



Federation for Development of Accreditation Services

CERTIFICATE OF ACCREDITATION **(AS PER ISO/IEC 17025:2017)**

This is to attest that

M/s RAJASTHAN TEST AND RESEARCH CENTRE.

Plot no. 296, Sector-7, IMT Manesar,
Gurugram (Haryana) -122050, India

Testing Laboratory

has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories and supplementary criteria for testing laboratories.

Certificate Number: TL-101

Issue Date: 17.06.2022

Valid Until: 16.06.2024

The certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard and the relevant requirements of FDAS. (for scope of accreditation visit website www.fdasindia.org).


DEVI SARAN TEWARI
Director



Federation for Development of Accreditation Services

SCOPE OF ACCREDITATION

Laboratory Name	M/s Rajasthan Test and Research Centre, Plot no.296, Sector-7, IMT Manesar, Gurugram, (Haryana)-122050, India		
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	TL-101	Page No.:	1/12
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ELECTRICAL TESTING

Laboratory based Testing (Oil Immersed Distribution Transformers)

S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1.	Outdoor/Indoor Type Oil Immersed Distribution Transformers up to and including 2500 kVA,33 kV	Measurement of Winding Resistance	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 1):2011 IEC 60076 (Part 1):2011	Digital Micro- ohm Meter
		Measurement of Voltage ratio and check of phase displacement	IS 1180(Part 1):2014 IS 2026(Part 1):2011 IEC 60076 (Part 1):2011	Automatic Turn-Ratio Meter
		Measurement of Short Circuit Impedance (principal tapping, when applicable) and Load Loss at 50% and 100 % load	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 1):2011 IEC 60076 (Part 1):2011	Digital Power Meter
		Measurement of no-load loss and current	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 1):2011 IEC 60076 (Part 1):2011	Digital Power Meter
		Measurement of insulation resistance	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 1):2011 IEC 60076 (Part 1):2011	Digital Insulation Tester
		Induced over-voltage withstand test	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 3):2009 IEC 60076 (Part 3):2013	Motor Generator Set

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Separate source voltage withstand test (Primary & secondary)	IS 1180(Part 1): 2014 (RA 2019) IS 2026(Part 3):2009 IEC 60076 (Part 3):2013	High-Voltage Test Set
		Pressure Test (Routine Test)	IS 1180(Part 1):2014 (RA 2019)	Pressure Gauge
		Oil leakage Test	IS 1180(Part 1):2014 (RA 2019)	Pressure Gauge
		Lightning Impulse Test	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 3):2009 IEC 60076 (Part 3):2013	Impulse Generator, Analyzer, Impulse Current Shunt
		Temperature rise test	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 2):2010 IEC 60076 (Part 2):2011	Temp Data logger/16 Channel & Glass Thermometer
		Pressure test (Type Test)	IS 1180(Part 1):2014 (RA 2019)	Pressure Gauge
		Determination of sound level	IS 1180(Part 1):2014 (RA 2019) IS 2026(Part 10):2009 IEC 60076 (Part-10)2016	Sound Level Meter
		No load current at 112.5 % voltage	IS 1180(Part 1):2014 (RA 2019)	Digital Power Meter

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Paint adhesion test	IS 1180 (Part 1):2014 (RA 2019), ASTM D3359	Cutting Tool, Tape, Brush, Eyeglass Lenses.
		Oil BDV and moisture content of transformer oil	IS 1180(Part 1):2014 (RA 2019) IS 335:2018	Motorized Oil Test Set and Karl Fischer titrator
		Measurement of dimension and physical verification	IS 1180(Part 1):2014 (RA 2019)	Steel Scale, Measuring Tape
		Permissible flux density and over fluxing	IS 1180(Part 1):2014 (RA 2019)	Digital Vernier Caliper
		Measurement of zero- sequence impedance(s) on three phase transformers	IS:2026(Part 1):2011 IEC 60076-1:2011	Digital Power Meter
		Measurement of Harmonic on no-load current	IS:2026 (Part 1):2011 IEC 60076-1:2011	Digital Power Meter
		Measurement of dissipation factor tan delta of the insulation system capacitances	IS: 2026 (Part 1):2011 IEC 60076-1:2011	Capacitance & Ten-Delta Test Set
		Determination of capacitance winding to earth and between windings	IS: 2026 (Part 1):2011 IEC:60076-1:2011	Capacitance & Ten-Delta Test Set

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Unbalance Current Test	CBIP Publication No.: 275 CBIP Publication No.: 317	Digital Power Meter, Clamp Meter
		Magnetic Balance Test	CBIP Publication No.: 275, CBIP Publication No.: 317	Digital Power Meter

Laboratory based Testing (Dry Type Power Transformers)

