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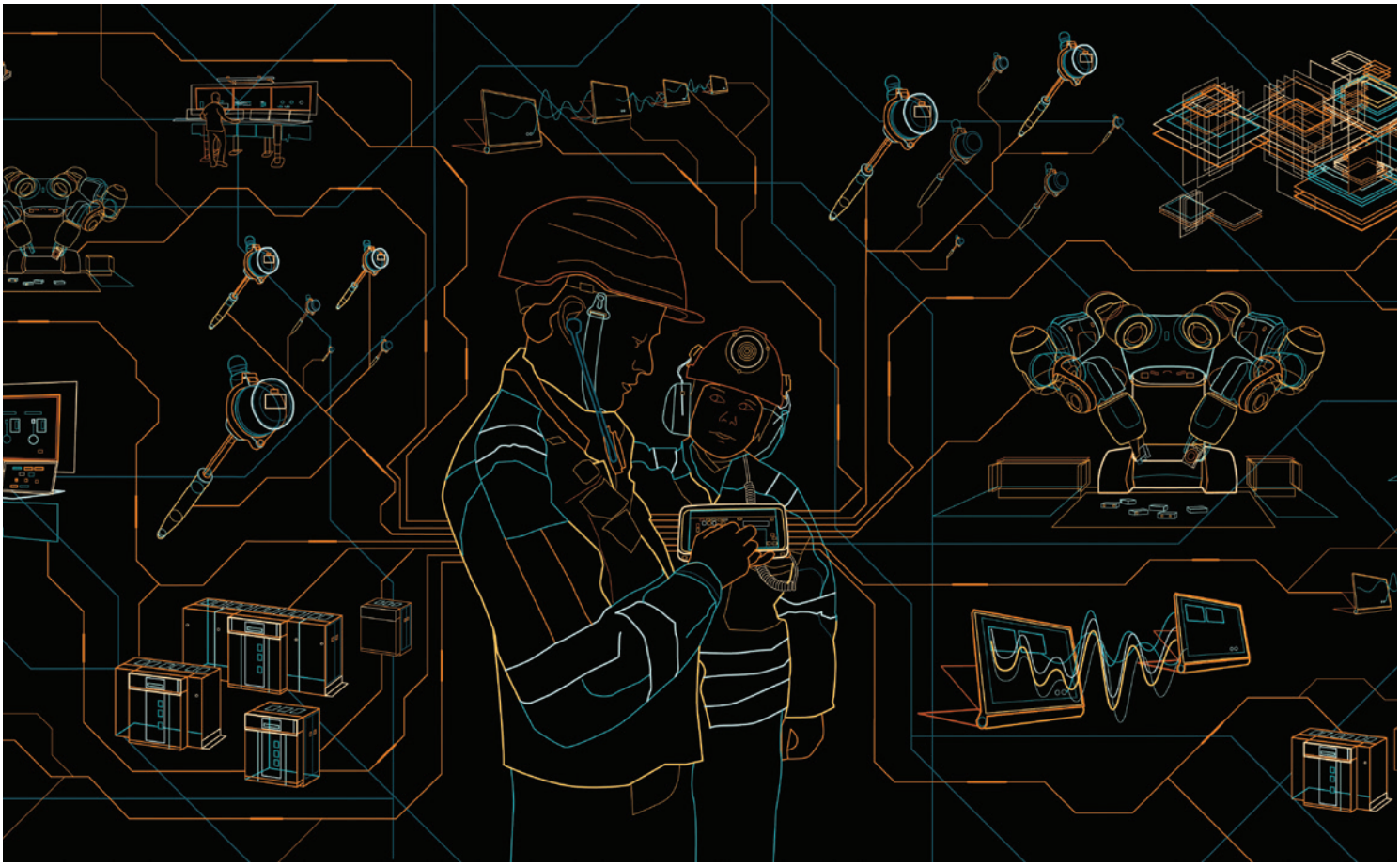
2|16
The customer magazine
of the ABB Group
in New Zealand



Tailored solutions

source 2|16

Ewan Morris
Managing Director
ABB
New Zealand

This year ABB is celebrating a double anniversary; 125 years of its presence in Switzerland, and 100 years of corporate research. The changes in technology over those years have been staggering, and ABB is proud to have been a part of making it possible to generate, transmit and convert electricity reliably and economically, particularly here in New Zealand for over 80 years.

