

# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 <b>Accredited to ISO/IEC 17025:2017</b>	<b>Alfred H Knight Energy Services Ltd</b>  <b>Issue No: 051   Issue date: 16 February 2024</b>	
	<b>Unit 1</b> <b>Palmermount Industrial Estate</b> <b>Bypass Road</b> <b>Dundonald</b> <b>Kilmarnock</b> <b>Ayrshire</b> <b>KA2 9BL</b>	<b>Contact: Mr John Watt</b> <b>Tel: +44 (0)1563 850375</b> <b>Fax: +44 (0)1563 850830</b> <b>E-Mail: john.watt@ahkgroup.com</b> <b>Website: www.ahkgroup.com</b>

**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
<b>Address</b> Unit 1 Palmermount Industrial Estate Bypass Road Dundonald Kilmarnock Ayrshire KA2 9BL	<b>Local contact</b> Mr John Watt Tel: +44 (0)1563 850375 Fax: +44 (0)1563 850830 Email: john.watt@ahkgroup.com Website: www.ahkgroup.com	Fuels - Chemical and Physical Tests	A
<b>Address</b> Units B3 - B4 Olympic Business Park Dundonald Kilmarnock Ayrshire KA2 9BE	<b>Local contact</b> Mr John Watt Tel: +44 (0)1563 850375 Fax: +44 (0)1563 850830 Email: john.watt@ahkgroup.com Website: www.ahkgroup.com	Fuels - Chemical and Physical Tests	B
<b>Address</b> LMA cv Oeverkruid 14 4941 VV Raamsdonksveer Netherlands	<b>Local contact</b> Mr Rutger Jan Hoeven Tel: +31 (0)183 307050 Fax: +31 (0)183 304502 Email: arno.kant@lma-xrf.nl	Fuels - Chemical and Physical Tests	C
<b>Address</b> Temple House Unit 1, Fairfield Park Manvers Way Wath upon Dearne Rotherham S63 5DB	<b>Local contact</b> Ms Clare Gittins Tel: +44(0) 1709 871 315 E-Mail: clare.gittins@ahkgroup.com Website: www.ahkgroup.com	Sampling and Sample Preparation of Solid Recovered Fuels and Refuse Derived Fuels	D



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**Site activities performed away from the locations listed above:**

Location details	Activity	Location code
Premises away from the main Laboratories	Fuels – Sampling Sampling of Solid Recovered Fuels and Refuse Derived Fuels	E



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**DETAIL OF ACCREDITATION**

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
COAL, COKE	<u>Chemical and Physical Tests</u>		
	Sampling	Documented In-House Method KES/93/Prep-C conforming to: BS ISO 18283:2022 ASTM D2234 (location E)	A, B, C, E
	Sample Preparation	Documented In-House Method LMA/93/Prep-C conforming to: BS ISO 18283:2022 ASTM D2013 (location B)	B, C
	Hardgrove Grindability Index (HGI)	Documented In-House Method SM041 (using Hardgrove Machine) based on: BS ISO 5074:2015; and ASTM D409:2016	A, C
	Free Swelling Index (Crucible Swelling Number)	Documented In-house Method SM010 based BS ISO 501:2012	A
	Free Swelling Index (Crucible Swelling Number)	Documented In-house Method LSM010 based on BS ISO 501:2012	C
	Total Moisture	Documented In-House Method based on ASTM D3302:2022	A, B
COAL	Analysis Moisture	Documented In-House Method based on ASTM D3173:2021	A
	Trace Elements: As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, Se, Ti, V, Zn, B, Ti, U, Sn, Te	Documented In-House Method SM044 (using ICP-MS) conforming to: BS ISO 23380:2022; and ASTM D6357:2021	A
ASH	Trace Elements: As, Be, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Se, Sn, V, Zn	Documented In-House Method SM044 (using ICP-MS) conforming to BS EN ISO 16968:2015	A
SOLID BIOFUELS	Sampling	Documented In-House Method KES/93/Prep-B conforming to: BS EN 18135:2017; BS EN ISO 14780:2017 + A1 2019	A,,B, C, E