2	Dry Type Power Transformer up to 2500 kVA,33 kV	Measurement of Winding Resistance	IS: 2026(Part1):2011 IEC 60076(Part 1):2011 IS 11171:1985	Digital Micro- ohm Meter
		Measurement of Voltage ratio and check of phase displacement	IS: 2026(Part1):2011 IEC 60076(Part 1):2011 IS 11171:1985	Automatic Turn-Ratio
		Measurement of short circuit impedance (principal tapping, when applicable) and Load Loss at 50 % and 100 % load	IS: 2026(Part1):2011 IEC 60076(Part 1):2011 IS 11171:1985	Digital Power Meter
		Measurement of no- load loss and current	IS: 2026(Part1):2011 IEC 60076(Part 1):2011 IS 11171:1985	Digital Power Meter
		Measurement of insulation resistance	IS: 2026(Part1):2011 IEC 60076(Part 1):2011 IS 11171:1985	Insulation Tester

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Induced over-voltage withstand test	IS: 2026: (Part 3): 2009, IEC 60076 (Part 3): 2013, IS: 11171: 1985	Motor Generator Set
		Separate source voltage withstand test (Primary & secondary)	IS: 2026: (Part 3): 2009, IEC 60076 (Part 3): 2013, IS: 11171: 1985	High-Voltage Test Set
		Lightning Impulse test	IS: 2026: (Part 3): 2009, IEC 60076 (Part 3): 2013, IS: 11171: 1985	Impulse Measuring & Analyzing System, Imp Impulse Current Shunt
		Temperature rise test	IS: 2026(Part 2):2010 IEC 60076 (Part 2):2011 IS: 11171:1985	Temp Data logger/16 Channel & Glass Thermometer
		Partial discharge measurement	IS: 11171:1985 IS: 6209: 1985 Annex A of IS: 2026 (Part 3):2009	PD Test Analyzer, PD Calibrator
		Determination of sound sound level	IS: 2026(Part 10):2009 IEC:60076(Part-10):2016 IS: 11171:1985	Sound Level Meter
		Measurement of zero- sequence impedance(s) on three phase transformer	IS: 2026(Part 1):2011 IEC:60076-1:2011	Digital Power Meter

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Measurement of Harmonic on no-load current	IS 2026 (Part 1): 2011, IEC: 60076-1: 2011	Digital Power Meter
		Measurement of dissipation factor tan delta of the insulation system capacitances	IS 2026 (Part 1): 2011, IEC: 60076-1: 2011	Capacitance & Ten-Delta Test Set
		Determination of capacitance winding to earth and between windings	IS 2026 (Part 1): 2011, IEC: 60076-1: 2011	Capacitance & Ten-Delta Test Set
		Unbalance Current Test	CBIP Publication No: 275 CBIP Publication No.: 317	Digital Power Meter, Clamp Meter
		Magnetic Balance Test	CBIP Publication No.: 275, CBIP Publication No.: 317	Digital Power Meter/ Multimeter
Laboratory based Testing (Transformers Oil)				
3	New Insulating Oils As per IS:335: 2018 New Insulating Oils As per IS:335: 2018	Viscosity	IS:1448(Part 25/sec 1):2018 ISO: 3104:1994	Digital Kinematic Viscosity Bath (RTRC-214), Low Temp Kinematic Viscosity Bath (RTRC-306)

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Pour point	IS:1448(Part 10/sec 2):2013 ISO: 3016:1994	Automatic Cloud point & Pour point Apparatus (RTRC-213), Cloud and Pour Point Apparatus (RTRC-305)
		Water Content	IEC:60814: 1997 IS 13567:2018	Karl Fischer Titrator
		Breakdown Voltage	IS 6792:2017 IEC 60156:1995	Automatic Oil Test Set
		Density	IS:1448(Part 16):2014 ISO 3675:1998	Liquid Glass bath (Density Bath) Refrigerated
		Dielectric dissipation factor (DDF)	IS: 6262:1971 IS 16086:2013 (RA 2018) IEC: 61620:1998	Capacitance & Tan Delta Test set
		Particle Content	IS 13236:2013 IEC:60970: 2007	Particle counter
		Appearance	Clause 6.6 of IS:335:2018	Qualitative Test

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Acidity	IEC:62021-1:2003	Potentiometric Titrator
		Interfacial Tension (IFT)	ASTM D971:2020	Digital Surface Interfacial Tensiometer
		Total Sulphur content	ISO: 14596:2007 or ASTM D4294:2016 ASTM D129:2018	EDXRF
		Corrosive Sulphur	DIN: 51353:1985	Hot Air Oven
		Potentially corrosive Sulphur	IS: 16310:2017 IEC: 62535:2008	Copper Strip Corrosion Test Apparatus
		DBDS	IS:16497(Part 1)2017 IEC:62697-1:2012	Gas Chromatography Mass Spectrometer
		Inhibitors	IS: 13631:2017 IEC: 60666:2010	HPLC (High Performance Liquid Chromatography)
		Metal Passivator additives	IS 13631:2017 IEC: 60666:2010	HPLC (High Performance Liquid Chromatography)
		2-Furfuryl Alcohol(2- Furfural and related compound content)	IS: 15668:2006 IEC: 61198:1993	HPLC (High Performance Liquid Chromatography)

