GFM435 FAQ Sheet

What's new and unique about the GFM435 Gas Monitor ?

The Instrument is now **approved to the very latest *m*CERT*S* standard** Version 3.1 dated February 2010. The instrument certification can be viewed at the link below.

http://www.siraenvironmental.com/UserDocs/mcerts/MCERTSCertifiedProductsPortableEmissionMonitoringSystems.pdf

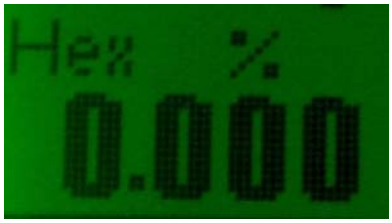
Other Monitors in this sector of the market are only *m*CERT*s* approved for the measurement of CH4, CO2, O2 & CO and to the older 2005 standard. The GFM435 is approved for all the above plus H2S and Flow – 0-100l/hr. Also included in the certification, although not mandatory, Atmospheric Pressure (800- 1200mbar).

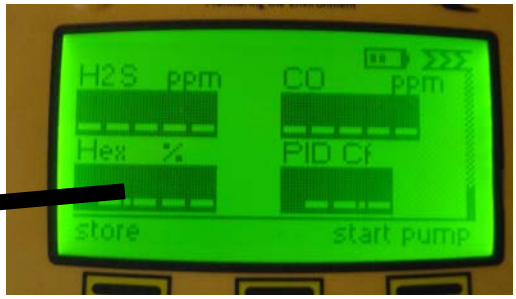
The instrument has a new and highly robust flow transducer. The transducer is rated up to 100 l/hr full scale measurement range but will withstand up to four times this flow rate for short bursts without damage. This characteristic dramatically reduces instrument damage when unexpectedly high borehole pressures are released upon opening the gas tap.

The instrument also has a new and improved infra-red bench which is mechanically more sound giving temporal stability and improved thermal characteristics.

This is important as the **GFM435 now incorporates an additional Hexane calibration of the infra-red sensor which is used to indicate, quantify and track hydrocarbon gases that would normally make the infra-red methane calibration read excessively high or even over-range rendering the results meaningless.** With the GFM435 when and if the methane sensor shows an over-range signal or abnormally high methane value (a good indicator that other hydrocarbons are present in the bore hole) the hexane value will remain valid and in range up to 2.000%. This response range is chosen as it allows typical concentration levels of hydrocarbon vapours that would be found in contaminated ground due to the spillage of common liquid fuels and oils to be quantified on a standard scale as a percentage hexane vapour equivalent. The Hexane signal is taken from the infra-red bench and processed to another output on the instrument display in the scale 0.000 – 2.000%. It does not need additional gas calibration as the infra-red beam is normalised using the existing methane calibration gas. At 100% Methane concentration the Hexane reading will be typically showing 0.200 – 0.300% and will continue to rise if there is a hydrocarbon problem present. Laboratory sampling is needed to establish a baseline and identify the specific hydrocarbon compound but repeat tests with the GFM435 will allow trends to be determined with great consistency.

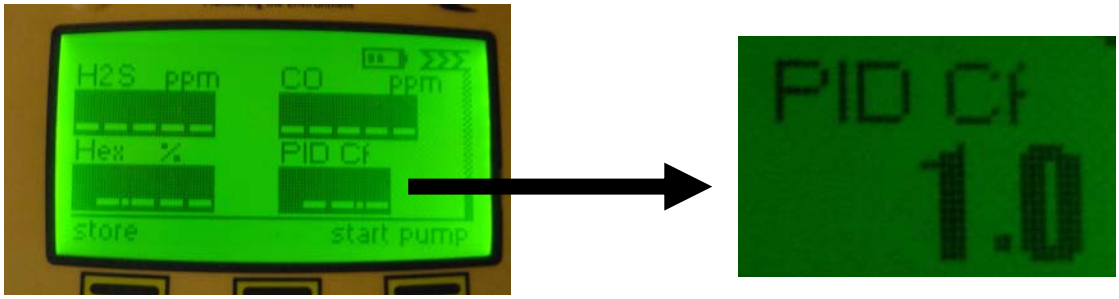
Using this technique the Hexane reading can also be used for an immediate indication that remedial action on the bore hole has been successful or not. Bore holes can be re-measured knowing that readings are " in scale" by referencing the original readings taken. No more waiting for samples to come back from the lab! Bore holes across a site can be compared and peak readings established to indicate those of significant interest, worst case and negligible etc





