coverings
information that sticks

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Si-COAT Goes Down-Under: Siemens/National Grid's Basslink HVDC Converter Station in Australia

Si-COAT® a CSL Innovation
TECHNOLOGY THAT STICKS™

It is said patience and sincere work earns you a reputation that always pays off in the end. It is just such a reputation that earned CSL the honour of working with Siemens, Germany to remedy an urgent situation at a newly constructed project in Australia.

SIEMENS – a world leader in machinery, equipment and services for power generation, transmission and distribution – is also the leader in high voltage direct current (HVDC) electricity systems. With an ever-growing global economy and associated increases in demand for electric power, HVDC has come to be recognized as a significantly more economical method for the transmission of electric power, especially for undersea transmission.

One such system was recently completed in Tasmania, Australia. A 290 km undersea cable, the longest of its type in the world, stretches from the north coast of Tasmania to the coast of Victoria, Australia, near Melbourne.

Tasmania has plenty of water resources to generate inexpensive and environmentally-friendly hydro-electricity for the state of Victoria, which is hungry for power particularly during the summer months from October to March.

A typical DC system consists of large hydro-electric generation, which produces electricity in an alternating current (AC) format. The AC electricity is then converted to DC for efficient long-distance or undersea transmission. In almost all cases, the hydro-electric stations are far from large population centres. Examples are Canada's Nelson River plant in northern Manitoba, Brazil's Itaipu plant in the remote south, and India's Rihand Dam, which is south of Benaras (Varanasi) in the state of Uttar Pradesh. AC generation at these sites is converted to HVDC (±500 to ±800 kV) for long-distance transmission.

One such project, known as Basslink, was recently carried out by Siemens for National Grid of Australia. The abundant water resources of Tasmania are used to generate 300 to 600 MW of electric power in the mid-highlands of Tasmania. This power is transmitted at 230 kV AC to the north of Tasmania near George Town. Here, the George Town DC convertor station converts the AC to ±400 kV DC for transport via undersea cable, through the Bass Strait, to the southern coast of Victoria state. Further inland, at Traralgon, the electricity is converted back to AC at the Traralgon convertor station and fed into the mainland's power grid.

This source of electricity to the flourishing region of southeastern Australia is vital. The Basslink project was completed in record time and was put into operation in April 2006. The

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Si-COAT goes Down-Under *(continued)...*

convertor station at George Town was energized on April 28, 2006, at the beginning of the Australian winter.

Despite rigorous design, airborne contaminants from local industry induced electrical discharges on the insulators of the DC side of the George Town convertor station. The main bus-bar porcelain post insulators and the smoothing reactor support insulators, all close to 8 metres tall, started showing surface discharge very soon after energizing in April 2006. This was especially true during early morning and evening hours. On May 17, 2006, hardly three weeks after the system's startup, CSL received the very urgent call to provide a remedy to the situation.

That was the beginning of a most amiable business relationship between CSL Canada and Siemens, headquartered in Erlangen, Germany. CSL bore the single responsibility to remedy the performance matters and submitted a turnkey solution to apply Si-COAT High Voltage Insulator Coating (HVIC) to the affected insulators.

This was the most challenging project CSL has undertaken to date. Since the supply of power from Tasmania to the mainland is not only essential but also a higher-than-average revenue generator, it was decided to carry out the Si-COAT application at the tail end of February 2007, which marks the tail end of the Australian summer and reduced demand from the air conditioning units of the mainland. Near-summer climate conditions are also ideal for the application of Si-COAT as it assures greater quality of application.

However, since late-February still tends to see elevated temperatures in the region and, thus, elevated power demand from the mainland, a very limited 12-hour window during daylight hours was granted to CSL to carry out the project.

Imagine mobilizing a caravan (of crew, scaffolding, boom trucks, cleaning and spray equipment, overspray shielding, compressors, etc.); cleaning, drying and applying Si-COAT across nearly 400 square metres of surface area on roughly 8 metre tall post insulators at a precise 500 microns dry film thickness; and tidying and de-mobilizing all within a 12-hour window!

