



GUIDE FOR

HIGH VOLTAGE SHORE CONNECTION

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**American Bureau of Shipping
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Foreword

It is envisaged that the effect of increasingly stricter air emissions legislation implemented through mainly local air quality controls will see an increasing number of vessels installing high voltage shore connection (HVSC) in the near future.

Shore power supply facilities have adopted high voltage rather than low voltage by necessity in order to keep the physical size of related electrical equipment such as shore connection cables manageable. Inevitably high voltage would otherwise introduce new risks to ship's crew and the shipboard installations if necessary safety features were not built into the HVSC system or safe operating procedures were not put in place. Accordingly, the requirements of this Guide have been developed with the primary focus on the safety of operating crews as well as for the security of the shipboard equipment.

It should be noted that the requirements in this Guide have been developed in consideration of the joint effort by IEC, ISO and IEEE to establish an international standard for Cold Ironing – High Voltage Connection Systems which at the time of the issuance of this Guide is under development.

The applicable edition of the *Rules for Building and Classing Steel Vessels* is to be used in association with the subject Guide.

This Guide becomes effective on the first day of the month of publication.

Users are advised to check periodically on the ABS website www.eagle.org to verify that this version of this Guide is the most current.

We welcome your feedback. Comments or suggestions can be sent electronically by email to rsd@eagle.org.

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1 Application

Requirements in this Guide apply to vessels equipped with a high voltage shore connection system (HVCS) designed to power the vessel with the shore power alone, enabling the shipboard generators to be shut down while in port. The installation of a HVSC is optional, however if installed it is to be designed, installed and surveyed in accordance with this Guide, and when found satisfactory, a classification notation as specified in Section 3 will be granted.

2 Objectives

The objective of this Guide is to provide requirements for the design, installation and survey of high voltage shore connection installations. The requirements in this Guide address:

- i) The safety of shipboard and, where applicable, shoreside personnel during the deployment and retrieval of the cable and when making the HV connection.
- ii) The safety of shipboard personnel during the period in which the vessel is operating using the established HV shoreside connection.
- iii) The safety of the shipboard personnel should the HV connection malfunction.
- iv) The safety of shipboard personnel and shoreside staff as applicable at the time the HV connection between the vessel and the shoreside supply is disconnected.
- v) Requirements for the safe storage of the HV equipment and associated connections when the vessel is on voyage or in ports where no HV connection is established.

These objectives are to be achieved by means of the system design, the construction of the HV equipment and operating safety procedures.

3 Classification Notation

A vessel with a high voltage shore connection installation which is found to be in compliance with the requirements in this Guide will be assigned the classification notation **HVSC**.

4 Plans and Data to be Submitted

The following plans and data are to be submitted:

- i) One-line diagram showing shipboard elements of the HVSC
- ii) Descriptions of Electrical System Grounding philosophy (See Section 5 and 7.3.3)
- iii) Descriptions of instrumentation, monitoring and alarms
- iv) Short-circuit current calculations for each shore facility
- v) Protection device coordination study for each shore facility
- vi) Load analysis
- vii) Capacity rating of HVSC installation, including maximum design short-circuit level
- viii) Details of shore connection switchboard, including outline view, internal arrangement, dimensions, IP rating, circuit breaker rating, socket rating and schematics
- ix) Details of transformer including kVA rating, impedance information and construction details