
September 25, 2010

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Chair - Coordinating Committee for IEEE-45
What is IEEE-45:

RECOMMENDED PRACTICE FOR ELECTRICAL INSTALLATION ON SHIPBOARD

THIS IS THE MOST PROGRESSIVE STANDARD FOR COMMERCIAL SHIP DESIGN PARTICULARLY THE ELECTRIC SHIP DESIGN-INTEGRATED POWER SYSTEM

THE STANDARD IS BEING UPDATED AND NEW SUPPORTING DOT STANDARDS ARE BEING DEVELOPED TO SUPPORT COMMERCIAL AND MILITARY SHIP DESIGN
IEEE STANDARDS SUPPORTING SHIP DESIGN
AEPS/IPS Design Topics

2002-VERSION

1) Prime Mover/Generator
   - Power Generator level
   - Voltage levels
   - Thermal management
   - Weight management

2) Switchboard
   a) Main SWBD
   b) Dist. SWBD
   c) Propulsion SWBD
   - Fault Rating
   - Bus Rating
   - Redundancy
   - Ambient Management

3) Transformer
   a) HV XFMR
   b) Drive XFMR
   c) S.S. XFMR
   - Voltage Rating
   - Weight management
   - Thermal management
   - Emerging Technology

4) Cable Technology (HV)

5) Drive Technology
   a) Cyclo
   b) Sync
   c) LCI
   d) Future

6) Propulsion Motor
   a) Synchronous
   b) Asynchronous (Induction)
   - Voltage/Power Level
   - Weight management
   - Thermal management
   - PM Motor
   - HTS Motor

7) Steady State Electrical System Analysis

8) Steady State Transient System Analysis

9) Real-time Transient Analysis

10) Short Circuit Protection and Coordination
    - Electric Plant Stability
    - Real-time for reconfiguration in view of System Stability, as well as battle sustenance

11) System of System Automation

12) Neural net / Agent Technology

13) Systems fault detection and automated reconfiguration

14) Time domain System performance analysis for a specified time interaction

15) Power demand for high-energy weapon system

16) Shipboard Space management

17) Shipboard Power management

18) Smart motor controllers

19) Smart/Open architecture universal Control System

20) Building block approach (Module to Equipment to System)

21) Fiber Optic Technology

22) Wireless Technology

23) Ship Service Distribution

24) Weapon Service Distribution
THE IEEE-45 WILL REMAIN AS A MOTHER STANDARD

IN ADDITION, THE FOLLOWING DOT STANDARDS HAVE BEEN APPROVED:

- IEEE-45.1 FOR POWER SYSTEM DESIGN
- IEEE-45.2 FOR CONTROLS
- IEEE-45.3 FOR SYSTEM INTEGRATION
- IEEE-45.4 FOR MARINE SECTOR AND MISSION SYSTEMS
- IEEE-45.5 FOR TESTING
- IEEE-45.6 FOR SAFETY PRACTICES
- IEEE-45.7 FOR SWITCHBOARD
- IEEE-45.8 FOR CABLE INSTALLATIONS

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THE FOLLOWING ADDITIONAL IEEE STANDARDS FOR SHIPBOARD APPLICATION:

- IEEE-1581 SHIPBOARD CABLE (Published)
- IEEE-1581.1 INSULATED BUS PIPE (PAR Approved)
- IEEE-1662 POWER ELECTRONICS APPLICATION FOR SHIPS (Published)
-IEEE- 1713 MV SHORE POWER (Will be published this year)*
-IEEE- 1709 GUIDE FOR MVDC DISTRIBUTION ON SHIPS (Published)
-IEEE- 1826 POWER ELECTRONICS OPEN SYSTEM INTERFACES IN ZONAL ELECTRICAL DISTRIBUTION SYSTEM- 100KW AND ABOVE

* IEEE-1713 IS BEING DEVELOPED IN COOPERATION WITH IEC GROUP AND ISO GROUP AS A TRIPLE LOGO STANDARD
SUPPORT GROUP

• SHIPYARDS
• UNIVERSITIES
• ABS –SVR GROUP AND NVR GROUP
• USCG
• NAVSEA
• ONR
• EQUIPMENT SUPPLIERS
• INDUSTRY EXPERTS
NEXT IEEE-45 DOT STANDARD
JOINT MEETING FOR 2010

• October 25-27, 2010
• Location: 901 N. Stuart St, Suite 603, Arlington VA 22203
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QUESTION & ANSWER SESSION