CSL did it in just over 8 hours.

To effect, choreograph and execute such a feat, CSL only had a few months and had to work within the uncertainty of a definite execution date. The best the customer could offer CSL was a 12-hour window sometime within three days at the end of February. Even as late as February 9th, CSL was uncertain which of February 24th, 25th or 26th would be granted to them for project execution.

Nonetheless, after a preliminary visit to the project site in October, 2006, everything shifted into high gear in early January 2007.

Pails of Si-COAT HVIC were dispatched by air, and John Barr, project leader at CSL, went to Tasmania two weeks ahead of the scheduled shutdown window to work out final logistics.

The final word was given just prior to the end of February, and while John was already in Tasmania, that the shutdown would be taken on February 24th from 07h00 to 19h00. Even though all meteorological data had been studied in advance and comfort was taken in the historically benevolent climactic patterns for that time of year, the project execution day turned out to be sunny at first but gusty and cloudy in the afternoon.

Further complicating the project was that the shutdown of the convertor station was the first real, non-practice shutdown to be carried out by the station operators. It took National Grid staff almost four hours to complete the shutdown process. These four precious hours were spent under the UV-intense Tasmanian sun whereas the shutdown was initially estimated to take no more than 60 minutes to complete. Finally, the "All Clear" came.

Work was carried out in a structured and methodical manner. With more than 30 people in a confined area, there was literally no room for error. When the high winds and threat of imminent rain arrived at about 18h00, the work had to be arrested for concern of safety. This left two final post insulators uncoated. With thanks to National Grid's acceptance that the duration of the shutdown procedure exceeded everyone's estimates, it was agreed the station

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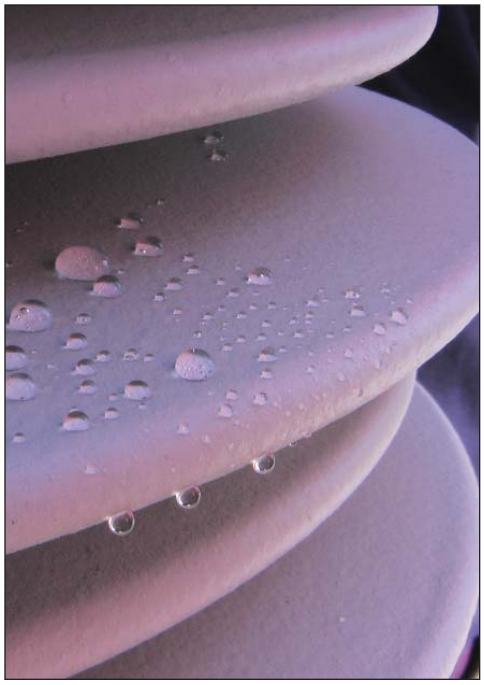
Si-COAT HVIC was applied to the DC side of the Basslink Interconnector Convertor Station near George Town. ±400 kV DC electricity from the Convertor Station is transmitted via overhead, underground and undersea lines to mainland Australia.

Si-COAT goes Down-Under *(continued)...*



After Si-COAT application an overnight rainstorm leaves behind discrete water droplets on the coating's hydrophobic surface. Such droplets will grow more spherical over time as Si-COAT achieves ultra-hydrophobicity.

would take a second short – yet expensive – shutdown on the morning of February 25th. The final two post insulators were coated within the span of an hour.

As indicated by the evening skies of February 24th, the convertor station was rained on over the course of the night. The following morning, National Grid staff excitedly reported no surface discharges were observed during the early morning mist and fog. On many previous occasions, identical conditions yielded heavy discharge with clearly visible arcing.

This observation alone was testimony to a job very successfully and satisfactorily carried out by CSL, in record time, on the far side of the globe. Further, and more heartwarmingly, several messages of thanks and positive feedback have been received by CSL from both National Grid in Australia and the Siemens head office in Germany.

