


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <b>0256</b> Accredited to <b>ISO/IEC 17025:2017</b>	<b>Doosan Babcock Limited</b>	
	Issue No: 055    Issue date: 29 October 2021	
	Porterfield Road Renfrew Scotland PA4 8DJ	Contact: Mr A Hughes Tel: +44 (0)1418 853535 Fax: +44 (0)1418 853338 E-Mail: <a href="mailto:andrew.hughes@doosan.com">andrew.hughes@doosan.com</a> Website: <a href="http://www.doosanbabcock.com">www.doosanbabcock.com</a>
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> Doosan Babcock Ltd Porterfield Road Renfrew Scotland PA4 8DJ <b>Local contact</b> Mr A Hughes Tel: +44 (0)141 885 3535 Fax: +44 (0)141 885 3338 Email: <a href="mailto:andrew.hughes@doosan.com">andrew.hughes@doosan.com</a> Website: <a href="http://www.doosanbabcock.com">www.doosanbabcock.com</a>	Metals and Weldments - Chemical Tests Metals and Weldments - Mechanical Tests Metals and Weldments - Metallurgical Tests Metals and Weldments - NDT Tests Metals and weldments - Corrosion	A

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

Location details	Activity	Location code
Premises including commercial and industrial	Metals and Weldments - NDT Testing Metals and Weldments - Metallurgical Tests	B



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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
METALS, ALLOYS AND METAL PRODUCTS	<u>Chemical Tests</u>	Documented In-House Methods:	
Iron, steel and other ferrous alloys	Aluminium (total) Arsenic Boron Carbon Chromium Cobalt Copper Manganese Molybdenum Nickel Niobium Phosphorus Silicon Sulphur Titanium Vanadium	WI-201-0107-000-122 using Direct Reading Emission Spectrometry	A
Nickel Alloys	Aluminium (total) Arsenic Boron Carbon Chromium Cobalt Copper Iron Manganese Molybdenum Niobium Phosphorus Silicon Sulphur Titanium Vanadium	WI-201-0107-000-122 using Direct Reading Emission Spectrometry	A



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS, ALLOYS AND METAL PRODUCTS (cont'd)			
Iron, steel and other ferrous alloys (cont'd)	<u>Mechanical and Physical Tests</u>		
	Brinell Hardness HBW10/3000	BS EN ISO 6506-1:2014 ASTM E10-18 ASTM A370-20	A
	Vickers Hardness HV30, HV10, HV5, HV1, HV0.5 and HV0.3	BS EN ISO 6507-1:2018 ASTM A370-20 ASTM E92-17	A
	Tensile testing:		
	Ambient Temperature (Load up to 1200 kN)	BS EN ISO 6892-1:2019 ASTM E8/E8M-16a ASTM A370-20	A
	Elevated Temperature (load up to 200 kN) (up to 700°C)	BS EN ISO 6892-2:2018 ASTM E21-17 ASTM A370-20	A
	Impact testing:		
	Charpy (-196°C and -60°C to 120°C)	BS EN ISO 148-1:2016 ASTM E23-18 ASTM A370-20	A
	Bend	BS EN ISO 7438:2016 ASTM E290-14 ASTM A370-20	A
	<u>Fracture Toughness:</u>		
	CTOD (-60°C to ambient temperature)	BS 7448-1:1991 ASTM E1820-18a	A
	J (-40°C to ambient temperature)	BS 8571:2018	



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METALS, ALLOYS AND METAL PRODUCTS (cont'd)	<u>Mechanical and Physical Tests</u> (cont'd)		
Seamless and welded steel tube	Tube - Drift Expanding test	BS EN ISO 8493:2004 ASTM A370-20	A
	Tube - Flattening test	BS EN ISO 8492:2013 ASTM A370-20	
METALS, ALLOYS AND METAL PRODUCTS	<u>Metallurgical Tests</u>		
	Metallographic replication preparation	Documented In-House Method WI-303-0451-000-06	A, B
	Metallographic replication assessment for microstructure and creep damage	Documented In-House Method WI-303-0451-000-11	A, B
METALS, ALLOYS and METAL PRODUCTS	<u>Corrosion Tests</u>		
Stainless steels	Resistance to pitting corrosion	ASTM G48-11(2015) Method A	A
	Intergranular corrosion	ASTM G28-02(2015) Method A ASTM A262-15 (Practice A & E)	A
Weldments	Tests designated in specific welding codes, excluding non-destructive testing - as detailed below:  Impact, Tensile, Bend, Hardness, Fracture, Macroscopic and Microscopic Examination Visual inspection by certified staff,	BS EN ISO 4136:2012 BS EN ISO 5173:2010+A1:2011 BS EN ISO 5178:2019 BS EN ISO 9015-1:2011 BS EN ISO 9016:2012 BS EN ISO 9017:2018 BS EN ISO 17637:2016 BS EN ISO 17639:2013 BS EN ISO 9606-1:2017 BS EN ISO15614-1:2017 ASME BPVC IX:2019 API 1104:2013 (21 <sup>st</sup> Edition) BS 4515-1:2009 BS 4515-2:1999 AWS D1.1/D1.1M:2015 23 <sup>rd</sup> Edition API SPEC 6A 20 <sup>th</sup> Edition EEMUA 158:2014 BS EN ISO 15156-2:2015 NACE MR0175/ISO 15156:2015	A



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LIGHT and DENSE METALS and ALLOYS including forgings and weldments	<u>Non-Destructive Tests</u> Automated Ultrasonic Flaw Detection examination method under the supervision of suitably qualified personnel	Specific Procedures to client's requirements, based on Documented In-House Procedure OP-303-0454-001	A, B
	Semi-automated Ultrasonic Flaw Detection; SMART-Scan system including TOFD (Time of flight diffraction)	Specific procedures to client's requirements based on Documented In-House Procedure OP-303-0454-370	A, B
	Ultrasonic Phased-array inspection method	Documented In-House Procedure OP-303-0454-351, OP-303-0454-352 and OP-303-0454-354 BS EN ISO 13588:2017 ASME BPVC 2019 Article 4	A, B
	Fluorescent & Colour Contrast Penetrant	Documented In-House Procedure OP-303-0454-601 BS EN ISO 3452-1:2013 BS EN 10228-2:2016 ASME BPVC 2019, Section V: Article 6	A, B
DENSE METALS  Weldments and forgings	Magnetic Particle	Documented In-House Procedure OP-303-0454-501 BS EN ISO 17638:2016 BS EN 10228-1:2016 BS EN ISO 9934-1:2016 ASME BPVC 2019, Section V:Article 7	A, B
	Ultrasonic Flaw Detection: Manual Contact Method	Documented In-House Procedure OP-303-0454-301 BS EN 10160:2015 BS EN 10228-3:2016 BS EN 10228-4:2016 ASME BPVC 2019, Section V:Article 5	A, B
METALS, ALLOYS AND METAL PRODUCTS Stainless steel and nickel alloys	Positive Metal Identification (PMI)	Documented In-House Method WI-303-0450-000-08 using Portable Niton XRF Analyser	A, B
END			