Looking to the future, ABB announced at its capital markets day on 4 October 2016, a clear focus on the digital revolution, sometimes referred to as Industry 4.0, and the part it will be playing. Along with a strategic partnership with Microsoft (see story on page 18), ABB announced ABB Ability™, a fully integrated digital offering which brings together for the first time all of ABB's digital products and services, each built from a unique combination of sector knowledge, technology leadership and digital expertise, to create real business value for customers.

ABB Ability™ connects customers to the power of the Industrial Internet of Things and, through ABB's services and expertise, goes further by turning data insights into the direct action that "closes the loop" and generates customer value in the physical world.

The digital revolution offers opportunities to open up new fields of application, many of which could previously not have been imagined. We look forward to working with you to help shape this revolution.

Source 2/16. Issue 2. December 2016. • Customer magazine from ABB in New Zealand • Copyright 2016 • **Editor:** Tracey Paver • **Tel:** 09 362 1227
Email: tracey.paver@nz.abb.com • **Design:** Sauvage Design • Any use of text or photos requires the written consent of the publisher.

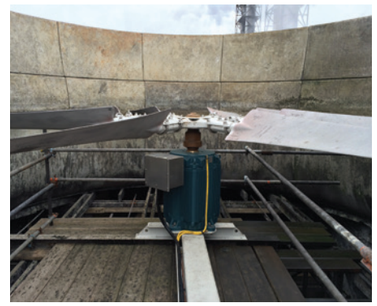
Tailored solutions

Technology stories

Stories in short

Motor and drives package

NZ Steel will be making significant savings on maintenance costs of around NZ $50,000 per year, following the upgrade of their cooling tower gearbox and motor with an ABB motor and drives package.



Background
NZ Steel needed to replace the motor driveshaft gearbox assembly (drivetrain) of their cooling tower fan – an essential piece of equipment for cooling the water used in the steel melters process at their Glenbrook Steel Mill, just outside of Auckland.

Industrial cooling direct drive motor and variable speed drive (VSD) package brings cost savings
ABB introduced the Baldor direct drive cooling tower permanent magnet motor and drive combination as a cost-effective solution, which would have a return on investment of around one year. The specialised motor is designed specifically to eliminate the gearboxes, drive shafts, couplings and bearings, with a direct-drive permanent magnet motor controlled by ABB's ACS880 drive. With the use of the ACS880 drive, the new motor speed can be controlled at the fan speed required of 200 rpm. This means the cooling tower fan can be mounted directly onto the motor-allowing the removal of the existing reduction gearbox from the assembly.

The motor and drive combination provides the high torque required, without additional drive train components. The removal of the standard speed motor, the driveshaft and couplings and the gearbox removes mechanical complexity, emits less noise and less vibration and increases reliability by eliminating major drive train maintenance issues.

This, in turn, puts an end to the associated annual maintenance of approximately $50,000 for around 10 years – an estimated saving of $500,000.

Nathen Phillips, Utilities High Voltage Technician for NZ Steel, comments: "New Zealand Steel has six large cooling towers on its site at Glenbrook. We were looking for opportunities to reduce maintenance costs and down-time associated with these assets. ABB's direct drive motor offered the opportunity to do this by replacing the high maintenance and costly gearbox driveshaft arrangement with a motor capable of being directly coupled to the fan and surviving in a wet environment.

We believe this will reduce the need for a bi-annual shut on the cooling towers to an expected lifetime of 10 years. This will be a significant cost saving for New Zealand steel."

The installation of this specialised motor and drives package is the first for New Zealand and has a range of applications, including wet or dry cooling towers, air cooled condensers (ACC) and air cooled heat exchangers (ACHE).

NZ Steel

New Zealand Steel is the leading manufacturer of quality steel in New Zealand.

New Zealand Steel supplies world class brands and products such as Colorsteel and AXXIS, and is the owner of the Glenbrook Steel Mill, located 40 kilometres south east of Auckland.

The mill was constructed in 1968 and began producing steel products in 1969.

ABB part of landmark commitment for electric vehicles

ABB is proud to be part of a landmark collective commitment by 30 of New Zealand's largest companies to transition at least 30 percent of their fleets to electric vehicles (EVs) by 2019.

This commitment, coupled with the New Zealand Government's EV policy announcements this year, is proving that collaboration is key to deploying new energy-saving and clean transportation solutions for the future.

ABB's Ewan Morris comments, "As both managing director of ABB in New Zealand, and as a member of the Drive Electric board, being part of the movement to accelerate a shift to EVs is an obvious choice. The commitment represents a tangible action by ABB to promote sustainable transportation alongside some of our key customers and the community. The commitment also complements ABB's position as a DC fast charging technology provider."

