

# Training ups availability

With ABB Marine Academy training, operators become more proactive in operating and maintaining equipment, which result in increased availability. One of the aims of the training is to reduce surprises and improve the operator's ability to handle them.

**S**hips are built and used to achieve tasks such as transportation. Maximum availability of a vessel's installations is therefore crucial for successfully completing these tasks. While availability is linked to profitability, its major driver will always be safety.

According to DNV, "studies show that 80 to 90 percent of accidents are caused directly by human error and that 60 percent of these are related to poor situational awareness." Situational awareness is described as "what you need to know not to be surprised." (Jeannot, Kelly, & Thompson, 2003).

## Regulatory environment

While "type specific" training is common in the aviation industry, and even mandatory, it is virtually absent in the maritime industry. International regulations that define the training requirements of deck, engine and electro-technical officers and crew are, by their very nature, generic.

Traditionally, original equipment manufacturer (OEM) training familiarizes customers with the OEM's products and is generally classroom-based, with some practical maintenance or operational tasks being demonstrated.

## ABB Marine Academy

The ABB Marine Academy in Helsinki was established in 2005 as part of the ABB Marine Service portfolio to provide specific training in ABB products. Since then, the academy has opened branches in Singapore, Rotterdam, Ulsteinvik, Genoa and Houston.

Besides providing technical product information, Marine Academy courses deliver system-wide knowledge to give a holistic view of the ship as a system, rather than a group of products bolted inside a hull.

## Training standards

The IMO's International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) was originally signed in 1978 and was then significantly amended in 1995 and 2010. This is the primary document that defines the minimum general training standards for all masters, officers and watchkeeping personnel on board ships. However, the International Convention for the Safety of Life at Sea (SOLAS) also specifies training requirements by vessel type, particularly in Chapter IX, also known as the International Safety Management Code.

Regional (such as European Union), Flag State or port specific regulations may also be applicable to certain vessels. While compliance with these regulations is



the primary responsibility of the owner or operator, ABB Marine continually reviews and adjusts its training to ensure that courses stay relevant.

Starting in 2011, ABB Marine Academy training courses have been aligned with the latest STCW standards to provide the right information to the right personnel on board.

### Outcome-based education

The STCW defines outcomes of training rather than specific training. By focusing on outcomes, rather than individual products, the Marine Academy is able to adjust “standard courses” to suit customer requirements so that instructors can address the specific needs of learners. Recognizing that every learner is different, instructors may need to use different training methods to achieve the same outcomes with different courses.

The academy also helps customers develop learning paths, starting with basic safety courses, through product courses (if required), and ultimately high-level system-wide courses.

### Responding to new technologies

Many consider marine industries slow to adopt

innovations. In reality there has been a huge change in maritime technologies and the complexity of its installations. As more shipping segments adopt diesel-based electric propulsion, an increasing number of vessels now operate a High Voltage (HV) plant<sup>1</sup>.

While there is no denying the benefits of HV, which are beyond the scope of this article, it does carry different risks compared with low voltage plants. These risks must be identified, understood and mitigated.

The ABB Marine High Voltage safety course has been offered since the Marine Academy’s inception in 2005. This course has attained certification with DNV and the Norwegian Maritime Directorate. After its initial certification in Helsinki, the course has been held at all branches of the Marine Academy that are located near maritime hubs.

### New training requirements

However, the STCW has now, for the first time, specified Marine High Voltage training for marine engineers as well as for a new certified position of Electro-technology Officer.

From July 1, 2013, management level officers (Second Engineers and above) with UK Certificates of



Competency in Marine Engineering will be required to take an approved High Voltage course covering, as a minimum, the following topics:

- Following functional, operational and safety requirements for a marine high-voltage system
- Assigning suitably qualified personnel to carry out maintenance and repair of various types of high-voltage switchgear
- Taking necessary remedial action during faults in a high-voltage system
- Producing a switching strategy for isolating components of a high-voltage system
- Selecting a suitable apparatus for isolation and testing of high-voltage equipment
- Carrying out a switching and isolation procedure on a marine high-voltage system, complete with safety documentation
- Performing insulation resistance and polarization index tests on high-voltage equipment

Engineers who do not complete this course prior to their next revalidation will see the following statement on their Certificate of Competence: "From 1 January 2017 this certificate is not valid for service on ships fitted with High Voltage (over 1000V) systems."

