can cause a downstream fault to shut off large sections of upstream equipment.

'Our clients speak for us'

Nilsen switchboards and motor control centres are part of the electrical plant of the largest Australian companies and government organisations. From the National Parliament to submarine service, we are represented and known for the high standards we adhere to. You too can rely on us for solid performance!



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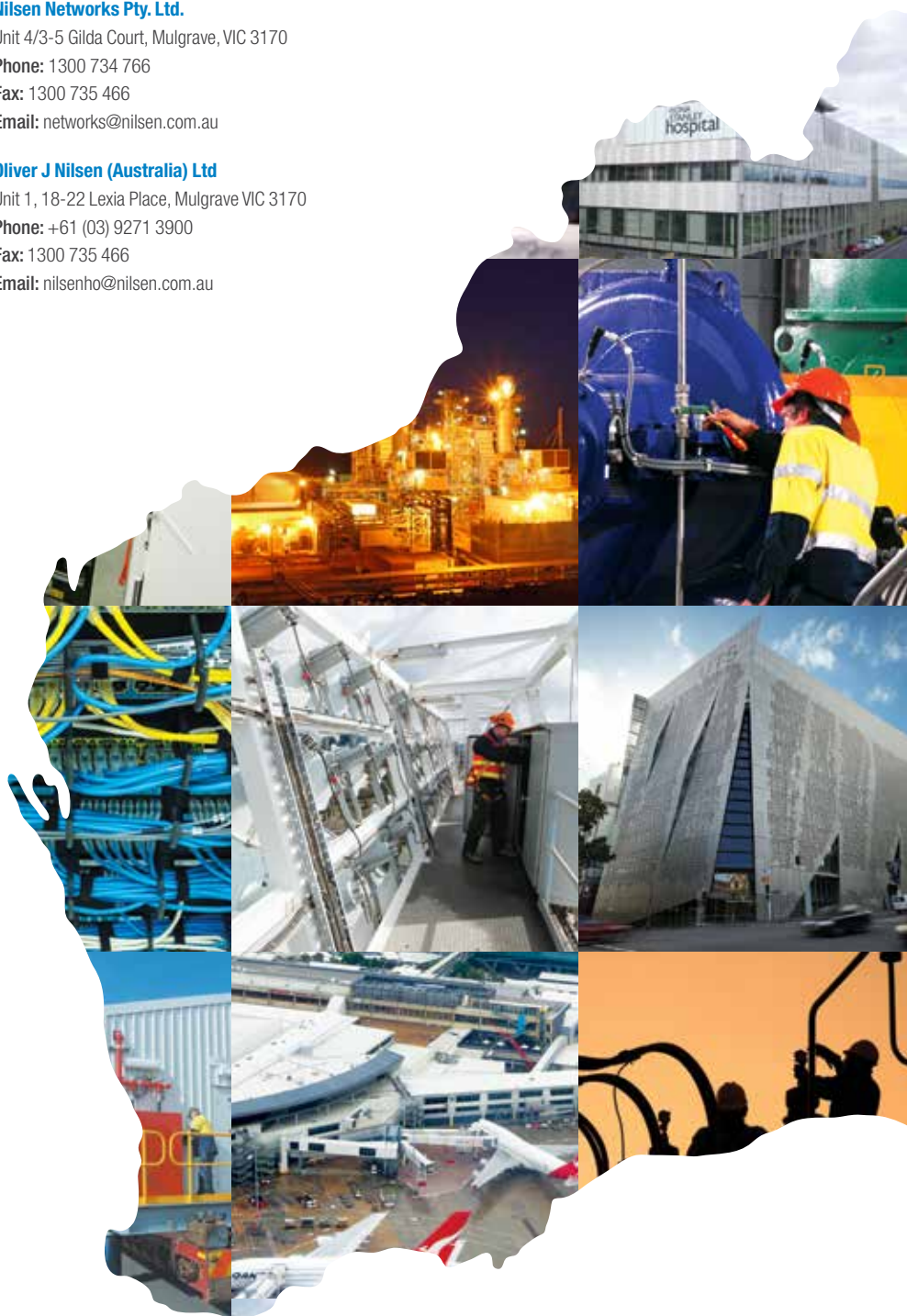
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CELEBRATING 100 YEARS
1916 – 2016

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