

ElectroLink



**NZI's 100-year path to
quality insulators**

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Distributing power to wherever it is needed throughout the country depends on the long-lasting quality of conductors, but it depends even more on the long-lasting quality of the insulators that support them.

Insulators are the unsung heroes of the national grid and local networks, and no company has been supporting power networks longer than New Zealand Insulators.

This Temuka-based company has been turning clay and sand into porcelain insulators for 100 years now and is looking forward to the next 100 years because there is no more durable insulating protection for power lines than expertly made porcelain insulators.

New Zealand Insulators' general manager, Chris van der Werff, says NZI has built its expertise in porcelain manufacture on the unique strength of the Kakahu clay from the company's opencast mines and the seven ingredients it blends to produce each finished insulator.

Van der Werff says NZI, as a cornerstone



Chris van der Werff



Turning clay and sand into high-performing electrical insulators depends on the craft skills of NZI's long-standing staff

ESI brand, will never change its focus on making the best insulators on the market because anything less than the best is a false economy for network owners.

He says research shows that in a network build, the costs associated with insulators for a new line is typically only three to five per cent of the total build cost.

"But when you examine where faults occur throughout the life of the line, 95 percent of the failures on a network are associated with insulators."

He says there is no shortcut to quality and the consequences for network owners investing in anything less than top quality insulators is more outages and a much higher cost in maintenance.

"We design our porcelain insulators to be the best performing and most durable on the market. The higher up-front investment easily guarantees the most cost-effective return over the life of a line."

Van der Werff says more engineers at network companies are now recognising the

advantages of investing in top quality, self-cleaning porcelain from NZI and particularly when they are replacing 60-year-old lines. The insulators are typically working as good as new.

Humble beginnings

The company began as a brickworks in 1868 when there was less than 50,000 dwellings in New Zealand. From making bricks, tiles and pipes, the company became New Zealand Insulators under the ownership of NEECO in 1924 following its success in manufacturing insulators for the rapidly growing telephone network throughout New Zealand.

Rewirable porcelain fuses became the next big product with NZI fuses finding their way onto almost every switchboard in New Zealand homes up to about 1980.

During the earlier years, NZI was also making electricity insulators and playing a vital role in electrifying New Zealand long before the company had electricity on its own site. Van der Werff says the insulators they made eventually helped bring power lines to its Temuka factory and enabled them to light the factory with electric power and eventually convert their kilns from oil to electricity.

Many other porcelain products have been made over the years including a wide range of pottery such as robust drinking cups and crockery for rail passengers, and in the 1970's 'Temuka Pottery' became a household brand.

During this time, NZI was also manufacturing metal and plastic components and assembling fuses, lampholders and other products for the electrical industry and was

taken over in 1967 by Cable Price Downer. The company expanded its low voltage division and added a Power Technology division as the company began making larger insulators such as those made for the North Island rail trunk line electrification.

In 1997 NZI began manufacturing a range of products for NGK, a large Japanese insulator manufacturer, and this became a mainstay of the insulator business as NZI expanded into insulators rated for 110 kV.

After a series of corporate owners NZI is now growing again as part of the Tiri Group. Over the last decade and under the management of Chris van der Werff, NZI has more than doubled its staff and expanded its electrical offer to include leading brands such as DTR (Korea), Payer (Canada), GIG (Ukraine), AX (made for NZI), Avon Industries (NZ), NGK Stanger (Australia), Fulton Industries (Australia), Red Spot (UK), Bussmann by Eaton (India/UK), Polesaver (UK) and Long Controls (UK).

Van der Werff says with the company built around the supply of electrical insulators, it operates today as a one-stop-shop for a full range of insulator solutions.

"Our premium choice for customers is NZI porcelain but if that doesn't meet what you require, then we provide other options. If we cannot make it for you, we can supply alternative insulator options from our leading brands from around the world."

Individual testing

Every NZI-branded insulator in every batch is quality tested and documented at seven stages during manufacturing so that any failure occurs in the factory and not in the field. These tests include a live HV flashover test



Rigorous electrical and mechanical testing is carried out at a safe distance on every NZI insulator



While manufacturing techniques have evolved over 100 years, the commitment to quality is unchanged

and mechanical strength testing from four different planes.

"If we cannot break it," says van der Werff, "we know it is set for its design life of over 60 years and we put our 25-year warranty on it."

"We put our Asian imports through the same rigorous lab testing and visual inspection regime because we test all the porcelain products we supply. About 80 percent do not pass our high-level testing but would likely still meet the industry standard. That is not to criticise the Asian product, but to draw a measurable distinction between product made down to a price for easy replacement rather than up to a quality that will outlast the line."

He says with more cross arms being made of composite and steel today, the failure point in the future will shift more to the insulators. Anything less than the most durable insulators will be problematic for lines companies and their accountability under SAIDI and SAIFI obligations.

"We are now seeing a flight to quality porcelain and with local production at Temuka there are no supply chain risks for networks to manage."

NZI's long-standing staff are key to achieving this quality as they apply over 700 standard operating procedures during the eight-to-ten-week insulator manufacturing process governed by their ISO 9001-certified quality system.

As a leader in the development of new products, NZI drove the development of 300 mm line posts to replace the standard 285 mm, and then developed 400 mm units to combat salt spray in coastal areas.



NZI is the only porcelain insulator manufacturer in the southern hemisphere and can develop insulators to suit whatever requirements network owners want.

"As a bespoke manufacturer we can do small runs of specialised products, but we can often provide a more cost-effective solution through our international supply chains."

Sustainable and recyclable

Van der Werff says insulators made by NZI are fully recyclable with the porcelain being crushed and blended back in with new clay.

"This year, we crushed and recycled about 700 tons of porcelain from traditional pin type insulators taken out of service. The metal is recycled as well."

"We can recycle only locally-made NZI products with their distinctive and strength-adding 'radio silent' blue glaze on the top. That is because the markings on the bottom tell us the unique clay blend of each type of insulator so we can accurately recycle each type to ensure the future performance of the new insulators they are made into."

"100 years ago we were the only game in town. In the open market today, we are happy to be the best game in town and we thank the network companies for increasingly recognising this and how we can solve their problems and add value to their assets." ■

For further information:
New Zealand Insulators
 P: 03 6878100/027694753
 E: sales@nzinsulators.co.nz
 W: nzinsulators.co.nz