Other National Authorities are also likely to enforce the new STCW requirements for High Voltage Safety training in a similar manner. As a result, the ABB Marine Academy is upgrading its current training to meet the UK's present requirements and is seeking Maritime and Coastguard Agency (MCA) approval for ABB's HV safety training.

### Improving quality

The certification process means ABB must be critical of its current training. At all of the academy locations, ABB collects feedback in a process known as eCROL. Collecting student and instructor feedback in a database allows the academy to see what is and is not working according to the type of course and location and to respond quickly when expectations are not met. This information can also be shared with customers, making the training process transparent and ensuring that the Marine Academy delivers on its promises.

For example, ABB was particularly concerned about the high level of theory in the High Voltage safety course. As part of the MCA certification process, certified HV Safety trainers from all over the world have been able to share their experiences and resources to

increase the non-theoretical aspect of the course to 50 percent. Using case studies, practical exercises, role-playing and other active training methods, the trainers now have a portfolio of dynamic training tools to achieve objectives.

In order to have a particular training center certified for HV safety certain training material is required; for example, HV switchboard, protection relays, defined safety and grounding equipment. Building up this knowledge in a secure environment through multiple learning methods and an outcome-based teaching method reduces the “surprise factor”.

### Regulatory environment

Given the ongoing tightening of the maritime regulatory environment for both personnel and equipment, it is vital that ship and shore staff receive training that is relevant, extensive and efficiently conveyed. Marine High Voltage safety training is therefore not the only training offered at ABB Marine Academy – it is constantly looking at ways of improving. Merely gaining certification will never be sufficient.

What differentiates ABB training from that offered by other marine vendors is access to technology specialists and facilities. Course participants are able to visit ABB feeder factories or workshops and ask a team of technical specialists questions that are answered during the training sessions. ABB also understands that people are participating in courses during their vacation time, meaning they and the trainers must be motivated to use this time optimally.

### Working with customers

By working with its customers, ABB supports not only the HR function within a shipping company, but the safety function as well. Under the International Safety Code, companies must meet several requirements with respect to training and, subsequently, availability:

“The Company should establish and maintain procedures for identifying any training which may be required in support of the safety management system and ensure that such training is provided for all personnel concerned.

“The Company should establish procedures for the preparation of plans and instructions, including checklists as appropriate, for key shipboard operations concerning the safety of the ship and the prevention of pollution. The various tasks involved should be defined and assigned to qualified personnel.”

Marine technology will always evolve. With more regulatory requirements being laid down to increase energy efficiency, system redundancies for safe return to port, and increasing operational expenses, owner-operators must ensure a vessel is continually available and able to carry out its tasks. Failure to do so could result in not only financial penalties but potentially catastrophic consequences for the environment and/or human life.

### The human element

The human element in shipboard operation will remain a major contributing factor for the foreseeable future. As human beings, we make mistakes. We lose situational awareness when overloaded or placed in unfamiliar situations and are then surprised when an incident or near miss occurs.

ABB Marine Academy can equip crew with the tools they need to be able to make informed decisions during operations and to plan and execute more effective maintenance that is timed to minimize disruption to the vessel's operation.

As the public spotlight focuses more on the shipping sector, pressure will also be placed on companies and their crews to reduce marine incidents. Ignorance of equipment and systems will no longer be tolerated by Port and Flag States.

As management guru Peter Drucker said in the 1950s, “If you think training is expensive, try ignorance.”

**Text:** Palemia Field

**Photos:** ABB

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1- Marine High Voltage is defined as a system where voltage is generated and/ or transformed to and distributed over 1000VACd.