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SOLID BIOFUELS (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)		
	Sample Preparation	Documented In-House Method LMA/93/Prep-B conforming to: BS EN 18235:2017 BS EN ISO 14780:2017+ A1 2019	B, C
	Minor Elements: As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, Se, Ti, V, Zn, B, Ti, U, Sn, Te	Documented In-House Method SM044 (using ICP-MS) conforming to: BS EN ISO 16967:2015; and ISO BS EN 16968:2015	A
	Particle Size Distribution	Documented In-House Method SM048 conforming to BS EN ISO 17827:Part 1 :2016	B
SOLID BIOFUELS (including WOOD PELLETS) and ASH	Particle Size Distribution: <3.15mm	Documented In-House Method SM049 conforming to BS EN ISO 17827: Part 2:2016	B
SOLID BIOFUELS	Particle Size Distribution of Disintegrated Pellets	Documented In-House Method SM049 conforming to BS EN ISO 17830:2016	B
WOOD PELLETS	Length Diameter	Documented In-House Method SM048 conforming to BS EN ISO 17829:2015	B
WOOD PELLETS COMPRESSED FUELS	Particle Density	Documented In-House Method SM054, BS EN ISO 18847:2016	A
SOLID BIOFUELS (including WOOD PELLETS), ASH and SOLID RECOVERED FUELS	Bulk Density	Documented In-House Method SM050 conforming to: BS EN ISO 17828:2015 and DD CEN/TS 15401:2010	B



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	<u>Chemical and Physical Tests</u> (cont'd)		
COAL, COKE AND SOLID BIOFUELS, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE	Major and Minor Elements	Documented In-House Method SM040 (using X-Ray Fluorescence Spectrometry) conforming to: ISO/CD 13605; PD ISO/TS 16996:2015 and ASTM D4326:2021	C
SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE	Sample Preparation	Documented In-House Method KES/93/Prep-S conforming to: BS EN ISO 21646:2022	B
SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE	Minor Elements: As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, Se, Ti, V, Zn, B, Ti, U, Sn, Te	Documented In-House Method SM044 (using ICP-MS) conforming to: BS EN 15410:2011; and BS EN 15411:2011	A
COAL, COKE, SOLID BIOFUELS, PEAT, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE	Chlorine and Fluorine	Documented In-House Method SM045 (using Ion Chromatography) conforming to: BS EN ISO 16994:2016 and BS EN 15408:2011	A
	Chlorine and Fluorine	Documented In-House Method LSM045 (using Ion Chromatography) based on ASTM D4208:2019, and BS EN 15408:2011	C
COAL	Mercury	Documented In-House Method LSM046 (using dedicated mercury analyser) based on ASTM D6722:2019	C
COAL, COKE, SOLID BIOFUELS, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE, PEAT, SOILS, COLLIERY SPOIL and HIGH ASH MATERIALS	Total Moisture	Documented In-House Method SM030 (Gravimetric Determination) conforming to: ISO 589:2008 ISO 579:2013 BS EN ISO 18134-2:2017 CEN/TS 15414, Part 2; 2010	A, B, C



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COAL, COKE, SOLID BIOFUELS, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE, PEAT, SOILS, COLLIERY SPOIL and HIGH ASH MATERIALS (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)		
	Analysis Moisture	Documented In-House Method SM031 (Gravimetric Determination) conforming to: ISO 11722:2013 ISO 687:2010 BS EN ISO 18134-3:2023 BS EN ISO 21660-3:2021	A, C
	Ash	Documented In-House Method SM033 Gravimetric Based on ISO1171:2010, ASTM D3174:2012, BS EN ISO 18122:2022, BS EN ISO 21656:2021	A, C
	Total Sulphur	Documented In-House Method SM 034 (using combustion Infra-Red Analyser) conforming to: ASTM D4239:2021 and ; ISO 17247:2020; BS EN ISO 16994:2016, and BS EN ISO 21663:2020	A
	Volatile Matter	Documented In-House Method SM032 (Gravimetric Determination) conforming to: BS ISO 562:2010 ASTM D3175:2020; BS EN ISO 18123:2023 BS EN ISO 22167:2021	A, C
	Carbon Hydrogen Nitrogen	Documented In-House Method SM 035 (based on Instrumental Determination) conforming to: ASTM D5373:2021; ISO BS EN 16948:2015 BS EN ISO 21663:2020 BS ISO 29541:2010	A



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COAL, COKE, SOLID BIOFUELS, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE, PEAT, SOILS, COLLIERY SPOIL and HIGH ASH MATERIALS (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)		
	Carbon Hydrogen Sulphur	Documented In-House Method LSM 035 (based on Instrumental Determination) conforming to: ASTM D5373:2021;  ISO BS EN 16948:2015 BS EN ISO 21663:2020; BS ISO 29541:2010 and ASTM D4239:2018	C
	Gross Calorific Value	Documented In-House Method SM 036 (using Bomb Calorimetry) conforming to: BS ISO 1928:2020 BS EN ISO 18125:2017 BS EN ISO 21654:2021 ASTM D5865:2019;	A, C
	Chloride	Documented In-House Method SM039 (Ion Selective Electrode Testing of aqueous residue from Test SM036) conforming to: BS EN 16994:2016, ASTM D4208:2019 & BS EN 15408:2011	A
COAL, COKE, SOLID BIOFUELS, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE, PEAT, SOILS, COLLIERY SPOIL and HIGH ASH MATERIALS (cont'd)	Calculation of Net Calorific Value	Documented In-House Method SM 037 conforming to: BS ISO 1928:2020 BS EN ISO 18125:2017 BS EN ISO 21654:2021 ASTM D5865 :2019	A, C
COAL, COKE, SOILS, COLLIERY SPOIL and HIGH ASH MATERIALS	Calculation of Fixed Carbon	Documented In-House Method SM 022 conforming to: BS 1016, Part 100:1994 ASTM D3172:2021	A, C