The following is an excerpt from an article that appeared on www.scoop.co.nz on 14th October 2016:

Transport, Energy and Resources Minister Hon Simon Bridges welcomes the initiative of major NZ corporates to transition their fleets to electric vehicles (EVs) by 2019

Landmark commitment will boost New Zealand EV numbers by more than 75 percent

Business leaders from some of New Zealand's most iconic companies have come together today, with a shared vision to transition their fleets to electric vehicles (EVs).

The initiative driven jointly by Air New Zealand and Mercury, with the support of Westpac, represents a total corporate sector commitment of more than 1,450 vehicles and will increase the number of EVs on New Zealand roads by more than 75 percent within the next three years. Along with the significantly lower running costs of electricity, this could remove almost 3 million kg of carbon emissions annually.

The business leaders, representing more than 30 organisations, each committed to transition at least 30 percent of their company vehicle fleets to plug-in electric vehicles by 2019 at the breakfast briefing in Auckland which was also attended by Transport, Energy & Resources Minister, Hon Simon Bridges.

Organisations committing to 30% EVs (where practical) by 2019:

- ABB
- Air New Zealand
- AMP
- BMW
- Contact Energy
- Custom Fleet
- Fleet Partners
- Fonterra
- Foodstuffs North Island
- Fuji Xerox
- Fujitsu
- Giltrap Group
- Hyundai
- ISS Facility Services
- Kiwirail
- Leaseplan
- Mercury
- OCS
- Opus
- Orion
- Powerco
- Renault
- SG Fleet
- Spark
- The Warehouse
- Transpower
- Turners Auctions
- Unison
- Vodafone
- Waste Management
- Watercare
- WEL Networks
- Westpac
- Xero

ABB's Technology Day 2017

Following ABB's successful Technology Day programme held in Auckland and Christchurch in April 2016, ABB is moving the concept around the country, hosting the Technology Day in both Hamilton and Dunedin in 2017.

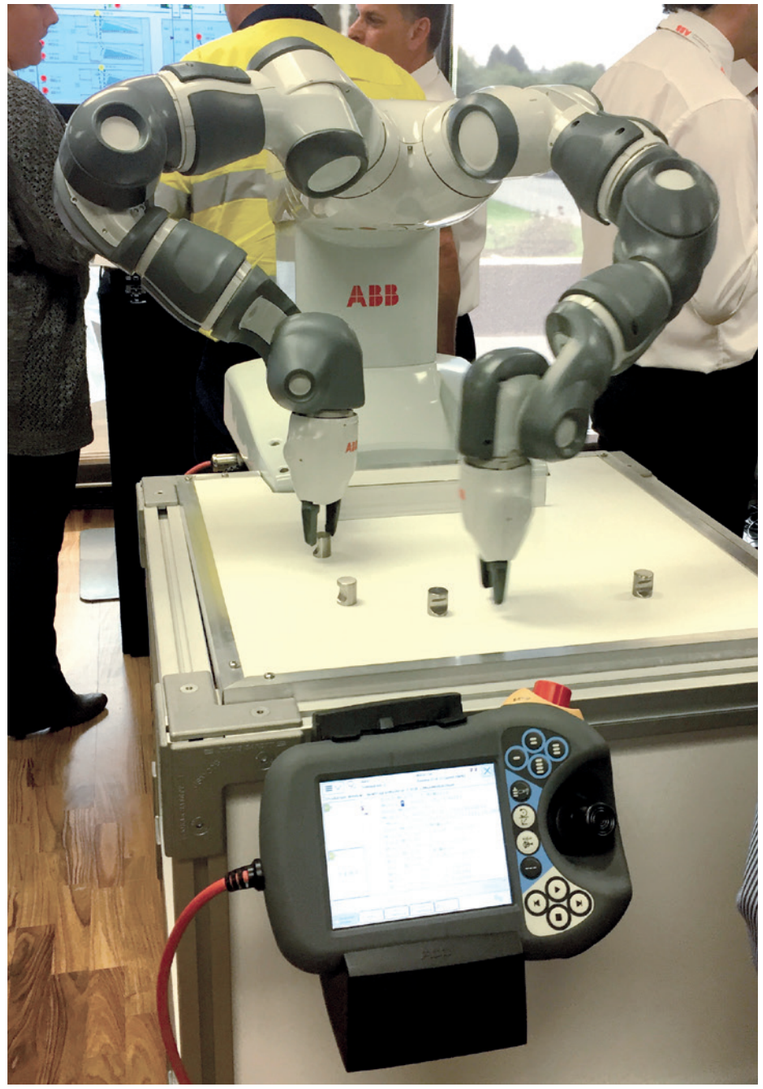
The half-day programme will again feature papers on advancement in technologies, energy efficiency and new products.
The programme is run twice a day, in the morning and again in the afternoon.

