Crowcon Technical Note

Document Reference: **GEN054 – Pellistor Correction Factors – Issue 5**

Date: **9/7/2018**

Document applies to: Fixed Detectors with VQ21 Series Sensors (see page 3 for VQ25 & VQ41)

Products: Xgard, Xsafe, Flamgard Plus. Also obsolete %LEL catalytic detectors that use VQ21 series Pellistors.

NB: These correction factors do not apply to detectors with Infra-Red (IR) sensors, or Portables.

The table below enables VQ1/VQ21 series pellistor-based flammable gas detectors to be calibrated to provide a %LEL concentration indication for a wide variety of gases and vapours using either methane or pentane as surrogate calibration gases.

To calculate a cross calibration value multiply the correction factor by the %LEL of the gas used.

Example:

If you want to calibrate for Ethane you should use Pentane gas with the following cross calibration value:

Ethane has a 0.8 correction factor with Pentane, therefore when using 50%LEL Pentane calibrate to 40%LEL Ethane (0.8 x 50=40).

Good practice is to use the closest factor to give you a half scale reading (or below half scale). Using a factor that will give above half scale can give inaccurate readings at normal alarm levels.

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Correction Factors for VQ1/VQ21 series pellistor based detectors

	Reference standard: IEC60079-20-1:2010	Correction Factor			Reference standard: IEC60079-20-1:2010	Correction Factor	
	LEL (% Volume)	Methane	Pentane*		LEL (% Volume)	Methane	Pentane*
Acetaldehyde	4.0	1.6	0.8	Ethylene Dichloride		1.2	0.6
Acetic Acid	4.0	3.0	1.5	Ethylene Oxide	2.6	2.1	1.1
Acetic Anhydride		2.5	1.3	N-Heptane	0.85	2.4	1.2
Acetone	2.5	1.7	0.9	N-Hexane	1.0	2.5	1.3
Acetylene	2.3	1.6	0.8	Unleaded petrol	1.4	3.8	2.0
Aniline	1.2	2.6	1.3	Hydrogen	4.0	1.2	0.6
Benzene	1.2	2.2	1.1	Hydrogen Sulphide	4.0	2.2	1.1
1-3 Butadiene	1.4	2.2	1.2	Methane	4.4	1.0	0.5
N-Butane	1.4	1.9	1.0	Methanol	6.0	1.3	0.7
Iso-Butane	1.3	2.2	1.1	Methylamine	4.2	1.3	0.7
1-Butene	1.6	1.9	1.0	Methyl Acetate		1.8	0.9
N-Butanol	1.4	2.2	1.1	Methyl Chloride	7.6	1.1	0.6
I-Butanol	1.4	1.9	1.0	Methyl Cyclohexane		2.3	1.2
Tert-Butanol		1.6	0.8	Methyl Ethyl Ketone	1.5	2.3	1.2
Butyl Acetate		2.5	1.3	Methyl-N-Propyl-Ketone		2.2	1.1
Carbon Monoxide	10.9	1.3	0.6	Nitromethane	7.3	1.8	0.9
Carbon Disulphide	0.6	10.5	5.4	N-Nonane	0.7	3.5	1.8
Cyclohexane	1.0	2.2	1.1	N-Octane	0.8	3.1	1.6
Cyclopropane	2.4	1.3	0.7	N-Pentane	1.1	1.9	1.0
N-Decane	0.7	3.4	1.8	Iso-Pentane	1.3	2.2	1.1
Dimethyl ether	2.7	1.7	0.9	Propane	1.7	2.0	1.0
2.3 Dimethyl pentane		2.0	1.0	N-Propanol	2.1	1.7	0.9
Dimethyl Sulphide		2.0	1.0	I-Propanol	2.0	2.3	1.2
Dioxane	1.4	2.2	1.1	Propylene	2.0	1.6	0.8
Ethane	2.4	1.5	0.8	Propylene Oxide	1.9	2.3	1.2
Ethyl Acetate	2.0	2.2	1.1	Propyne		2.0	1.0
Ethylamine	3.5	1.6	0.8	Styrene Monomer	1.0	2.4	1.2
Ethanol	3.1	1.6	0.8	Tetra Hydro Furan	1.5	2.1	1.1
Ethyl Benzene	0.8	2.5	1.3	Toluene	1.0	2.4	1.2
Ethyl Bromide		0.8	0.4	o-Xylene	1.0	2.6	1.4
Ethyl Chloride		1.5	0.8	m-Xylene	1.0	2.4	1.2
Ethyl Methyl Ether	2.0	2.0	1.0	p-Xylene	0.9	2.4	1.3
Ethylene	2.3	1.6	0.8				

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Other specialist Pellistors:

		Correction Factor with Butane
VQ25 Pellistor	**LEL**	
Vinyl Chloride Monomer	3.6	1.0
VQ41 Pellistor		**Hydrogen**
Ammonia	15.0	0.5**
		Pentane
Kerosene	0.7	3.0

* Methane and Pentane factors are derived from SGX Sensortech technical note: A1A-Pellistor_AN3 Iss 4 March 07.

** Note: the VQ41 is sold as a 0-25%LEL NH3 detector, therefore 10%LEL (0.4%) H2 would need to be used to set the calibration to 5%LEL NH3.

This document supersedes all previous issues.

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