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SUBJECT: MSHA Intrinsic Safety Evaluation Number IA-13827-0 and Information
Related to KH Controls Inc. Power Supply Models ISS1 and ISS3

Scope

MSHA personnel, operators of underground coal or metal and nonmetal mines, independent contractors, miners' representatives, mine product manufacturers, repair shops, and other interested parties should have this information.

Purpose

The purpose of this Program Information Bulletin (PIB) is to alert the mining industry on the MSHA Approval status of KH Controls Inc. power supply Models ISS1 and ISS3. Model ISS1 power supplies providing current above 2.00 amperes that are currently in service will no longer have MSHA approval as of January 1, 2014.

Information

KH Controls Inc. was granted modification of MSHA Intrinsic Safety Evaluation Number IA-13827-0 to correct problems discovered during testing at MSHA's Approval and Certification Center. The modification involves safety upgrades to the Model ISS1 power supply with a current limit above 2.00 amperes. The modified power supply is identified as Model ISS3.

The modification of Model ISS1 to ISS3 requires the following:

- **KH Controls is not permitted to provide a new Model ISS1 power supply with a current limit above 2.00 amperes.**
- **KH Controls is required to convert each Model ISS1 power supply with a current limit above 2.00 amperes received for service to a Model ISS3.**
- **MSHA will not issue a new approval incorporating the KH Controls Model ISS1 power supply with a current limit greater than 2.00 amperes.**
- **MSHA will not issue modifications to existing MSHA approvals or other actions that incorporate a Model ISS1 power supply with a current limit greater than 2.00 amperes unless the application specifies a Model ISS3 or other acceptable power supply as an alternate component. This restriction applies to applications requesting modification independent of the power supply.**
- **All Model ISS1 power supplies with a current limit greater than 2.00 amperes must be removed from service by January 1, 2014.**

KH Controls can continue to provide a Model ISS1 power supply with a current limit at or below 2.00 amperes.

Background

The KH Controls Model ISS1 power supply was used in testing for approval of an intrinsically safe lighting system. The approval criteria require the system to pass tests with a safety factored power supply set at elevated voltage and current limits. Power supplies with current limits set at greater than 2.0 amperes failed tests involving a short circuit with a load of one ohm. KH Controls modified the power supply to prevent failure at these conditions.

Model ISS1 power supplies currently installed may remain in service until retrofitted with a safety upgraded Model ISS3 power supply. This determination is based on the following factors:

- The installed Model ISS1 power supplies are set at nominal voltage and current limits 33% less than a safety factored unit. When tested under the same conditions, power supplies set at nominal limits have not failed any tests. Additionally KH Controls has tested the Model ISS1 power supply at approximately 80% of safety factored levels without failure.
- The one ohm load short circuit system fault is not a typical system failure. If this unlikely fault occurs, the system will not function and will not operate until the fault is repaired.

The Model ISS1 power supply is used in many pieces of mining equipment such as longwall systems, continuous mining machines, and roof bolters. The two primary uses are as part of control systems provided by KH Controls or other manufacturers and

longwall lighting systems. The power supply is available with various current limits up to 8.1 amperes. The model number of the KH Controls power supply specifies the voltage and current limits of the unit. For example, Model number ISS3- 13.0 – 6.80 is limited to 13.0 volts and 6.80 amperes.

The ISS3 and ISS1 models rated at 2.00 amperes or less are identical in function. The ISS3 model incorporates additional protection at levels above 2.00 amperes.

Recommended Actions

MSHA is recommending that users of the KH Controls Model ISS1 power supply take the following steps:

1. Determine if your mining machines or equipment incorporate the Model ISS1 power supply. Applications of the power supply will include but are not limited to the following:
 - Each system covered by or incorporating MSHA intrinsic safety evaluation number IA-13827-0 and installed before August 2010.
 - Lighting systems manufactured by KH Controls prior to August 2010.
 - Many other intrinsically safe components of MSHA approved machines and longwalls.
2. Check the model number to determine the current limit of the Model ISS1 power supply. If the current limit is greater than 2.00 amperes, you should follow steps 3 and 4. If the current limit is 2.00 amperes or less, no further action is required.
3. Contact KH Controls or the equipment manufacturer to determine whether the Model ISS3 power supply will provide for proper functioning of the system. KH Controls expects recently designed intrinsically safe control systems will operate satisfactorily with a Model ISS3 power supply, but **ISS3 power supplies are more sensitive to some control circuit designs than the prior model**. Older control systems may not function properly with a new model supply. In those cases, an MSHA approved alternate power supply or modification of the control system may be required.
4. Contact the equipment manufacturer to verify that the MSHA approval incorporates the Model ISS3 power supply. If not, the manufacturer may revise the MSHA approval to include the Model ISS3 or mine operators may submit a Field Modification Request to the Approval and Certification Center to include the Model ISS3 power supply.

KH Controls will provide ISS3 power supplies in quantities controlled by the company's manufacturing capability. KH Controls has taken steps to increase production, but shortages may occur due to high demand. Users should plan to update first their most critical applications or those for which no alternate power supply or alternate product is available.

Notice!

KH Controls Model ISS3 and Model ISS1 power supplies must be calibrated by an MSHA evaluated procedure to be considered intrinsically safe. Only KH Controls should repair or adjust Model ISS3 or ISS1 power supplies. Failure to follow the MSHA evaluated procedure will result in an unsafe condition.

Authority

The Federal Mine Safety and Health Act of 1977; 30 CFR Parts 18, 57 and 75.

Internet Availability

This Program Information Bulletin may be viewed on the World Wide Web by accessing the MSHA home page (<http://www.msha.gov>) then choosing "Compliance Info" and "Program Information Bulletins."

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