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Owner / Prelude

RBNA/TER

The purpose of the General Delivery Specification (GDS) for Manufacturing Machinery and Equipment (MAE) is to give the manufacturing facilities a baseline document to build upon for machinery procurement. This document is binding for all US locations and all locations that supply Manufacturing Machinery and Equipment to US locations. This document is mandated by CP and will be used in MAE Procurement audits.

General Delivery Specifications for Manufacturing Machinery and Equipment in the USA is required to ensure:

1. Region, USA, specific requirements such as EHS regulations (N93A), governmental regulations (e.g. OSHA, EPA, ANSI, etc.), BPS planning guidelines, equipment acceptance requirements are fulfilled
2. All MAE orders processed through CP/MAE14 adhere to the GDS
3. Consistency to our Manufacturing Machinery and Equipment (MAE) suppliers

The GDS is considered a binding requirement for all Manufacturing Machinery and Equipment (MAE) purchases and/or transfers.

C/TES-NA will manage the upkeep of the GDS at least on an annual basis or when there is a regulatory change. The upkeep details will be supported by the regional (RBNA) and plant/site experts.

The standard MAE procurement is owned by C/TES-NA. MAE procurement training can be offered from C/MPE-NA on the standard.

For I4.0 solutions please reference the project house of C/MPD C/TED. They are the I4.0 governing function within Bosch.

Overview

Tier 1 - Global Requirements

The GDS Tier 1 is the representation of all global requirements by Bosch. It is required that all Manufacturing Machinery and Equipment must conform to Bosch Norms. The only exceptions are modifications by Tier 2 or Tier 3 requirements.

Additional detail on Tier 1 requirements can be found in the Detailed Requirements section.

Tier 2 - USA Requirements

The GDS Tier 2 is the representation of all USA requirements by Bosch. It is required that all Manufacturing Machinery and Equipment must conform to Bosch Norms. In addition to Bosch Norms any Manufacturing Machinery and Equipment must conform to the additional United States regulatory codes and standards.

Additional detail on Tier 2 requirements can be found in the Detailed Requirements section.

Tier 3 - Local Requirements

The GDS Tier 3 is the representation of local requirements by Bosch and local governmental agencies. Specific locations may have local requirements dictated by the state, county, or municipality, as well as business divisional requirements and site specific requirements. Local requirements for specific sites shall be obtained from the location where equipment is to be installed.

Additional detail on Tier 3 requirements continues on following pages.

Detailed Requirements

Tier 1 – Global Requirements

All Manufacturing Machinery and Equipment shall conform to Bosch Norms listed below except as modified by Tier 2 or Tier 3 requirements:

N51M M20 - General delivery instructions for machines, installations and production equipment

N51M M23 - Delivery instructions for electrical, pneumatic and hydraulic equipment of machines, installations and production equipment

N51M M24 - ESD-compliant production components

N51M M27 - Delivery instructions for IT Security

N54 B1 - General requirements specification for special systems

N62A 3.3 - Work system design, Planning basics, Ergonomic basics

N62C 7.1 - Technical reliability and technical availability of equipment

Central Directive CD 03800 – Occupational health and safety, fire protection, environmental protection, and emergency control – principles of organization and content

Quality Management, Booklet 9 – Machine and Process Capability

MAE Target Specification – Bosch TPM Pillar 4

Quality Management, Booklet 10 – Capability of Measurement and Test Process

Tier 2 - USA Requirements

Manufacturing Machinery and Equipment for use in the United States shall also comply with the following regulatory codes and standards:

Occupational Safety and Health Administration, OSHA 29 CFR 1910

Environmental Protection Agency, typically but not limited to BACT (best available controls technology) with regards to air, waste, water, etc.

