

*Field Operations Directorate***OC 498/14**

To

Agricultural, Factory and Quarries Inspectors (Bands 0-4)

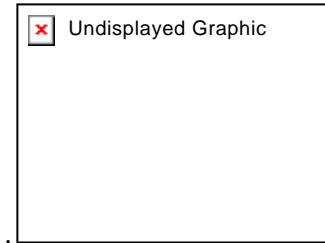
FCG Specialist Inspectors (Elec and Process Safety) (Bands 1-3)

**FLAME-PROOF RIGHT-ANGLED ADAPTORS MANUFACTURED
BY REDAPT ENGINEERING COMPANY LTD**

This OC gives information for the attention of inspectors regarding right-angled adaptors, (elbows) manufactured by Redapt Engineering Company Ltd, Darleston, West Midlands, which were originally supplied without sufficient information regarding conditions necessary to ensure safe use. The adaptor is manufactured for connection to, and use with, flame-proof enclosures containing electrical equipment in potentially flammable/explosive atmospheres. The internal volume of the adaptors may be such that their use in connection with the enclosures invalidates the certification of the assembly as a whole for use in such atmospheres. The increase in risk however, is thought to be low in the type of assembly in which these adaptors have so far been found in use onshore.

BACKGROUND

1 FOD HQ was made aware that the above make of right-angled adaptor, intended to permit the entry of electrical conductors into flame-proof enclosures at right angles, had been certified for such use but the validity of the certification had been questioned. Enquiries indicated that the information provided to end-users was initially inadequate. As a result adaptors were likely to be connected to systems for use in flammable/explosive atmospheres without the assembly as a whole being certified, or re-certified, as specified by BS 5345 Part I: 1989 [BS 5345: Part I: 1989 Code of Practice for selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining applications or explosive processing and manufacture).] and BS EN 50014: 1992 [BS EN



50014: 1992 Electrical apparatus for potentially explosive atmospheres. General requirements.] .

2 Due to the internal volume of this particular component there is a possibility that connecting it to an enclosure for carrying electrical equipment would increase the internal volume of the whole assembly to a point such that any explosion within the assembly could be sufficient to damage the enclosure.

STANDARDS

3 BS 5345: Part 1 1989 deals with the installation of flame-proof electrical equipment. It specifies that the strength of an assembly of such equipment should be sufficient to withstand any pressure caused by a gas explosion within it.

4 BS EN 50014: 1992 deals with construction standards for flame-proof electrical equipment for use in hazardous areas. The standard allows for testing, the marking of equipment and 2 types of certification:

- (1) a "certificate of conformity" can be issued stating the suitability of systems/assemblies for use in flammable/explosive atmospheres; and
- (2) a "component certificate" can be issued relating to individual components later to be assembled into systems. Such certificates should identify the limitations of use of those components.

5 The purpose of component certification is to assist test bodies when issuing certificates of conformity for equipment which are assemblies of such components. Thus the 2 types of certificate are related to each other and any limitations on the use of the components are imposed. This system permits the use of components certified by one European test body to be used with equipment/enclosures certified by another.

THE PROBLEM

6 It was found that a test body had tested and issued a component certificate for the right-angled adaptors in question which merely stated that the use of the component will "normally be subject to national legislation and the installation Code of Practice". (The installation Code of Practice is BS 5345: 1989). This certificate was passed on together with the adaptors by the manufacturer to end-users.

7 The cause for concern was that the component certificate did not contain sufficient information as to what assemblies (if any) the adaptors could be safely connected. Users were not informed that the adaptor/equipment assembly would require re-testing as a complete unit, to ensure they could be used together in safety, and a certificate of conformity issued. The component certificate for the adaptor should have included a condition that the adaptor could only be used as part of an assembly with which it had been tested.

8 Offshore Safety Division were made aware of the problem. They subsequently issued information to the offshore industry concerning the use of these adaptors.

9 Following investigations by FOD staff, the manufacturers (Redapt) were informed that, in HSE's view the information they had been supplying with the adaptors did not meet the requirements of the Health and Safety at Work etc Act 1974 s.6. Whilst the manufacturers referred end-users to the relevant British standard (BS 5345), it was not made clear that users would need to assess the suitability of the whole assembly (viz adaptor and enclosure) for use in potentially explosive atmospheres.

10 It has been made clear to Redapt that such an assessment is considered to be a crucial part of determining the risks that could arise from the whole assembly and whether it can be safely used. They have been required to make suitable amendments to their information to purchasers to ensure that this important information is conveyed along the whole supply chain.

11 The PI supplier has recently been informed that appropriate changes have been made to Redapt's new literature/information.

Action by inspectors

12 Inspectors are advised to bear the above information in mind when dealing with enquiries and when dealing with manufacturers of electrical equipment for use in explosive atmospheres and with users of such equipment particularly in the chemical sector.

26 April 1996

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ASI headings

Certificates: electric(ity): electrical equipment: fire and explosion: HSW Act s.6: supply: testing.