

### Reducing Explosion Risks

Gas turbine enclosures are potentially hazardous environments, as there are hot surfaces and the potential for gas leaks which may lead to explosions. The EU ATEX regulations and UK DSEAR regulations place requirements to protection of workers potentially at risk from explosive atmospheres. The HSE guidance note, PM84, and more recently BS ISO 21789 provide information on how to meet the ATEX DSEAR requirements – these include requirements for CFD modelling. MMI have been undertaking these studies for many years. We understand the implications of the standard for enclosure manufacturers and operators, and know how to propose and test simple modifications to a design that will ensure it meets the standards. Key to this is an appreciation of the stoichiometric gas cloud calculation, and the methods used to efficiently identify the worst case leak location. There is a correlation between the volume of leak gas in a GT closure and the blast overpressure that can be created if the gas ignites. MMI Engineering uses CFD modelling to determine the volume of leaked gas and ensure that the ventilation system is correctly designed and optimized to prevent excessive overpressures. The CFD analysis is also used to determine appropriate gas detector settings for controlling leak gas volumes within the set limits.

Recently, the HSE has identified that oil mist can pose an explosion risk, and we use similar CFD modelling techniques to ensure operators are protected.

