



ATEX / DSEAR COMPLIANCE FOR THE UTILITIES INDUSTRY

Datasheet

Utility companies, like those in many other industries have a duty of compliance with the safety requirements of EU Directive ATEX 137 (implemented within the UK as DSEAR 2002). The Water Industry is well aware of the fire and explosion hazards presented by flammable gases such as methane and bio-gas, but newer processes such as the drying of sewage sludge present a new dust explosion hazard. In the Power Industry, dangers associated with flammable dusts are well understood from experience with coal and coke. However, with the introduction of new bio-mass fuels the Power Industry faces additional hazards from properties such as thermal instability and the variable composition of these materials.



In the Utilities Industry ATEX / DSEAR covers all aspects of process safety from acceptance of raw materials, through primary storage, transfer to mills and furnaces, production of flammable powders and gases and even final product storage. When considering how to comply with these regulations it is best to divide operations into areas where the main hazard involves powders and those where gases and liquids are involved.

POWDER HAZARDS

In the Power Industry raw materials such as coal, coke or biomass are delivered by road, rail and/or sea and stored either on the ground (open storage) or in large storage hoppers. Transfer to mills is normally by belt conveyor and then to furnaces by pneumatic conveyance. With the introduction of new coals from the Far East and a varying selection of biomass materials, the probability of ignition especially from electrostatic discharges has increased.

In the Water Industry the process of drying sewage sludge, produces fine dust, which has the inherent risk of fire and/or explosion. Bulk storage of the final product (sludge pellets) also has the risk of self-heating and a subsequent risk of fire.

Under ATEX / DSEAR, a company must demonstrate that all risks have been recognised and an appropriate Basis of Safety (BOS) must apply. For bulk storage of raw materials such as coal and coke or finished product (dried sewage sludge) this may be avoidance of ignition sources, such as electrostatic discharges. In

silos or hoppers, explosion protection techniques such as explosion relief panels or doors may be the preferred BOS.

A suitable BOS for drying sewage sludge can come from the copious amounts of steam produced during the drying process, which can be used to provide an inert atmosphere in the dryer. Alternatively, some plant operators prefer explosion protection such as explosion relief panels or suppression systems. In either case consideration must be given to the movement of material after drying where fine dust can be produced by attrition. In such circumstances conveying systems, dust collectors, silos and big bag charging points will become high-risk areas for fire or explosion. A BOS must be implemented for each stage of these processes.

ATEX / DSEAR also makes specific reference to the need for explosion isolation to prevent the explosion travelling to interconnecting vessels and the occurrence of secondary explosions. Isolation between items of plant however can be problematic in the Utilities Industry where mechanical conveying is extensively used, and often, due to the volume of materials being handled, good housekeeping is difficult to sustain.

LIQUIDS & GASES

In the Water Industry, the greatest hazard comes from the production of gases such as methane and bio-gas, generated by the digestion of sewage sludge. Although the industry is used to working with these gases, it is still necessary to review issues such as Hazardous Area Classification (HAC) and standard working practices, to come in line with the requirements of ATEX / DSEAR. The Power Industry has a similar problem from the use of flammable liquids and gases as fuel and in other applications such as hydrogen employed for the cooling of turbines. In both cases a BOS will need to be defined and areas classified as hazardous according to the latest European standards.

WASTE

Under ATEX / DSEAR, waste products should be addressed in the same way as all other materials found on site, whether the products are produced intentionally or accidentally. In the case of power generation, this can include the disposal of large volumes of ash which may be flammable.

DUTY OF CO-ORDINATION

Due to the nature and scale of utility operations it is often accepted that outside contractors may be permanently employed

on site. It is therefore necessary for the Utilities company to ensure that fire and explosion safety is agreed and coordinated.

ATEX / DSEAR REQUIREMENTS

Under legislation a risk assessment must be performed that will indicate where flammable atmospheres can be generated, and identify all potential sources of ignition. It must also state the scale of anticipated effects and whether isolation techniques have been considered. To do this effectively it will be necessary to provide flammability and thermal stability data on all materials being processed. This is especially important with the introduction of more volatile fuels and the presence of new bio-mass materials.

Hazardous Area Classification (HAC) is required wherever a potential flammable atmosphere may occur, together with a review of all potential sources of ignition such as electrical equipment, mechanical action and electrostatic discharges.

Training is essential to ensure that all personnel working within potentially explosive atmospheres have an understanding of the hazards and knowledge of the procedures for dealing with accidents, incidents and emergencies. Training can also assist personnel with the future management and maintenance of ATEX / DSEAR compliance.

Finally, before an operation can become ATEX / DSEAR compliant the overall explosion safety must be verified, by a person who is competent (having the required level of knowledge and experience) in the field of explosion protection.

HOW CHILWORTH CAN HELP

Chilworth Technology has a wealth of knowledge from working within the Utilities Industry and the following proven 4 phase approach is often recommended:

Phase 1: An initial site audit and gap analysis to obtain an overview of the operations and the current state of the plant with respect to explosion hazards. The Phase 1 report is often used as a plan of action for full ATEX / DSEAR compliance.

Often, in conjunction with Phase 1 audits, training is undertaken, to raise safety awareness and provide an increased level of understanding with respect to hazardous areas, fire/explosions, and electrostatic hazards. Such training can be tailored to suit your specific requirements and may be included at the time of the audit. After training, it is possible for selected engineers to accompany the Chilworth engineer on the audit and obtain further on-site training.

Phases 2 & 3: Follow-on from the recommendations in Phase 1 and may consist of obtaining flammability data, performing detailed hazard and risk assessments, performing electrostatic audits and completing the hazardous area classification. Individual reports will be issued for each of these areas of work.

Phase 4: The final audit and verification stage, which can include assistance in preparing the documentation required by ATEX / DSEAR to demonstrate overall compliance.

Chilworth's aim is to work with companies to obtain full compliance and train personnel to maintain compliance in the future.

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Dr/Mr/Ms/Mrs/Miss:..... Job Title:.....

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My particular interests are:-

- | | | | |
|--|--------------------------|---|--------------------------|
| ATEX / DSEAR Audits | <input type="checkbox"/> | Electrostatic Hazards / Problems..... | <input type="checkbox"/> |
| Hazardous Area Classification | <input type="checkbox"/> | Dust/Gas/Vapour Explosion Hazards..... | <input type="checkbox"/> |
| Emergency Relief Design/Validation (DIERS) | <input type="checkbox"/> | Chemical Reaction Hazards | <input type="checkbox"/> |
| Chemical Process Optimisation | <input type="checkbox"/> | Hazard Analysis and HAZOP | <input type="checkbox"/> |
| IEC61508/11 Functional Safety Assessment | <input type="checkbox"/> | Incident Investigation / Expert Witness | <input type="checkbox"/> |
| SIL Determination | <input type="checkbox"/> | Training..... | <input type="checkbox"/> |

I would like a FREE talk with a consultant about a process safety matter

I would like a FREE visit from a consultant next time one is in my area

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