

High Voltage Course for Management level

Day 1

- 0830 – 1000 Registration and Course Introduction
- 1000 – 1100 Introduction on High Voltage
Lecturer to go through Power Point on definitions of High Voltage.
After the session the candidate will be able to clearly define High Voltage applicable to Marine Industry.
Have knowledge on various standards and will be able to understand the definition of High voltage as per British Standard BS 7671:2008, IEC and its counterparts IET, IEEE and VDE etc. and also NEC 2005 Article 490.2 (USA)
- 1100 – 1200 Power requirement on Modern Vessels
Lecturer to go through Power Point on Power requirement on modern vessels.
After the session the candidate will be able to understand the demand of increased electrical power on modern vessels depending on the class of vessels and cargo carriage.
Have knowledge of the demand of power on modern vessels.
- 1200 – 1330 Reasons for HV deployment
Lecturer to go through PowerPoint and illustration why HV is opted.
After the session the candidate will be able to understand the power generation, simplicity of equipment's and cables with the employment of High Voltage
Reduction of operating current and heat losses with High Voltage.
Have knowledge of the reasons and designs in employing High Voltage in Marine industry.
- 1330 – 1400 Lunch
- 1400 – 1600 Review of Basic Electricity and Design requirements
Lecturer to go through PowerPoint and video on Design requirements involved in High voltage installations.
Have knowledge of design and safety requirements involved in High Voltage installations.
- 1600 – 1700 Advantages and Disadvantages on High Voltage.
Lecturer to go through PowerPoint of advantages on High voltage.
After the session the candidate will be able to understand the principles and basic concepts on the reasons and advantages of High voltages and valid reasons for HV employment.
Have knowledge and understanding of HV employments and its advantages.

Day 2

- 0830 – 1000 Review and Assessment
- 1000 – 1100 Need for HV Rules and Regulations
Lecturer to go through power point and details of the accidents and unsafe acts and followed by pictorial illustrations which paved way for framing of the rules and regulations for HV operation.
After the session the candidate will understand the reasons for emergent of rules and regulations imposed onto the industry.
Have knowledge and understanding of the significance of the rules and regulations.
- 1100 – 1200 MCA COSWP and other regulations
Lecturer to go through PowerPoint, briefing MCA COSWP and other regulations.
After the session the candidate will have appreciation of the agency's organisation and commission involving to avoid injury and death to personnel.
Have knowledge and understanding the authoritativeness of the various bodies laying out rules and legislations for the safety of the personnel in the industry.
- 1200 – 1330 Electrical and HV hazards
Lecturer to go through PowerPoint, on various Electrical hazards, followed by a video illustration to understand the after effects of such hazards.
After the session the candidate will have witnessed various hazards and the reasons for such accidents they will also understand in detail about Electrical shocks, Arc blast and its effect on human.
Have knowledge and understanding of Electrical shocks Arc blast and effect on human body.
- 1330 – 1400 Lunch
- 1400 – 1600 Significance of Safe working procedures and Procedures involved in High voltage operation
Lecturer to go through Power Point, detailing the safe working procedures and work procedures involved especially in HV installations.
After the session the candidate will have knowledge of safe working, with the knowledge including the requirement of Isolation, safety equipment's incorporated in HV installations, Lock out tag out procedures and Earthing down and appropriate and approved PPE involved.
- 1600 – 1700 Risk Assessment, EPTW, HV Entry permits and Sanction to test.
Lecturer to go through Power Point, Exercise on Risk Assessment/ Sanction test and terms involved in HV. EPTW and HV room entry permits also described in detail.
After the session the candidate will have knowledge of framing Risk assessment, EPTW HV Entry permits and Sanction to test involving Lock out tag out procedures, planning, execution of all safety procedures involved for the nature of work, access, assignment of Authorised and competent person involved.

Day 3

- 0830 – 1000 Review and Assessment
- 1000 – 1100 Arrangement of HV switchboard room.
Lecturer to go through Power Point detailing the HV installations .
- After the session the candidate will have knowledge of the arrangement of HV switchboard, Main switchboards, power distribution systems, bus bar lay outs and components involved in such installations.
- 1100 – 1200 Power system protection devices
Lecturer to go through Power Point, the need for Power protection system, and various types of power protection devices involved in HV installations.
- After the session the candidate will have knowledge of the qualities of protection devices required, Philosophy of faults, fault detection Equipment protection and discrimination.
- 1200 – 1330 Significance of Insulated and Earthed neutral systems
Lecturer to go through Power Point, on power distributions and Neutral systems.
- After the session the candidate will have knowledge of differences between Earthed and Insulated neutral systems, sizing of neutral earth resistor, High/Low resistance earthing, and significance of earth faults.
- 1330 – 1400 Lunch
- 1400 – 1600 Circuit Breakers function, types
Lecturer to go through Power Point on Circuit breaker, its function and types.
- After the session the candidate will have knowledge of principle and properties of circuit breakers and types of breakers employed in HV installations.
- 1600 – 1700 Circuit breakers Practical demonstration.
Lecturer to demonstrate the construction of breaker, its operation and maintenance procedures with the facilities available at the teaching space.
- After the session the candidate will have practical knowledge of the construction of Circuit breakers, its operation and maintenance procedures.

Day 4

- 0830 – 1000 Review and Assessment
- 1000 – 1330 HV testing and illustration of measuring equipment's
Lecturer to go through Power Point about test equipment's to familiarise the candidates.

After the session the candidate will have knowledge to use various test equipment's and procedures for handling the equipment's with HV Switchboard.
- 1330 – 1400 Lunch
- 1400 – 1700 HV Distribution Faults and Practical illustration on testing equipment's
Lecturer to demonstrate various test equipment's practically to familiarise the candidates and to render a hands-on experience with the equipment's.
Candidates will also be given exercises for fault finding, isolation and restoration of HV circuits.

After the session the candidates will have a thorough knowledge in handling the HV test equipment's and procedures.
Have knowledge of fault finding, isolation and restoration in the event of fault existing in HV circuits.

Day 5

- 0830 – 1100 Electric propulsion systems and VFD demonstration
Lecturer to go through Power Point, about the Electric propulsion and demonstrate practically the VFD simulator to familiarise the candidates about the concept.

After the session the candidate will have knowledge of the principles of Electric propulsion and VFD units.
- 1100 -1330 Final Assessment and Certificate Issue