



High Voltage

SAFETY AND OPERATIONAL PROCEDURES FOR MARINE AND OFFSHORE HIGH VOLTAGE SYSTEMS

The aim of educational and training program for marine/offshore high voltage (HV) applications is to cover the requirements laid down by the STCW Manila amendments 2010 for obtaining following licenses:

- STCW AIII/2 (Marine Engineering at the Management Level)
- STCW AIII/3 (Marine Engineering at the Management Level (with restrictions such as near coastal and low hp/kW))
- STCW AIII/6 (Electro technical Officer - ETO)

The course/training should include following topics:

- Marine/offshore statutory electrical regulations
- Electrical hazards and precautions
- Arrangement of high voltage switchrooms
- Power generation in "island systems"
- Philosophy of high voltage distribution
- Marine/offshore high voltage safety rules
- Operation and safety features of switchgear & Operational Procedures
- Issue and control of safety documentation
- HV equipment isolation procedures
- Safety Lockout Procedure, Key Safes/Multi Hasp locking device (Isoloks)
- Treatment of system neutral point
- Appreciation of fault levels
- Marine/offshore application of electrical protection
- Insulation resistance and polarisation index test on HV equipment
- Emergency conditions
- Practical exercises
- Case studies
- Theoretical and Practical Assessment
- One section of marine high (medium) voltage switchboard (6kV or 11kV) suited for education purposes.

In order to carry out the practical part of the future HV course/training we need following equipment:



- As a reference, a typical arrangement of marine switchboard panel is shown on figure

- (1) Busbars
- (2) Cable compartment
- (3) Circuit breaker
- (4) Control(Low voltage) compartment



- Appropriate circuit breaker lifter, earthing switch operating handle and circuit breaker draw in/out handle:



CIRCUIT BREAKER LIFTER



EARTHING SWITCH
OPERATING HANDLE



CIRCUIT BREAKER
DRAW IN/OUT HANDLE

- High Voltage tester





High Voltage Laboratory - Armoire HV 6600, Hyundai

1. High Voltage training panel consists of 6,6 kV distribution block with HV circuit breaker, earthing switch, protection relay and the associated control circuits
2. Vacuum high voltage switch 6,6 kV
3. Numerical protective relay
4. Hydraulic trolley for lifting/descending and transportation of HV circuit breaker
5. High voltage tester
6. High voltage insulation tester with PI index function
7. Multimeter
8. Hand tools set for maintenance and repair
9. Schemes

Duration: 22 hours





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Theoretical part of this course is already well covered by the courses implemented in regular programs of study (Marine Engineering and Marine Electrical Engineering) at the Faculty of Maritime Studies in Rijeka.

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