Radio Frequency (RF) ignition sources

The radio-frequency environment is becoming increasingly severe, with the proliferation of transmitting sources, increased transmitter powers and the exploitation of new techniques.

Sources for radio-frequency transmissions include radio and television broadcasts, radio communications, mobile phone communications, radar and navigational equipment. These transmission sources can affect an area of up to 30km and have the potential to impinge on most operating sites.

In order to comply with the ATEX and the Dangerous Substance and Explosive Atmosphere Regulations (DSEAR), companies handling substances capable of creating explosive atmospheres are required to carry out a formal risk assessment. This must consider the extent of foreseeable explosive atmospheres within and external to the process, and ensure that suitable equipment is installed to control all potential ignition sources.

One potential ignition source arises from radio-frequency radiation, often identified during the preparation / review of company COMAH safety reports.

What we offer
Electromagnetic waves produced by radio-frequency transmitters will induce electric currents and voltages in any conducting structure on which they impinge. The magnitude of the induced current and voltage depends upon the combination of the shape and size of the structure, the wavelength and the strength of the transmitted signal. A spark may occur if the induced voltage and currents are sufficiently large.

The latest standard for the assessment of inadvertent ignition of flammable atmospheres by radio-frequency radiation, PD CLC/TR 50427:2004, provides detailed guidance, but currently many companies are unclear about the level of risk posed by radio-frequency induced ignition.

To assist with this problem ABB provides an initial assessment. The initial assessment essentially identifies all the radio frequency transmissions that may be of sufficient power and have the right characteristics to cause sparking in any structures. The vulnerable zone from each transmission source is categorised against each of the gas groups I/IIA, IIB & IIC. Any radio transmission sources identified in the screening study that are a cause for concern, can then be assessed in more detail.
When such risk areas are identified, then ABB can undertake a detailed RF risk study which looks at the characteristics of the plant structures which are acting as an ‘aerial’, so as to determine whether sufficient energy can be extracted (by the structure) which can exceed the threshold values to cause ignition of any flammable atmosphere that may be present.

Benefits
ABB have proven experience for carrying out initial and full RF assessments in accordance with the guidance PD CLC / TR 50427:2004.

As each assessment of the risk from RF induced ignition will be dependent on the location of RF sources in relation to the site under consideration, ABB can tailor the assessment to the needs of the site and any local geography i.e. long wave radio, radar and shipping represent the highest level of risk of RF induced ignition.

Our specialist safety engineers have considerable multi-sector experience and knowledge that can be focused to provide technically robust solutions for your overall ATEX / DSEAR compliance requirements. The prevention of potential ignition sources within the workplace is a key activity in any manufacturing organisation and we offer to provide an efficient, well-organised, cost-effective and innovative capability that can address all your process safety requirements.

Why ABB?
We can provide a cost effective; technically robust service for all your ignition source reviews, hazardous area zoning and ATEX / DSEAR compliance related requirements.

As a core service provision, our technical safety engineering capabilities are at the forefront of design, build, repair and regulatory compliance. As such, we continue to evolve our technical services to meet the new challenges faced by the process industries including protecting people, the environment and creating a sustainable future for your operations.