

**Issue 18/02**  
**HVDC/FACTS - Highlights**

**“The prevention of accidents must not be perceived as a statutory directive, but rather as a precept of human obligation and commercial good sense.”**

Werner von Siemens, 1880

Environmental protection, health management and safety (EHS) is part of Siemens social responsibility and the key factor for sustainability and success in business. In the field of high voltage direct current (HVDC) transmission EHS aspects play a major role in project excellence, e.g. the Basslink HVDC Interconnector in Australia ([HVDC/FACTS Highlights 2006](#)) or BritNed (Living Energy Magazine, [Issue 6](#), 2012), the DC link between UK and Netherland. In recent years HVDC projects have been honored for their excellent performance, for example, with two STAR (Safety Thanks And Recognition) Awards from Transpower for New Zealand’s Interconnector Pole 3 in 2011 and The British Safety Council’s Sword of Honour award 2015 for the HVDC Western Link Consortium.



In November 2017, the HVDC project “Nemo Link” connecting United Kingdom with Belgium received the Sword of Honour award 2017 ([Press Release](#)) for the UK part. It is the first DC link in modular-multilevel voltage-sourced converter technology (HVDC PLUS) at  $\pm 400$  kV DC configured as symmetrical monopole for a power transmission capacity of 1,000 MW. Siemens received the contract for the converter stations from Nemo Link Ltd.

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in June 2015. Nemo Link Ltd. is an incorporated joint venture between National Grid Interconnector Ltd. (part of National Grid PLC) and Elia System Operator SA (the Transmission System Operator of Belgium). EHS is part of their company policies.

Mike Elmer, Project Director from National Grid for Nemo Link states, "From a company perspective, nothing is more important. Our reputation in this area sets us apart from industry comparators." And he continues, "For Nemo Link it forms the basis of our license to operate: a great reputation gives us the right to show our customers, the regulators and government that we care about people and the environment - with it we earn the right to participate in the energy market, without we have very little."



Fig. 1: Site view of the converter station at Richborough



Fig. 2: Converter station Herdersbrug

The submarine cable connection has been designated as one of the European Commission's projects of common interest to help create a European internal energy market and to facilitate the integration of renewable energy (e.g. offshore wind power). The Sword of Honour award 2017 with its audit, which goes far beyond the requirements of current health and safety management systems such as OHSAS 18001, is testament to Siemens' commitment and resolve to achieving the highest standards of health, safety and environmental performance.

### Design to safety

Diligence begins with the design of our products and solutions. In project excellence for Nemo Link the early implementation of design to safety review meetings allow to positively influence the design of the station. In the particular example, working with the 3D model, offers the opportunity to identify, analyze and find a solution as well as to achieve an agreement on a common platform.

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Figure 3 showcases an example: It became obvious that stairs would provide the safest means of access. Additionally the piping was adapted to maintain safe escape routes. Also the positioning of a small crane was optimized and handrails added to ensure better handling of material and safe working conditions.