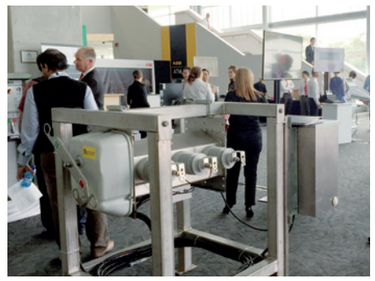
The dates are:

Hamilton – Wednesday, 29th March 2017 at Claudelands Centre in Hamilton
Dunedin – Tuesday, 4th April at the Dunedin Centre in Dunedin.

For more information on the event, including papers, abstracts and timing, please visit http://new.abb.com/nz/techevent2017

If you would like to receive updates on the technology day as they happen, please email nz.communications@nz.abb.com.





Compact secondary substation with space and safety in mind for Marlborough Lines

Marlborough Lines has selected the highest level of protection from arc flash hazards with the recent installation of ABB's locally-designed and fully-integrated UniPack compact secondary substation (CSS) technology in Picton.

Background

Marlborough Lines asset management planning called for the replacement of two older oil filled ring main switches, near the Port Authority building in Picton and a distribution transformer in the building's basement. An additional oil filled 11 kV switch was located in the basement carpark of the building. This equipment forms a key part of the local power infrastructure, and supplies 11 kV power for downtown Picton and 400 V feeders for both the Marlborough Port Authority building and adjacent premises.

Locally produced compact secondary substation with safety in mind

Marlborough Lines chose ABB's UniPack compact secondary substation (CSS) technology, which is designed and factory-assembled in Henderson, Auckland, with New Zealand-made switchgear and transformers. The specific UniPack selected comprises CFCF 4-way SafeLink 11 kV ring main switch, feeding a 500 kVA transformer in the centre section of the UniPack, which supplies 4 x 400A outgoing feeders to local consumers from the low voltage section of the substation.

ABB's UniPack meets the current IEC 62271 Arc Flash Standard for Arc Fault Containment and has been rigorously type tested to national and international standards at an overseas high voltage laboratory. The installation provides for public safety with a "B Classification" under IEC 62271.

Minimal disruption and a small footprint

Since internal electrical connections had been factory-fitted and tested, the installation personnel from Marlborough Lines could focus on quickly completing the external cabling connections to the existing 11 kV main feeders and 400 V consumer feeds. The older equipment was then disconnected and removed, with landscaping completed shortly afterwards.

The UniPack provided space for a footpath and landscaping to be installed around the unit, due to its compact size and softer appearance. The CSS was lifted into the final position in one operation with a minimum of site works required, saving time and reducing disruption to adjacent businesses.

Due to the combined cabling and switching in one location outside the building, the installation freed up valuable basement space inside the Port Authority building for the occupants.

Marlborough Lines are one of the early adopters of this technology, and this is the first installation of its kind for the UniPack in the South Island. It is also the first time that a utility has installed a UniPack outside of a building to replace aging equipment originally located in a basement of a commercial building.

ABB wins first commercial order for breakthrough 15-second flash charging technology to enable CO2-free public transport in Geneva

Revolutionary technology requires no overhead lines and offers a silent and zero-emission mass transit solution as a viable alternative to diesel buses, providing a model for future urban transportation.

ABB was awarded orders totaling more than $16 million in July 2016 by Transports Publics Genevois (TPG), Geneva's public transport operator, and Swiss bus manufacturer HESS, to provide flash charging and on-board electric vehicle technology for 12 TOSA (Trolleybus Optimisation Système Alimentation) fully electric buses (e-buses) which will run on Line 23, connecting Geneva's airport with suburban Geneva. The e-buses can help save as much as 1,000 tons of carbon dioxide per year, when compared with existing diesel buses.