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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		5-Hydroxymethyl-2-Furfural(2-Furfural and related compound content)	IS: 15668:2006 IEC: 61198:1993	HPLC (High Performance Liquid Chromatography)
		2-Furfural (2-Furfural and related compound content)	IS: 15668:2006 IEC: 61198:1993	HPLC (High Performance Liquid Chromatography)
		2-Furyl Methyl Ketone (2 Acetyl Furan)(2-Furfural and related compound content)	IS: 15668:2006 IEC: 61198:1993	HPLC (High Performance Liquid Chromatography)
		5-Methyl-2-Furfural (2- Furfural and related compound content)	IS: 15668:2006 IEC: 61198:1993	HPLC (High Performance Liquid Chromatography)
		Oxidation Stability	Method C of IS: 12422:2017 IEC: 61125:1992	Oxidation Stability Test Apparatus
		a. Total acidity	As per 1.9.4 of IS:12422:2017 IEC: 61125:1992	Glass Burette A CLASS Capacity-1 ml Q 3 283Q
		b. Sludge	As per 1.9.1 of IS:12422:2017 IEC: 61125:1992	Weighing Balance
		c. DDF at 90°C	As per 1.9.6 of IS:12422:2017 IEC: 61125:1992	Capacitance & Tan Delta Test set

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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Gassing Tendency	Method A of IEC: 60628:1985	Gassing Tendency Apparatus
		Flash Point	IS:1448(Part 21) ISO: 2719:2016	Pensky Marten flash Point Tester
		PCA Content	IP: 346:2015	Weighing Balance
		PCB Content	IS: 16082:2013 IEC: 61619:1997	Gas Chromatography Mass Spectrometer
4	Mineral Insulating Oils in electrical supervision and maintenance guidances as per IS: 1866:2017 or IEC:60422:2013	Color & Appearance	ISO: 2049:1996	Color Comparator
		Breakdown Voltage	IEC: 60156:2018	Automatic Oil Test Set
		Water Content	IEC:60814: 1997	Karl Fischer Titrator
		Acidity (Neutralization value)	IEC:62021-1:2003 IEC:62021-2:2007	Potentiometric Titrator
		Dielectric dissipation factor (DDF) and resistivity	IEC: 60247: 2004	Capacitance & Tan Delta Test set Resistivity (Million Mega Ohm Meter)
		Inhibitor content	IEC: 60666:2010	HPLC (High Performance Liquid Chromatography)
		Sediment/Sludge	Annex-C of IS:1866:2017 IEC: 60422:2013	Weighing Balance

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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Interfacial Tension (IFT)	ASTM D971, EN14210	Digital Surface Interfacial Tensiometer
		Particle (counting and sizing)	IEC: 60970:2007	Particle counter
		Oxidation Stability	IEC: 61125:1992	Oxidation Stability Test Apparatus
		a. Total acidity	IEC: 61125:1992	Glass Burette A CLASS Capacity-1 ml
		b. Sludge	IEC: 61125:1992	Weighing Balance
		c. DDF at 90°C	IEC: 61125:1992	Capacitance & Tan Delta Test set
		Flash point	ISO 2719 :2016	Pensky Marten flash Point Tester
		Compatibility	IEC: 61125:1992	Qualitative Test (Not Applicable)
		Pour point	ISO: 3016:1994	Automatic Cloud point & Pour point Apparatus, Cloud and Pour Point Apparatus
		Density	ISO 3675:1998	Liquid Glass bath (Density Bath) Refrigerated

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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Viscosity	ISO: 3104:1994	Digital Kinematic Viscosity Bath, Low Temp Kinematic Viscosity Bath
		Polychlorinated Biphenyls (PCBs)	IEC: 61619:1997	Gas Chromatography Mass Spectrometer (RTRC-243)
		Corrosive Sulphur	IEC:62535, ASTM D1275, Method B of DIN:51353	Hot Air Oven
		Dibenzyl disulfide (DBDS) content	IEC:62697-1:2012	Gas Chromatography Mass Spectrometer
		Passivator content	Annex B of IEC: 60666:2010	HPLC (High Performance Liquid Chromatography)
		Dissolved gas analysis	IS: 10593:2006 IEC: 60599:1999	Gas Chromatography

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