The first edition of the Electrical Code (NEC), also referred to as NFPA 70, was published in 1897. The NEC is the only code for electrical installations that enjoys national recognition in the USA. It addresses the causes of electricity-induced fire. The code is updated every three years, that means in 2011 appeared the edition of 2012. In Article 670 “Industrial Machinery” the NEC refers to the NFPA 79 (Electrical Standard for Industrial Machinery).

This standard specifies the safety requirements for electrical equipment of industrial machinery or industrial manufacturing systems. Manufacturers and operators of plant and machinery have to comply with this and other standards in order to fulfil their product liability and satisfy insurance requirements.

Machines commissioned in the USA are always subject to approval, which can be obtained in two different ways. One is through a testing institute accredited in the USA, alternatively the machine concerned is subjected to an acceptance procedure in Germany, for example. The final decision on whether a machine is to be commissioned is always taken by a local inspector, who does not necessarily have to be an expert in electrical systems. If the inspector is in any doubt as to whether the machine complies with the relevant US standards, he may order a temporary stoppage.

The NFPA 79: 2007 allowed for the use of AWM wires in chapter 12.2.7.3 „When part of a listed assembly suitable for the intended application, type AWM shall be permissible“.

However, there are applications for which there had up to now not been any NFPA 79-relevant wires. This applies to wires used for power track chains or wires with special-purpose bodies. There were objections and protests from the industry in this regard. The NFPA responded accordingly and appointed an expert commission. As a result, the NFPA 79: Edition 2012 once again allows for the use of AWM wires under certain conditions. As before, usage is not unrestricted. Rather, responsibility for their usage now lies with the manufacturer or builder of the system.

Article 12.2.7. of Edition 2007 was deleted entirely. The new article 12.9 summarizes all recommendations.

The complete original text:

12.9 Special Cables and Conductors
12.9.1 Other listed cables and conductors shall be permitted where identified as suitable for the identified use.
12.9.2 Appliance Wiring Material (AWM) shall be permitted under 12.9.2.1 through 12.9.2.3
12.9.2.1 Where part of an assembly that has been identified for intended use
12.9.2.2 Where specified for use with approved equipment and used in accordance with the equipment manufacturer’s instructions.
12.9.2.3 Where its construction meets all applicable requirements of sections 12.2 – 12.6 with modifications as follows:
   (1) Stranded conductors with wire sizes smaller than those listed in 12.2.2 shall have a minimum of 7 strands.
   (2) Conductor insulation and cable jacket materials not specified in 12.3.1 have flame resistant properties in compliance with applicable standards for intended use such as FT2 (horizontal wire) flame test or VW-1 (Vertical Wire) flame test in ANSI/UL 1581-2001, Reference Standard for Electrical Wires, Cables and Flexible Cords.
   (5) Minimum insulation thickness for single conductor AWM shall be as specified in 12.5.2. Minimum insulation thickness for conductors that are part of a multi conductor jacketed AWM cable shall be as specified by the AWM Style number and by the marked voltage rating of the cable.
(4) AWM shall be marked in accordance with 12.4.1, 12.4.3 and 12.4.4. The legend shall include manufacturer’s name or trademark, AWM style number, voltage rating (unless marking is prohibited by 12.4.2), wire gauge(s), temperature rating and flame resistance. Additional markings for properties such as oil, water, UV and chemical resistance identifiers shall be permitted where in compliance with applicable standards for intended use. Where markings alone are insufficient to identify for the intended application, suitable information shall be included with the technical machine documentation.

Summary
- Plant and machinery with certification (e.g. from UL) can continue to be repaired, modified or upgraded in accordance with existing rules.
- Newly certified plant and machinery can continue to be constructed in accordance with existing rules. The certification is recognised.
- In certain sectors, new plant and machinery without certification may need to satisfy tougher requirements for certain cables (e.g. UL Listing). In this case, consultation is required with the certifying body concerned.

HELUKABEL recommends in many cases still the use of UL-listed cables.

The following pages present a broad range of cables that already meet the requirements of the 2007 Edition of NFPA 79.

If you have any further questions, please contact our cable experts on +49 (0)7150 9209 -0.