ABB will deliver and deploy 13 flash-charging stations along an urban transit bus route, as well as three terminal and four depot feeding stations. This will be the world's fastest flash-charging connection technology taking less than one second to connect the bus to the charging point. The onboard batteries can then be charged in 15 seconds with a 600-kilowatt boost of power at the bus stop. A further four to five minute charge at the terminus at the end of the line enables a full recharge of the batteries. The innovative technology was developed by ABB engineers in Switzerland.

"We are proud of this breakthrough technology to support Geneva's vision of providing a silent and zero-emission urban mass transportation for the city. It provides a model for future urban transport and reinforces our vision of sustainable mobility for a better world" said Claudio Facchin, President of ABB's Power Grids division. "As part of our Next Level strategy, we are committed to developing customer-focused solutions and technologies that help lower environmental impact."

The decision to deploy TOSA on Line 23 was undertaken after the successful pilot of the first such e-bus on the route from Geneva airport to the Palexpo exhibition centre. The Line 23 bus route will be slightly modified in order to provide a fast connection to Praille-Acacias-Vernet, a new suburb being built to accommodate 11,000 flats and office space for about 11,000 employees. When fully commissioned in 2018, the high-capacity articulated buses will depart from both terminuses at 10-minute intervals during peak times. The line carries more than 10,000 passengers a day and the replacement of diesel buses by TOSA e-buses reduces noise as well as greenhouse gas emissions.

As part of a separate award by HESS, ABB will supply 12 flexible drivetrain solutions for the buses including integrated traction and auxiliary converters, roof-mounted battery units and energy transfer systems (ETS), as well as permanent magnet traction motors. Both contracts include five-year maintenance and service agreements to ensure operational reliability, efficiency and safety.

"The deployment of TOSA on Line 23 is the result of the collaborative efforts of the public and private sector partners who invested in this vision. This innovative project opens the way for the future of mobility, by providing a sustainable and environmentally-friendly mass transport solution for the well-being of our community," said Luc Barthassat, Geneva's State Councilor for Transport and Environment.

Geneva is one of the world's leading cities, recognised as a global centre of diplomacy, a financial hub and a technology and innovation centre. It is also a popular tourist destination with a high quality of life. It hosts the highest number of international organisations in the world, including global headquarters of institutions like the United Nations and the Red Cross.

ABB provides a range of technologies to support mobility applications such as railways, metros and electric buses and vehicles. Transportation and Infrastructure is one of the three customer groups served by ABB alongside utilities and industry, and sustainable mobility is a key focus area within ABB's Next Level strategy.

ABB is celebrating 125 years of its legacy in Switzerland and has been actively involved in the transportation sector, including rail. As a recent example, ABB technologies are helping to power and ventilate the recently commissioned 57 km Gotthard base tunnel through the Alps - the world's longest railway tunnel.

Buses in Geneva will be charged in 15 seconds with ABB technology

Solar Impulse completes historic voyage, ABB supports every step of the way

ABB and Solar Impulse take a shared message of pioneering technology across continents and oceans.

The landing of Solar Impulse in Abu Dhabi on July 26, 2016, marked the successful completion of the record-breaking zero-emission flight around the world, the first by a solar-powered aircraft. Solar Impulse achieved this historic milestone with stopovers on four continents, and flights across the Atlantic and Pacific Oceans that tested the endurance of pilot and craft alike. The unprecedented journey demonstrated the great promise of renewable energy to the world.

ABB joined forces with the Solar Impulse team when the plane was under construction. For ABB, the plane perfectly encapsulated its credo, “Power and productivity for a better world.” Through the innovation and technology alliance it forged with Solar Impulse, ABB provided dedicated engineers to the project, whose experience was critical to enabling the success of the mission.

At the same time, ABB’s local teams participated at every stop, explaining to students, customers, employees and communities across the world that what Solar Impulse has achieved in the air, ABB is doing on the ground.

While the mission of Solar Impulse may be complete, for ABB, committed to maintaining its position in the vanguard of change, the journey has just begun. Digitisation and sustainability are integral parts of a fourth industrial revolution, and ABB will lead the way, enabling humanity to run the world without consuming the earth.

ABB and Energy News

Energy News and ABB are delighted to have held another successful Annual New Zealand Electricity Survey this year. The survey presents fascinating insights gained from 500 industry participants sharing their opinions on the New Zealand electricity sector.

Celebrating its fifth birthday this year, the survey focused on identifying opportunities for the sector and highlighting areas for collaboration and new ways of thinking.

Twenty-one thought-provoking questions tested respondents’ views on electricity industry matters such as disruptive technologies (including solar PV, electric vehicles and battery storage), changes to the industry structure, retail competition and climate change responses.