National Fire Protection Agency, NFPA 70 – National Electrical Code

National Fire Protection Agency, NFPA 79 – Electrical Standard for Industrial Machinery

American National Standards Institute (ANSI) ANSI-RIA R15.06 – Industrial Robots and Industrial Robot Systems - Safety Requirements

American National Standards Institute (ANSI) ANSI B11 Series of Machinery Safety Standards

American National Standards Institute (ANSI) ANSI Z136.1 Safe Use of Lasers

Robert Bosch North America (RBNA) C/HSE3-NA PSDI/Muting Approval Initiative

Robert Bosch North America (RBNA) Equipment Installation Approval Initiative

Due to regulatory requirements in the United States, the following Tier 1 Norms are modified as follows:

1. N51M M20 - General delivery instructions for machines, installations and production equipment (MAE)

a. Section 2 Paragraph 1) a) - The US Energy Independence and Security Act of 2007 requires the use of IE3 or “Premium” class motors.

b. Section 2 Paragraph 5) - EC Machinery Directive 2006/42/EC although permissible, is not required in the US. OSHA safety requirements shall govern.

c. Section 5.1 c) - EC Declaration of Conformity may be helpful, however approval in the US is granted by the Authority Having Jurisdiction (AHJ). See NFPA 70 and OSHA 29 CFR 1910.399.

2. N51M M23 - Delivery instructions for electrical, pneumatic and hydraulic equipment of machines, installations and production equipment (MAE)

a. Section 4.1 Paragraph 1 - Voltage supply frequency - 60 Hz.

b. Section 5.1 Point 1 - Electrical enclosure degree of protection - shall be suitable for environment where installed.

c. Section 5.3 Electrical enclosure access and working space – shall meet the requirements of NFPA 70 and OSHA 29 CFR 1910.303.

d. Section 6 Point 1 - Each machine/installation/equipment shall be provided with a supply circuit disconnecting means and emergency stop function as required by NFPA 79.

e. Section 6 Point 2 - Each machine/installation/equipment shall have the supply circuit disconnecting means interlocked with the control cabinet door(s) when and as required by NFPA 79.

f. Section 6 Point 3 - Risks associated with electrical equipment hazards shall be assessed and mitigated by control circuits that perform safety related functions compliant with NFPA 79.

g. Section 7.1 1) - Voltage supply frequency - 60 Hz.
h. Section 9 Paragraph 1 - Conductors, Cables, Flexible Cords and Wiring Practices shall comply with NFPA 79.
i. Section 9 Paragraph 2 - Receptacles for Accessory Equipment and for Maintenance Personnel shall comply with NFPA 79 (shall be GFCI). A CE type Residual Current Device (RCD) switch required by N51M M23 2015-12-18 Art 9 that is not Nationally Recognized Testing Laboratory (NRTL) GFCI compliant shall not be used.
j. Section 9.2 Color identification of conductors - shall comply with NFPA 79.
k. Section 11 Protection from electrical hazards by enclosures - Equipment enclosures and enclosure openings shall meet the requirements of ANSI/UL 508, UL 508A, ANSI/UL50, or NEMA 250. (NFPA 79).

3. ESD-compliant production components, N51M M24
   a. No Exceptions

4. Delivery instructions for IT Security, N51M M27
   a. No Exceptions

5. General requirements specification for special systems, N54 B1
   a. Section 2 Point 5 (references DIN EN 60204-1 Appendix A and addresses protection from ground fault current based on power supply systems with a neutral connected grounding conductor.) Protection against electric shock shall comply with NFPA 79.
   b. Sections 5.2.1 1), 2) and 3) Incoming supply circuit, conductors, live parts and termination shall comply with NFPA 79.
   c. Section 5.3 2) Connection between Gnd (PE) and N shall comply with NFPA 70 (i.e., only one connection at the transformer terminals or power service terminals).
   d. Section 5.3 4) Single phase loads shall be permitted to connect to two L conductors, phase to phase.
   e. Section 6.1.1 Supply circuit disconnecting devices (Disconnect) shall comply with NFPA 79.
   f. Section 6.1.2 1) Disconnect shall be lockable in “Off position” only.
   g. Section 6.1.2 2) Disconnect color as permitted by NFPA 79.
   h. Section 6.1.3 1) Disconnect shall comply with NFPA 79 and shall be installed per manufacturer instructions.
   i. Section 6.1.3 2) Enclosure interlocking shall be provided where required by NFPA 79.
   j. Section 6.1.4 1) and 2) Disconnects that are plug and socket combinations shall comply with NFPA 79.
   k. Section 9.2 1) NFPA 79 compliance is required.
   l. Section 9.2.1 Table 3 NFPA 79 compliance is required.
   m. Section 9.2.3 1) Shall be identified with orange.
   n. Section 9.2.3 Figure 3 Where yellow or gray is indicated, orange is required.
   o. Section 9.2.3 Figure 4 Where yellow is indicated, orange is required.
   p. Section 9.3 12) Exceptions due to technical reasons are permissible.
   q. Section 9.4 6) Where voltage is 50V or less, Notice labels shall be permitted.

