

SGX Sensortech are often asked for advice on the use of pellistors for the detection of spillages of kerosene based products such as aviation fuels, diesel or domestic heating oils.

Kerosene is a mixture of heavy hydrocarbons used in a number of products. The LEL of its vapour is given as 0.7%. The main problem in using a gas detection system to monitor for spillages is that it has a very high flash point. The literature gives the flash point as 37 - 65 °C, chiefly because some of the components in it are more volatile than others; virgin kerosene will have a much lower flash point than older kerosene, since the volatile components will evaporate away. This ageing of kerosene also makes it very difficult to specify a relative response figure for calibrating a pellistor.

The result of this is that, at normal temperatures, very little of the vapour is present above the liquid, and as a consequence, for a pellistor to be effective it needs to be calibrated with a lower alarm level than for other flammable vapours.

When using a pellistor for monitoring for kerosene spillages, SGX Sensortech suggest the use of a calibration factor similar to pentane, and as low an alarm level as possible. The risk of false alarms will be dependent on the stability of both the pellistor and the instrument in which it is fitted, and a judgement should be made on that basis.

The best pellistor for monitoring kerosene spillages has been shown to be the SGX Sensortech VQ41TSB. Whilst originally designed for monitoring low LEL levels of ammonia, its very stable zero and repeatable response to heavy hydrocarbons has been shown in the field to give satisfactory results. The sensor yields an output of about 20 - 30 mV for 20% LEL Pentane with typical zero stability on bench tests of ± 0.5 mV.