The survey results are available for download from www.abb.co.nz or by contacting nz.communications@nz.abb.com.

Robots on show at Foodtech Packtech

ABB’s YuMi and IRB120 robots were on show at Foodtech Packtech (FTPT) – New Zealand’s largest food manufacturing, packaging and processing technology trade show – in October.

Now on its 20th year, the biennial event provides a forum for industry professionals and decision makers to discuss and share industry knowledge and expertise.

The event attracted more than 250 local and international exhibiting companies and some 4,500 qualified visitors.

New Zealand integrator RML utilised ABB’s IRB120 to put giant jaffas into boxes on their stand.

YuMi mastering the rubics cube as part of Hot Melt Packaging Systems (HMPS) stand. HMPS are an AU system integrator based in South Australia.

Variable speed drive retrofit brings reliability for New Zealand Navy vessels

When the New Zealand Navy experienced on-going problems with the bow thruster starters on their offshore patrol vessels, BAE systems in Australia commissioned ABB to investigate the issue and help them achieve full operational reliability.

Background

The Royal New Zealand Navy's *Protector*-class offshore patrol vessels (OPV) HMNZS *Otago* and *Wellington* commenced operation in 2010. Their primary purpose is to carry out resource protection functions in New Zealand's exclusive economic zone, and around the South Pacific and Southern Ocean.

Since commencing operation, both vessels had experienced reliability issues with the starters for their 450 kW, 440 V bow thruster drive motors. The bow thruster is a vital component in the control of the vessel during manoeuvring and docking. The existing starters (non-ABB) had been installed during the vessels construction, so space was extremely limited and access to install the new units was now via a single water-tight hatch in the foredeck of each vessel.

Power quality testing

BAE Systems asked ABB to carry out power quality testing on the Navy's HMNZS *Otago* at the naval dockyard in Devonport, Auckland. Following further investigations and tests, it was found that the existing soft starter would not reliably start the thruster motor due to the set-up of the vessel's power management system (PMS) and generating capacity. A new, more suitable system would need to be designed and installed that would provide reliable starting of the thruster motors.

ABB's solution

ABB's variable speed drive (VSD) option, utilising the new ACS880 drive module, was established as the most reliable solution for starting the thruster motor using the vessel's existing power system. After a review, it was decided that, rather than attempting a replacement upgrade with ABB VSD cabinet, the most cost effective and efficient course of action was to install a new a custom-built control panel with drive module fitted into the cabinet and featuring the same external/auxiliary control set up as the existing system. This would mean that there would be no requirement to change or modify the vessel's operational procedures. ABB's scope included engineering, supplying, building, installing and commissioning a bow thruster starter system on both of the navy's offshore patrol vessels.

A key advantage of ABB's solution was that the proposed control panel could be part-stripped to fit through the water-tight access hatch, compared to other proposals which had required cutting and removing a section of the steel deck to gain access to the thruster room. This solution allowed for reduced installation and certification costs, and fewer time delays. The panel was also designed to fit the same footprint as the existing unit, and the main and auxiliary cable connection terminations were arranged so there were minimal changes required. Despite being the largest component part, because of its relatively small footprint, the ACS880 drive module only required a hand rail to be removed for installation.

ABB contracted McKay Ltd to provide support services for engineering design and manufacturing of the new control panel, as well as installation services.

The existing control panel was decommissioned, part-stripped and removed from the vessel. After factory acceptance testing (FAT) was carried out by ABB at the McKay workshop in Whangarei, and witnessed by the New Zealand Navy project acceptance team, the new panel was shipped to Devonport to be installed into the vessel.

Installation and commissioning had to be carried out on both vessels, one after the other, during their routine maintenance period in September and October 2015. This was successfully completed on time.

The *Otago* and *Wellington* now feature a bow thruster starter system that provides the vessels with safe and reliable manoeuvrability; designed and installed without the requirement to change or modify existing operational procedures, and easily fitted without the need for cutting the deck or bulkhead plating.

New products

Read about the latest products in the market.

Miniature Circuit Breaker S 200 80A-100A

More amps per millimetre width

The miniature circuit breakers of the System pro M compact® series S 200 provide state-of-the-art safety and comfort. They stand out due to their high performance and the wide range of accessories and approvals.

The additional electrical currents 80 A and 100 A complement the current portfolio of the System pro M compact® and offer maximum performance in a single module width.