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BIOFUELS, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE and other CARBONACEOUS MATERIALS	<u>Chemical and Physical Tests (cont'd)</u>		
	Biomass Content expressed As; Mass, by Energy Content ( <u>gross or net calorific value</u> ), or Carbon Content	Documented In-House Method SM 042 (using Selective Dissolution Method) conforming to: BS EN ISO 21644:2021 (Annex B)	A
	Biomass and Fossil Energy Content	Documented In-House Method SM 046 based on "Template Methodology for measuring fossil derived contamination within waste wood" Ofgem Guidance Note 9 November 2013.	B
SOLID BIOFUELS: PELLETS and BRIQUETTES	Mechanical Durability	Documented In-House Method SM 043 (using Pellet Tester) conforming to: ISO BS EN 17831-1:2015	B
	Determination of Fines Content	Documented In-House Method SM 053 (using 3.15mm Sieve) conforming to: BS EN ISO 18846:2016	B
COAL, SOLID BIOFUEL and SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE	Carbonate Content and Calculation of Organic Carbon Content	Documented In-House Method SM 047 (by Titrimetry) conforming to: BS 1377-3:2018+A1 2021	A
COAL, SOLID BIOFUEL and SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE	Ash Fusion Temperature	Documented In-House Method SM017 (using Ash Fusion Furnace) conforming to: ISO 540:2008; ASTM D1857:2018; and BS EN ISO 21404:2020CEN/TS 15404:2010	A, C
COAL, COKE, SOLID BIOFUELS, SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, MUNICIPAL SOLID WASTE	Loss on Ignition at specified temperatures inc 440°C, 550°C, 815°C	Documented In-House Method SM052 based on BS ISO 1171:2010 BS ISO 18122:2022 , BS EN ISO 21656:2021 and BS EN 15935:2021	A





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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
TROMMEL FINES	<u>Chemical and Physical Tests</u> (cont'd)  Loss on Ignition at specified temperatures inc 440°C, 550°C, 815°C	Documented In-House Method SM052 in accordance with HMRC document LFT1:2023	A
METALS, ALLOYS AND METAL PRODUCTS			
Chrome Ore, Ferrochromium and Ferrosilicochromium	Chromium	Documented In-House Method LMS 111 (by Titrimetry) conforming to ISO 4140:1979 and ISO 6331:1983	C
Ferrotungsten	Tungsten	Documented in-house method LMS151 (by fused bead X-Ray Fluorescence Spectrometry)	C
Ferromolybdenum	Molybdenum Silicon Copper Phosphorus	Documented in-house method LMS152 (by fused bead X-Ray Fluorescence Spectrometry)	C
Ferroalloys	Carbon Sulphur	Documented in-house method LMS101 (using combustion-IR analyser)	C
	Oxygen Nitrogen	Documented in-house method LMS102 (using combustion-IR analyser)	C
Manganese Ore	Manganese Iron Silicon Aluminium Phosphorous Titanium Magnesium Calcium	Documented in-house method LMS176 (by fused bead X-Ray Fluorescence Spectrometry) based on ISO 12677	C



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METALS, ALLOYS AND METAL PRODUCTS (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)		
Iron Ore	Manganese Iron Silicon Aluminium Phosphorous Titanium Magnesium Calcium	Documented in-house method LMS177 (by fused bead X-Ray Fluorescence Spectrometry) based on ISO 12677 and ISO 9516	C
SOLID RECOVERED FUELS, REFUSE DERIVED FUELS, SOLID MUNICIPAL WASTE	Sampling and Sample Preparation		
	Sampling of Solid Recovered Fuels	Documented in-house procedure QOP06 based on BS EN 21645:2021	D, E
	Sample Preparation of Solid Recovered Fuels (sample division, oven drying, grinding, shredding)	Documented in-house procedure TCM010 based on BS EN ISO 21646:2022 and TCM01 based on BS EN 15414-1:2020	D
	Calculation of Net Calorific Value	Documented in-house procedure LM20 (calculation) based on BS EN ISO 21654:2021	D
END			