ANSI ECMA 35-2018

Electrification Systems for Electric Overhead Traveling Cranes

An Industry Group of MHI
8720 Red Oak Blvd., Suite 201
Charlotte, NC 28217-3992
standards@mhi.org

American National Standard

Approval of an American National Standard requires verification by the American National Standards Institute (ANSI) that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published by

Electrification and Controls Manufacturers Association
An Industry Group of MHI
8720 Red Oak Blvd., Suite 201, Charlotte, NC, 28217-3992
Telephone: (704) 676-1190 Fax: (704) 676-1199
www.mhi.org/ecma
standards@mhi.org

American National Standard

Electrification Systems Components for Electric Overhead Traveling Cranes

Electrification and Controls Manufacturers Association (ECMA)
An Industry Group of MHI

Approved July 11, 2018
American National Standards Institute, Inc.

FOREWORD. This standard, which was developed under the American National Standards Institute (ANSI) Canvass method and approved by ANSI on July 11, 2018, represents suggested design practices and operational requirements for electrification and controls systems. It was developed by MHI, along with the Electrification and Controls Manufacturers Association ("ECMA"), one of its Industry Groups, and is intended to provide useful information and guidance for owners, users, designers, purchasers or specifiers of material handling equipment or systems. It is advisory only and should only be regarded as a simple tool that its intended audience may or may not choose to follow, adopt, modify, or reject. A standard may be part of, but does not constitute a comprehensive safety program that cannot guard against pitfalls in operating, selecting and purchasing such a system, and should not be relied upon as such. Such a program should be developed by a qualified professional.

VOLUNTARY. The use of this document is completely voluntary. Its existence does not in any respect preclude anyone, whether it has approved this standard or not, from following procedures and assuming responsibilities not conforming to this standard.

DISCLAIMER OF LIABILITY. MHI, ECMA and their members assume no responsibility and disclaim all liability of any kind, however arising, as a result of acceptance or use or alleged use of this standard. Anyone using this standard specifically understands and agrees that MHI, ECMA, their members, officers, agents, and employees shall not be liable under any legal theory of any kind for any action or failure to act with respect to the design, erection, installation, manufacture, and preparation for sale, sale, characteristics, features, or delivery of anything covered by this standard or any other activity covered by this standard. Any use of this information must be determined by the user to be in accordance with applicable federal, state, and local laws and regulations.

DISCLAIMER OF WARRANTY. MHI, ECMA and their members make NO WARRANTIES of any kind, express or implied, in connection with the information in this brochure and SPECIFICALLY DISCLAIM ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR PARTICULAR PURPOSE.

INDEMNIFICATION. By referring to or otherwise employing this standard, its user agrees to defend, protect, indemnify, and hold MHI, ECMA, their members, officers, agents, and employees harmless from and against all claims, losses, expenses, damages, and liabilities, direct, incidental, or consequential, arising from acceptance or use or alleged use of this standard, including loss of profits and reasonable attorneys' fees which may arise out of the acceptance or use or alleged use of this document. The intent of this provision is to absolve and protect MHI, ECMA, their members, officers, agents, and employees from any and all loss relating in any way to this document, including those resulting from the user's own negligence.

The **Electrification and Controls Manufacturers Association** (ECMA) is comprised of companies that design and manufacture electrical control systems for cranes and material handling equipment. This standard is the result of ECMA's recognition of the need to standardize performance, and design criteria for the proper utilization of electrification systems for electric overhead traveling cranes, and was formulated under MHI procedures approved by ANSI.

This standard represents design, operating and testing practices and performance criteria that may be used in determining product utilization.

On the date of approval of this standard, ECMA consisted of the following member companies:

- Cervis Inc.
- Conductix-Wampfler
- Control Chief Corporation
- HBC-radiomatic Inc.
- IKUSI, USA Inc.
- Laird Controls North America
- Magnetek, Inc.
- Microtronics LLC
- Morris Material Handling, Inc.
- Nedic Industrial Solutions
- Power Electronics International, Inc.
- Powerohm Resistors, Inc.
- Robinson Engineering, Inc.
- Schneider Electric
- TELE RADIO, LLC
- Trans Tech – Power Transfer Systems
- Vahle, Inc.

Questions or suggestions for improvement regarding of this standard are welcome. Suggestions should be sent to: ECMA Committee, MHI, 8720 Red Oak Blvd., Suite 201, Charlotte, NC 28217; standards@mhi.org.

Electrification Systems for Electric Overhead Traveling Cranes

Contents

Electrification Systems for Electric Overhead Traveling Cranes

1 Purpose and Scope

This standard provides minimum requirements and guidelines for alternating current (AC) and direct current (DC) electrification systems for electric overhead, monorail, and gantry traveling cranes.

Electrification systems include:

- conductor bars;
- festoon systems;
- cable chains;
- spring driven reels; and
- motor driven reels.

2 Normative References

Parts of this standard refer to certain portions of other applicable specifications or standards. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AIST TR-06, *Specification for EOT Cranes for Steel Mill Service*, 2005 Edition

ASME B30.2-2011, *Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder Top Running Trolley Hoist)*

CMAA 70, *Specification for Top Running Bridge & Gantry Type Multiple Girder Electric Overhead Traveling Cranes*

CMAA 74, *Specifications for Top Running Bridge & Under Running Single Girder Electric Overhead Traveling Cranes Utilizing Under Running Trolley Hoist*

Article 610 of the National Electrical Code

NEMA Standards publication ICS6 classifications

IEC 60529-2004, *Degrees of Protection Provided by Enclosures (IP Code)*

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply. Definitions are shown in alphabetical order except when used in another definition.

3.1
bridge conductors

the electrical conductors located along the bridge structure of a crane to provide power to the trolley

3.2
runway conductors

the main conductors mounted on or parallel to the runway which supplies power to the crane

3.3
festoon system

a mechanical system consisting of a guiding support with multiple rolling carriers used to manage the movement of electrical power and/or control cable or hose from a stationary point to the moving equipment