

PUBLIC SUBMISSION

As of: 12/17/20 7:21 AM
Received: December 17, 2020
Status: Pending_Post
Tracking No. 1k4-9kov-49lr
Comments Due: December 21, 2020
Submission Type: API

Docket: MSHA-2020-0018

Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories.
(PARTS 18 & 74)

Comment On: MSHA-2020-0018-0001

Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories

Document: MSHA-2020-0018-DRAFT-0010

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General Comment

See attached file(s)

Attachments

MSHA - Voluntary Consensus Standards (VCS) 2020

1219-AB93-COMM-4

Dear MSHA Team,

First off all I would like to thank you for releasing this approach for comment.

The Voluntary Consensus Standards (VCS), which are supposed to be accepted by MSHA in the future, are internationally recognized IEC and associated ANSI standards for the protection against fire or explosion hazards. The IECEx certification system offers a global framework and covers all safety-relevant aspects of explosion-proof equipment over the entire life cycle. The IECEx system presently encompasses 35 member states.

By accepting these established standards, MSHA would be in a position to enhance the efficiency and effectiveness of its approval process. Such an approach would also take into account that the international IEC standards are kept under permanent revision and updating to reflect the latest state-of-the-art. In regard to the level of safety the IECEx system is at least equal to the existing MSHA regulations. The two systems, however, partly outline different ways of how to ensure compliance with the required safety standards.

Headquartered in Germany Eickhoff Bergbautechnik has been a mining machinery supplier to the most productive mines worldwide for generations. The shearer loaders and continuous miners leaving our factory are often setting standards in terms of quality and innovation. The IEC standards generally serve as a basis for our developments. MSHA's approval process is well known to us since our machines have successfully passed this process multiple times.

We would much appreciated it, if our mining equipment, which is designed according to IEC standards with its proven safety-technical requirements, is unmodified accepted according to MSHA's approval criteria and could pass the approval process in future in less time.

Start of the comment:

In regard to the listed IEC standards, it should however be noted, that MSHA's present approach can be seen only as a first step in this direction. The discrepancies regarding flameproof enclosures have already been discussed in detail in a previous comment, to which we fully agree. We would like to take this opportunity to also address the topic of intrinsic safety equipment.

IEC 60079-11, Ed. 6, Explosive Atmospheres—Part 11: Equipment Protection by Intrinsic Safety “i” (Group I, Level of Protection ‘ia’) (2011). This standard specifies the construction and testing of intrinsically safe apparatus intended for use in an explosive atmosphere and for associated apparatus, which is

The regulations presented for discussion are intended to apply to Testing, Evaluation and Approval of Electric Motor-Driven Mine Equipment and Accessories.

In regard to intrinsic safety a reference to the IEC 60079-11 standard is made, but the levels of protection are limited to 'ia' only. Here it should be noted, that the level of protection Ex **ia** I Ma is usually only applied to intrinsically safe methane monitors, cap lamps, etc. which are needed to be operated even in the presence of an explosive methane atmosphere. A typical intrinsically safe product intended for use in underground mining bears the marking Ex **ib** I Mb and must be switched off, same as flameproof equipment with the marking Ex **db** I Mb when an explosive atmosphere arises.

The type of protection intrinsic safety 'i' is subdivided into the levels of protection 'ia,' 'ib,' and 'ic'. Level of protection 'ia' is appropriate for zone 0, 'ib' is appropriate for zone 1. Zone 0 is designated for areas where the explosive atmosphere (...) is continuously, for long periods or frequently present. In contrast Zone 1 is designated for areas where an explosive atmosphere (...) is likely to occasionally occur in normal operation. This allocation into zones has been defined for equipment to be used on surface (Group II) where gas may occur in defined zones.

In contrast to Group II, Group I is based on the assumption that almost all underground mines, where an explosive atmosphere may occur, are assessed and as a result allocated to hazardous areas. An allocation into zones is not possible for these underground mines due to the fact that the hazard level does not depend on local parameters but may differ in time. The hazard level for installed equipment may change from a usually acceptable methane concentration in the mine air flow (hazard level 2; Mb equipment sufficient) to a higher methane gas concentration (hazard level 1; Ma equipment required; Mb equipment must be deenergized), and vice versa.

We therefore strongly ask you to include EPL **Mb** in the VCS so that the levels of protection '**db**' and '**ib**' can be applied as well.

As a conclusion we regret that the regulations are not applicable in their existing form.

Best regards

Dipl.-Ing. Sven Wagner

Teamleader Certification

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