Further info: www.abb.co.nz

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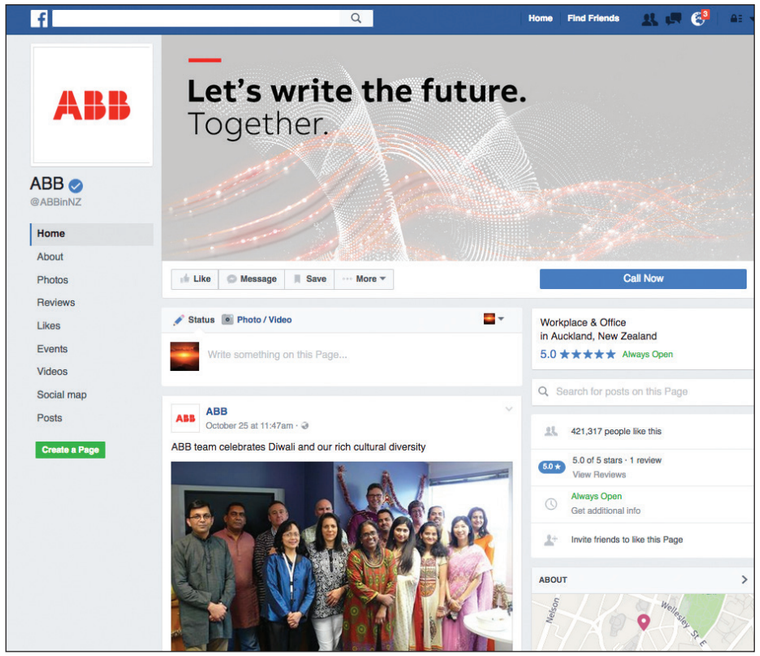
Advantages

- No need for a hybrid chassis, therefore saving cost
- Clear contact position indication in red/green (“real CPI”)
- Unique, patented twin terminal with captive screws and an increased opening for cables up to maximum 50 mm², finger-proof (IP20)
- Busbar slot in the back for best visibility during installation
- High performance in building installations and industrial applications up to 6 kA at Ue = 400 V AC acc. to IEC/EN 60947-2 and IEC/EN 60898-1
- Individual product identification code
- Approved acc. to IEC/EN 60898-1 and IEC/EN 60947-2 for global use

ABB on social media



Don’t forget to like ABB in New Zealand on Facebook for the latest news and information.

ABB is also on Twitter, LinkedIn and has a channel on YouTube.

Deloitte Energy Excellence Awards 2016

ABB was both a proud award sponsor and award nominee at this year’s Deloitte Energy Excellence Awards, held at SkyCity in Auckland in August.

ABB congratulates Linda Thompson, Energy Manager for Fonterra, for being the recipient of the ABB Young Energy Executive of the year award (Linda was unable to attend the awards, so Glenn Sullivan from Fonterra collected the award on her behalf as pictured).

ABB was also honoured to be one of three companies shortlisted for the Energy Technology of the year award for the recently-launched MV uninterruptable power supply (UPS) developed and manufactured in Napier.

More than 650 guests from the energy sector, heavy industry, consulting firms and community groups attended the awards dinner at SkyCity in Auckland. The Deloitte Energy Excellence Awards provide an opportunity to recognise excellence and achievement across the electricity, oil, gas and petroleum industries. Founded in 2010, the awards are now the industry’s annual black-tie gala event and are attended at an influencers and decision-maker level.

ABB and Microsoft partner to drive digital industrial transformation

In early October, ABB and Microsoft announced a strategic partnership to help industrial customers create new value with digital solutions. Customers will benefit from the unique combination of the Microsoft Azure intelligent cloud and ABB's deep domain knowledge and extensive portfolio of industrial solutions.

The two partners are committed to empowering digital transformation in customer segments such as robotics, marine and ports, electric vehicles and renewable energy. By selecting Microsoft Azure as the cloud for its integrated connectivity platform, ABB's customers will now have access to an enterprise-grade cloud infrastructure that benefits from billions of dollars of ongoing investment.

"Together with ABB, we are providing industrial customers with the digital technology and cloud platform to empower every person, team and business system within an organisation to glean new insights and drive faster decision-making to seize new growth and opportunities," said Microsoft CEO Satya Nadella.

"This partnership will provide unique benefits to our customers in utilities, industry, transport and infrastructure, building on the combined strength of Microsoft and ABB," said ABB CEO Ulrich Spiesshofer. "Building on our installed base of more than 70 million connected devices and more than 70,000 digital control systems, the next step is to develop one of the world's largest industrial cloud platforms."