6. Work system design, Planning basics, Ergonomic basics N62A 3.3
    a. No Exceptions

7. Technical reliability and technical availability of equipment N62C 7.1
    a. No Exceptions

8. Occupational health and safety, fire protection, environmental protection, and emergency control Central Directive CD 03800
    a. OSHA, EPA, NFPA and Property Insurance Carrier Requirements shall govern.

9. Quality Management, Booklet 9 – Machine and Process Capability
    a. No Exceptions

10. Quality assurance guideline for suppliers (QSL)
    a. No Exceptions
11. MAE Target Specification – Bosch TPM Pillar 4
    a. No Exceptions

Tier 3 – Local Requirements

In addition, specific locations may have local requirements dictated by the state, county, or municipality, as well as business divisional requirements and site specific requirements. Local requirements for specific sites shall be obtained from the location where equipment is to be installed.

For local requirements please contact the following as required:

Plant Contact list as maintained according to the following separate document: RBNA_GDS_Responsibility_By_Plant_MAR2020.Doc.

Annex A – Explanatory Material

Annex A is not a part of the requirements of this document but is included for informational purposes only. This annex contains explanatory material that non-US suppliers of Manufacturing Machinery and Equipment may find helpful. Items are numbered to correspond with the applicable text paragraphs. The NFPA references were compiled using the NFPA 70 2014 and NFPA 79 2015 editions.

A.2. NFPA 70 Art 409 includes Industrial Control Panel requirements.
NFPA 70 Art 409.110 includes Industrial Control Panel and Short Circuit Current Rating marking requirements.
NFPA 70 Art 670 includes Industrial Machinery and Short Circuit Current Rating requirements.
NFPA 79 Art 5.1.5 includes incoming supply conductor wire bending space requirements.
NFPA 79 Art 5.1.6 includes incoming supply conductor separation requirements.
NFPA 79 Art 5.1.6 includes incoming supply live parts requirements.
29 CFR 1910.147 includes energy source isolating requirements and safe means for the dissipation of stored energy.

A.2.f. NFPA 79 Art 9.2 includes risk assessment requirements.

A.2.h. NFPA 79 Art 12 includes conductor, cable, and flexible cord requirements.
NFPA 79 Art 13 includes wiring practices requirements.

A.2.i. NFPA 79 Art 15.1.1 and 15.1.2 include receptacle requirements.

A.2.j. NFPA 79 Art 13.2 includes requirements for color identification of conductors.

A.2.k. NFPA 79 Art 6.2.3 includes requirements for enclosures and enclosure openings.

A.5. See A.2. Items listed above.

A.5.a. NFPA 79 Art 6.3 includes protection against electric shock requirements.

A.5.c. NFPA 70 Art 250 includes grounding and bonding requirements.

A.5.e. NFPA 79 Art 5.3 includes supply circuit disconnecting (isolating) means (disconnect) requirements.

A.5.h. NFPA 79 Art 5.3 includes disconnect requirements.

A.5.i. NFPA 79 Art 5.3 and 6.2.4 include disconnect and enclosure door interlocking requirements.

A.5.j. NFPA 79 Art 5.3.3.2 and 5.3.3.3 include plug/socket combination disconnect requirements.

A.5.k. NFPA 79 Art 13 includes requirements for wiring practices.

A.5.l. NFPA 79 Art 13.2 includes requirements for identification of conductors.

A.5.m. NFPA 79 Art 13.2.4.1 includes identification by color orange requirement.

Revision Control

Issue	Date	Editor	Description of Amendment
1	30.Oct.2017	C/MPE-NA	Initial Release
2	01.Jan.2021	C/TES-NA	Corrections (various) Incorporation of Robert Bosch North America (RBNA) C/HSE3-NA PSDI/Muting Approval Initiative (reference) Incorporation of Robert Bosch North America (RBNA) Equipment Installation Approval Initiative (reference) Plant Contact List broken to separate document