

SAFETY BULLETIN

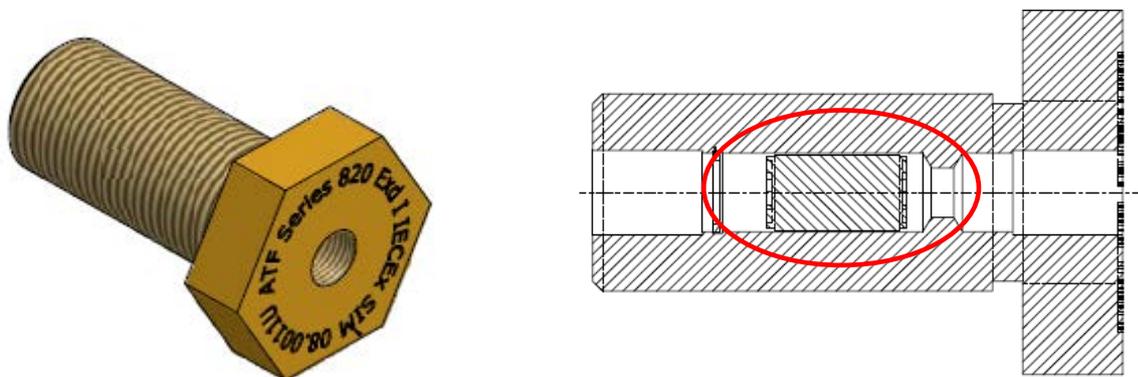
Interaction of explosion protected electrical equipment and pneumatic controls

BACKGROUND

Some of the current diesel-powered machinery utilised within the underground coal mining environment interface electrical controls with the diesel engine shut down systems for functions such as methane monitoring systems. Some machines also use automatic change over red reversing/tail lights. When the direction of plant is reversed, the red lights are switched off in the direction of machine travel. These machines commonly utilise pneumatic control systems to automate the control of these red tail lights.

The pneumatic control often requires entry of the compressed air lines into the flameproof enclosure. To maintain the explosion protection properties of the electrical enclosure, it is necessary for flame arrestors, or flame traps, to be fitted within the compressed air lines at the points of entry or exit from the electrical enclosure.

There have been several instances identified where machines have been found with these flame arrestors either removed from the pneumatic control lines or the internal components of the flame arrestors removed. The reasons and causes for these failures have not been identified.



Representational drawing of the style of flame arrestor used in explosion protected electrical equipment and a sectional view of the flame arrestor showing the critical flame trap pin.

RECOMMENDATIONS

- Diesel machines should be audited to determine if control systems are used that require the use of flame arrestors where pneumatic control lines enter into explosion protected electrical enclosures.
- Where flame arrestors are found to be fitted to a machine, checks should be undertaken to verify that the flame arrestors are:
 - correctly certified for use in group I environments
 - assembled in accordance with the relevant Certificate of Conformity
 - inspected at required intervals by an appropriately licensed service facility
- Records that enable tracking of the history of the flame arrestors should be maintained in the verification dossier for the respective machine.
- Where the certification or the service history cannot be verified, flame arrestors should be replaced with units that have correctly documented history available.
- Introduction-to-site procedures for the mine should be reviewed to ensure that, where fitted, these flame arrestors are installed in accordance with conditions of certification.
- Maintenance procedures for the mine should be reviewed to ensure that, where fitted, flame arrestors are correctly installed and in serviceable condition.
- Personnel, whether electrical or mechanical, who may be required to undertake work on pneumatic circuits that interface with explosion protected electrical equipment are trained and competent in explosion protection techniques associated with electrical apparatus.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Bulletin, and are informed of its content and recommendations. This Safety Bulletin should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

Signed



Rob Regan
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