The ABB Ability™ offering, announced today, combines ABB's portfolio of digital solutions and services across all customer segments, cementing ABB's leadership in the energy and fourth industrial revolution.

Satya Nadella, CEO of Microsoft, shares his thoughts on the partnership

ABB's new integrated cloud platform will be a key enabler for ABB Ability and is expected to create a large, open, digital industrial ecosystem for customers, partners, suppliers and developers.

Together, ABB and Microsoft will accelerate digital solutions that improve customers' productivity by increasing uptime, speed and yield. As ABB standardises its platform on Azure, and expands its leadership in energy and the fourth industrial revolution, the company will take full advantage of Azure services such as Azure IoT Suite and Cortana Intelligence Suite to capitalise on insights gathered at every level from device, to system, to enterprise, to cloud.

ABB and Microsoft have a long history of successful collaboration, and have delivered transformational end-to-end solutions across several industries including Robotics, Smart Grids, Marine and Ports, and Electric Vehicle Charging Infrastructure.

ABB and Fluor partner to deliver power substation projects globally

ABB and Fluor have formed a global strategic partnership for the execution of large turnkey engineering, procurement and construction (EPC) projects for electrical substations. By combining ABB's world-leading technology and its market leadership position in power transmission and distribution with Fluor's expertise and experience in delivering large EPC projects, the partnership will help meet the evolving need of power grids across the globe for safe, reliable and state-of-the-art electrical substations.

Fluor Corporation (NYSE: FLR) is a global engineering, procurement, fabrication, construction and maintenance company that designs, builds and maintains capital-efficient facilities for its clients on six continents. For more information, please visit www.fluor.com.

ABB and Aibel to partner on offshore wind connections

ABB and Aibel have announced a strategic partnership to deliver state-of-the-art offshore wind integration solutions. ABB will focus on its proven high voltage direct current (HVDC) technology, while Aibel will take turnkey engineering, procurement and construction (EPC) responsibility for the design, construction, installation and commissioning of the offshore platforms.

The partnership will combine the core competencies of the two companies to deliver best-in-class solutions. The partners will collaborate on the design, engineering and optimisation of offshore wind connections.

Aibel AS employs around 5,000 people and is engaged in the oil, gas and renewable energy sectors, providing engineering, construction, upgrading and maintenance solutions. The company has two construction yards: one in Haugesund, Norway, and the other in Thailand. The Haugesund yard was set up over 100 years ago and is today one of the largest such yards in Norway.

ABB energises transformer at world record voltage level of 1.2 million volts

ABB has developed, manufactured and energised a 1,200 kilovolt (kV) ultra-high-voltage power transformer to support India's plans to build a 1,200 kV transmission system, supplementing the existing 400 kV and 800 kV transmission grid as demand for electricity increases.

The transformer was manufactured and tested at ABB's state-of-the-art Vadodara facility in India.

This 1.2 million volt transformer represents the highest alternating current voltage level in the world and is installed at the national test station at Bina, Madhya Pradesh in Central India, as part of a collaborative initiative by the country's central transmission utility, Power Grid Corporation of India Limited (POWERGRID).

ABB launches flexible "plug and play" microgrid solution to boost use of renewables

ABB today announced a modular and scalable "plug and play" microgrid solution to address the globally growing demand for flexible technology in the developing market for distributed power generation. The cost-efficient, containerised solution is relevant for mature and emerging countries and will help maximise the use of renewable energy sources while reducing dependence on fossil fuels used by generator sets.

ABB's innovative technology with the PowerStore Battery and the dedicated Microgrid Plus control system, as well as cloud-based remote service, can not only provide power access to remote areas, but also secure cost-efficient uninterrupted power supply to communities and industries during both planned and unplanned power outages from the main grid supply.

Enter the digital substation

New complexities and the need for a more flexible and intelligent grid are driving a digital revolution across the power value chain. The digital substation is a centrepiece of an increasingly automated grid. IEC 61850 automation systems with the IEC 61850-9-2 process bus along with intelligent electronic devices enable seamless integration of protection, control and communication equipment. These smart substations incorporate innovative products like compact disconnecting circuit breakers (DCB) with built-in Fiber Optic Current Sensors (FOCS) as well as sensor equipped transformers and switchgear - all supporting our vision of a stronger, smarter and greener grid. new.abb.com/grid