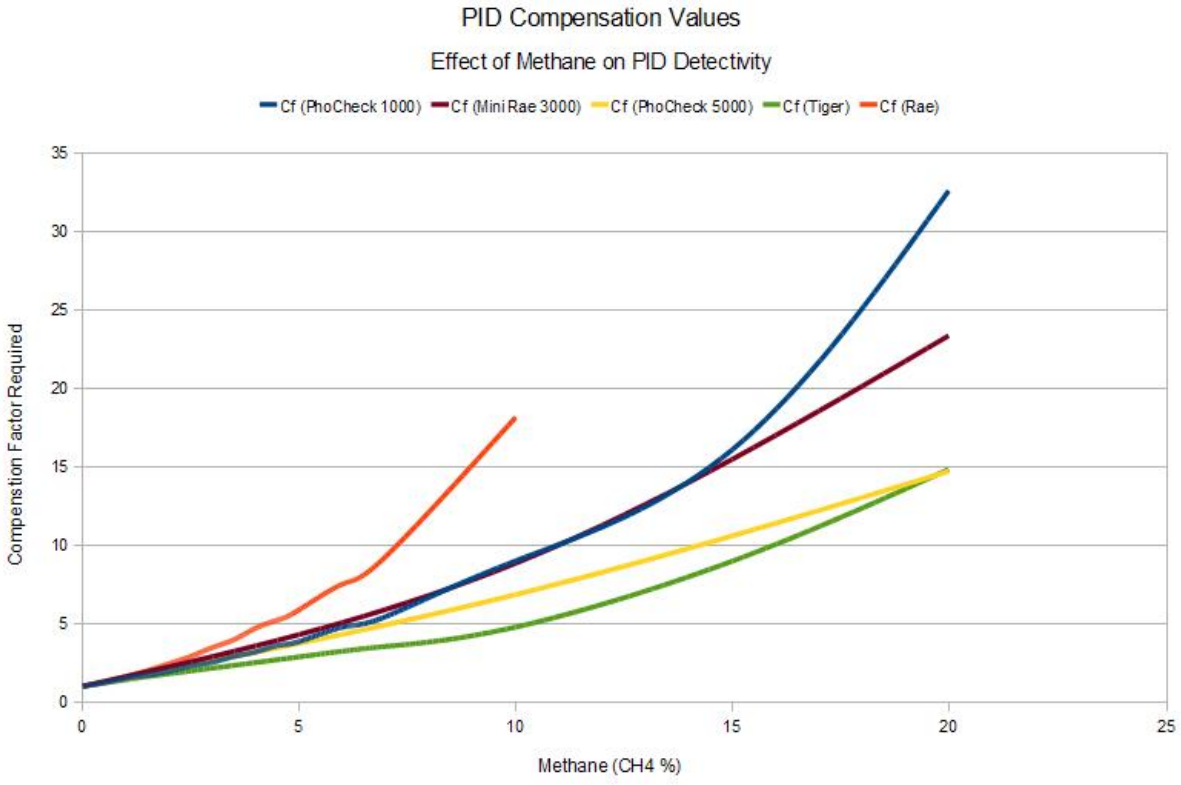
This Hexane reading is not a substitute for PID (Photo Ionisation Detector) readings of low level hydrocarbons in the borehole but is there to plot trends and be utilised in 'first pass' site surveys.

For accurate low level hydrocarbon readings the GFM435 also has a new PID Compensation factor display built in. The PID (Photo Ionisation Detector) is the instrument normally used to characterise other hydrocarbons indicated in a borehole as it does not ionise methane.



However even small quantities of methane present in a borehole can absorb UV light without becoming ionized thus quenching the PID signal and consequently de-sensitising the instruments response.

The built in PID Compensation factor in the GFM435 is a derived figure from extensive testing of the non-linear characteristics of this phenomenon and is displayed as a number 1 – 10 to multiply your PID reading taken by (10.6eV Lamp i/ ppm measurement) to give an accurate total hydrocarbon reading on the borehole in the presence of methane. This figure is accurate for the Ion Phocheck range of PIDs up to a value of 10 which occurs at approximately 9% methane in the borehole. This characteristic varies between PID manufacturers. For example, typically only 5 – 6% of methane will diminish the PID response of a RAE Systems unit to only one tenth of the correct value thus needing a PID compensation factor of 10. Instrument characteristics when subjected to high levels of methane do differ considerably (see chart of typical responses below).



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