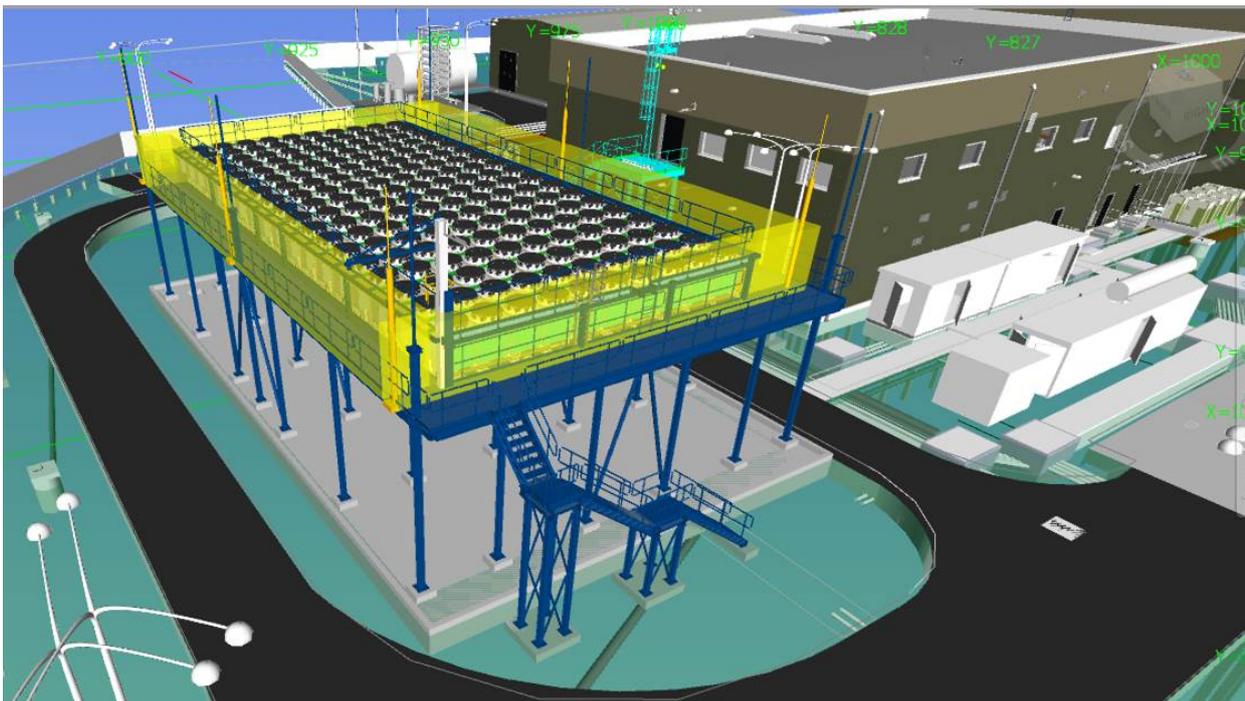


Fig. 3: 3D model of the cooling system

Joergen Kroemeke (Project Director, Siemens) states, “In my opinion it was essential to get safety on top of the agenda right from the start when we kicked off the design process. Only by thinking the whole project through to completion were we able to make a real difference. For every phase of the project we are led by the objective to try to be as good as we possibly could in the field of EHS.”

A safe working environment not only reduces the possibility of a major accident from occurring which could have significant costs associated with restricted access to site, actions from UK Enforcement bodies, legal action and loss of reputation. Moreover design to safety will undoubtedly optimize processes and reduce maintenance times by ensuring equipment can be serviced in the most efficient manner.

An additional highlight for Mike Elmer has been the management and control of psychosocial hazards, “We have recently started to explore the challenges of mental wellbeing in the workplace. It is complex, it is hard and yet Siemens is with us all the way to make a difference - it is not yet clear what this may look like but Siemens having the faith to explore the future is magnificent.” However, by effectively managing the risk associated with these hazards it promotes a safer work environment with improved morale and productivity combined with reduced absenteeism.

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### Come Home Safe

In order to implement the Nemo Link converter stations for secure and flexible power supply it goes without saying that all employees want to come home safe to their families. Family events and a drawing contest for children improve the team spirit and the zero harm culture.

### Nemo Executive Safety Board (NESB)

In parallel to the EHS project activities, representatives from the clients, Siemens and other companies involved in the Nemo Link project have followed the invitation from Siemens to form the NESB. Hauke Juergensen (Head of Large Transmission Solutions) declares, "With the Nemo Executive Safety Board we have created something pretty unique on this project. A forum to share cross-company best practices and to agree joint safety initiatives on management level has been a great inspiration for everyone involved. It clearly sets the right tone with respect to our continued commitment and the mutual sense of urgency with respect to safety matters." The open dialogue has helped the involved companies to support each other, by learning from similar projects and sharing best-practice and knowledge for other projects.

### Conclusion

The commitment to occupational safety is paying off. Less time lost on the job due to safety-related incidents offers an optimized project implementation time. Nemo Link is on schedule and will commence commercial operation in early 2019.

These are just a few examples of the high standards Siemens is setting for EHS at HVDC projects worldwide. Occupational health, safety and environmental protection not only benefit people's health, but also help to avoid consequential costs. Well-structured processes improve both safety and quality, which also improve efficiency in operation and maintenance.

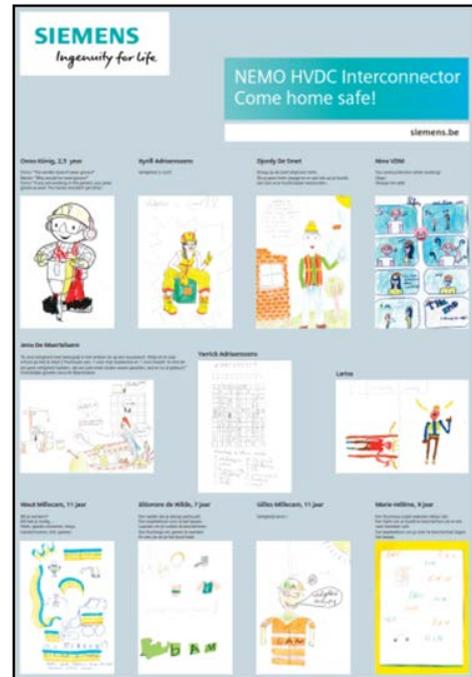


Fig. 4: Poster of the drawing contest "Come home safe!"