Schedule of Accreditation

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Accredited to ISO/IEC 17025:2017

EffecTech Limited

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Testing performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address Dove House Dove Fields Uttoxeter Staffordshire ST14 8HU	**Local contact** Dr Gavin Squire Tel: +44 (0)1889 569229 Fax: +44 (0)1889 569220 email: gavin.squire@effectech.co.uk	Gas Testing	**Uttoxeter**
Address N-163 MIDC Tarapur Boisar District Palghar - 401506 Maharashtra India	**Local contact** Padmakar Tillu Tel: +91 (0)2525 276137 Fax: +91 (0)2525 276827 email: padmakar.tillu@effectech.co.in	Gas Testing	**Tarapur**
Address QP West Support Services Area Ghuwairiya Street IR # 1 Ras Laffan Qatar	**Local contact** Biju Davis Tel: +974 55 89 8625 Fax: +974 44 51 5319 email: biju.davis@effectech.com.qa	Gas Testing	**Qatar**

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Chemical Analysis		
NATURAL GAS	amount fraction (%mol/mol) nitrogen 0.1 to 22 carbon dioxide 0.05 to 15 methane 34 to 100 ethane 0.1 to 35 propane 0 to 15 iso-butane 0 to 2 n-butane 0 to 2 neo-pentane 0 to 0.35 iso-pentane 0 to 0.35 n-pentane 0 to 0.35 2-methylpentane 0 to 0.1 3-methylpentane 0 to 0.1 2,2-dimethylbutane 0 to 0.1 n-hexane 0 to 0.1 hexanes [1] 0 to 0.1 benzene 0 to 0.1 cyclohexane 0 to 0.1 n-heptane 0 to 0.1 heptanes [1] 0 to 0.1 toluene 0 to 0.1 methylcyclohexane 0 to 0.1 n-octane 0 to 0.05 octanes [1] 0 to 0.05 n-nonane 0 to 0.02 nonanes [1] 0 to 0.02 n-decane 0 to 0.005 decanes [1] 0 to 0.005 helium 0 to 0.2 hydrogen 0 to 0.2 oxygen 0 to 1 argon 0 to 0.05 C_6+[2] 0 to 0.35	**In-house method TM001/UT** Analysis of natural gas using gas chromatography (GC-TCD and GC-FID) Where the lower limit of the range is given as nil or zero amount fraction then, if the component is not detected in the sample, the certificate shall include the amount fraction in the form <x.xxxxxx where x.xxxxx is a value at or above the limit of quantification (LoQ) determined for that component. Note [1]: the amount fraction of a grouped component is the sum of all isomers in that group except for those identified separately Note [2]: the sum of all hydrocarbons containing six carbon atoms or greater	Uttoxeter

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
NATURAL GAS	**Chemical Analysis** amount fraction (%mol/mol) nitrogen 0.1 to 12 carbon dioxide 0.05 to 8 methane 64 to 100 ethane 0.1 to 14 propane 0 to 8 iso-butane 0 to 1.2 n-butane 0 to 1.2 neo-pentane 0 to 0.35 iso-pentane 0 to 0.35 n-pentane 0 to 0.35 2-methylpentane 0 to 0.1 3-methylpentane 0 to 0.1 2,2-dimethylbutane 0 to 0.1 n-hexane 0 to 0.1 hexanes [1] 0 to 0.1 benzene 0 to 0.1 cyclohexane 0 to 0.1 n-heptane 0 to 0.1 heptanes [1] 0 to 0.1 toluene 0 to 0.1 methylcyclohexane 0 to 0.1 n-octane 0 to 0.05 octanes [1] 0 to 0.05 n-nonane 0 to 0.02 nonanes [1] 0 to 0.02 n-decane 0 to 0.005 decanes [1] 0 to 0.005 oxygen 0 to 1	**In-house methods** **TM005/TA** **TM022/QA** Analysis of natural gas using gas chromatography (GC-TCD and GC-FID) Where the lower limit of the range is given as nil or zero amount fraction then, if the component is not detected in the sample, the certificate shall include the amount fraction in the form <x.xxxxxx where x.xxxxx is a value at or above the limit of quantification (LoQ) determined for that component. Note [1]: the amount fraction of a grouped component is the sum of all isomers in that group except for those identified separately	Tarapur Qatar

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Chemical Analysis		
NATURAL GAS	Calculated values from composition	**In-house methods** **TM001/UT** **TM005/TA** **TM022/QA**	Uttoxeter Tarapur Qatar
	superior calorific value inferior calorific value relative density density superior Wobbe index inferior Wobbe index molar mass compression factor	Values calculated according to **ISO 6976:1995** (including amendment No 1, May 1998) on a *real* or *ideal* gas basis assuming mixture is dry (free from water) Combustion properties can be expressed in units of the Joule (J) or in kilowatt hours (kWh)	
	gross calorific value net calorific value relative density density gross Wobbe index net Wobbe index molar mass compression factor	Values calculated according to **ISO 6976:2016** on a *real* or *ideal* gas basis assuming mixture is dry (free from water) Combustion properties can be expressed in units of the Joule (J) or in kilowatt hours (kWh)	
	gross heating value net heating value relative density compressibility factor	Calculated values according to methods given in **GPA 2172-09** (2009) using data tables from **GPA 2145-09**	
	gross heating value net heating value relative density compressibility factor	Calculated values according to methods given in **ASTM D3588-98** (2011) using data tables from **GPA 2145-09**	
	Calculated values from composition	**In-house method TM001/UT**	Uttoxeter
	carbon dioxide emission factor (gross combustion energy basis) carbon dioxide emission factor (net combustion energy basis) carbon dioxide emission factor (volume basis)	Calculated values in support of the COMMISSION REGULATION (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council of Brussels, 18/VII/2007 C (2007) 3416 final (publ EU Commission 18th July 2007)	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
NATURAL GAS	**Chemical Analysis** amount fraction (ppm mol/mol) hydrogen sulphide 0 to 10 carbonyl sulphide 0 to 10 methanethiol (methyl mercaptan) 0 to 10 ethanethiol (ethyl mercaptan) 0 to 10 2-methyl-2-propanethiol (tert-butyl mercaptan) 0 to 10 propanethiol (n-propyl mercaptan) 0 to 10 butanethiol (n-butyl mercaptan) 0 to 10 2-propanethiol (iso-propyl mercaptan) 0 to 10 dimethyl sulphide 0 to 10 ethyl methyl sulphide (methyl ethyl sulphide) 0 to 10 diethyl sulphide 0 to 10 tetrahydrothiophene (THT) 0 to 10	**In-house method TM002/UT** Analysis of sulphur components in natural gas using gas chromatography with sulphur chemiluminescence detection (SCD) Where the lower limit of the range is given as nil or zero amount fraction then, if the component is not detected in the sample, the certificate shall include the amount fraction in the form <x.xx where x.xx is a value at or above the limit of quantification (LoQ) determined for that component.	Uttoxeter
END			