As a standard accompaniment to any turnkey Si-COAT project undertaken by CSL, a long term warranty was issued to the customer. From numerous applications around the world under the harshest of conditions, CSL has gained a tremendous confidence in Si-COAT's ability to provide flawless, maintenance-free performance for a minimum of 10 years.

CSL takes this opportunity to thank Siemens' officials, especially Christoph Armschat, Thomas Westerweller, Mathias Kuhn, Asok Mukherjee, Klaus-Peter Schallert and Paul Burke for their confidence in CSL and assistance in successfully completing what CSL considers a prestigious undertaking and a feather in its cap.

At the same time, a special thank-you is extended to Malcolm Eccles, Joska, Greg and Bruce of National Grid of Australia for their on-site help in completing this project on time and on budget.

For more information on Basslink, please visit http://www.nationalgrid.com.au

One Year without any Lost Time Accidents

On October 25, 2006 employees celebrated; it had been one year since the last lost time accident at CSL. And in April, as promised, all employees were rewarded for their conscientious safe work practices with fleece jackets emblazoned with the Si-COAT logo.

The photo of CSL's Joint Health and Safety Committee (JHSC) members proudly modeling their jackets shows how sharp the jackets look. CSL's JHSC played a significant role in helping the employees achieve the one year mark without any lost time accidents. The Committee's main responsibility is to identify hazards in the workplace stemming from machinery, substances, production processes, working conditions, procedures or anything else that might endanger the health and safety of workers. To a large extent, this responsibility is met by carrying out monthly inspections of the workplace. The JHSC also meets quarterly to discuss health and safety concerns, review progress and make recommendations.

CSL's JHSC is comprised of four members. There are two co-chairs who have received special training in occupational health and safety and have been certified by the

CSL's JHSC members (left to right): John Barr, Bill McLaren, Bonnie Cummings and Cindy Johnson

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A Year without Lost Time Accidents *(continued)*...

Workplace Safety and Insurance Board. CSL's workforce co-chair is Cindy Johnson (QA Technician) and the management co-chair is Bill McLaren (Production Manager). Cindy and Bill are both long-standing members of CSL's JHSC. When asked about their roles on the JHSC, both stated views about wanting to ensure all employees at CSL feel assured that CSL is a safe place to work. Cindy expressed that over the last four or five years she has seen CSL's health and safety practices significantly improve, but she was careful to note that there is always room for improvement and there is never a time to ignore health and safety in the workplace.

The two other members of the JHSC are Bonnie Cummings (Accounting Clerk/ Receptionist) and John Barr (VP Projects and Engineering). Bonnie was just recently voted in as the workforce representative on the Committee. While input on health and safety is new to Bonnie, she is excited about the appointment and has taken on the role happily. John Barr is also a long-standing management member of the JHSC. He is glad to bring his extensive knowledge of CSL's operations and his engineering background to the table to generate a safer and healthier workplace at CSL.

Congratulations to all of the employees for working smart and working safe!

Results: CSL's Annual Customer Satisfaction Survey

As in past years, CSL sent out a survey to customers late last year, and they were returned earlier this year.

Customer service questions were divided into two categories, the first dealing with quality of service relating to order processing and delivery of product. The second category dealt with technical support and the overall communication of technical knowledge regarding CSL and Si-COAT products.

Close to 200 surveys were sent out, and results showed a trend – on a scale of 1 to 5 (with 1 being poor and 5 being excellent), product quality had the highest average, followed by customer support. On-time delivery was an area which showed the greatest improvement from last year, and overall, customers seemed very happy with the level of technical expertise and support they were receiving at CSL.

The survey will soon be posted on the CSL website – feel free to take a look and send in a completed survey, so we can continue to best address your needs and provide superior service and quality products to all our customers, both near and far.

John, Natasha & Tamara George

Growing Family...

Weighing six pounds, ten ounces, Tamara Lynn George was born on January 25th, 2007 at 6h20 to John George (Production Associate) and his wife Jennifer.

Tamara was warmly welcomed into the growing family by her three older sisters, Natasha, Breanna and Haleigh.

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SUGGESTIONS:
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