Laboratory Advanced Motor Test Centre, Siemens Limited, Motor Works- Kalwa,

Thane - Belapur Road, Thane, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Electrical Testing Issue Date 14.11.2014

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	ROTATING ELECT	FRICAL MACHINE		
1	3 Phase Induction Motors	Resistance measurement of Stator winding	IS 325: 1996 Cl.22.3.1 IS 4029: 2010 Cl. 7.2	Resistance : 0.002Ω to 200Ω

IS 325, 3 Phase Energy **Efficient Squirrel** cage induction motors -IS 12615 & **Rotating Electrical** Voltage & Frequency Machines – IEC

Temperature rise test at rated

by Voltmeter-Ammeter method IS 12615: 2011 Cl. 19.2 IEC 60034-2-1:2007 Cl.5.7

IS 325: 1996 Cl.14 IS12802:1989 Cl. 5.2 Resistance method IS12802:1989 Cl. 5.8 for Bearing temperature measurement

IS 12615: 2011 Cl. 19.7

IEC 60034-1: 2010 Cl. 8.4

Least Count: 0.001 Ω Temperature 15 °C to 40 °C / LC 0.1 °C

Input Power:

30 W to 3000 kW LC 0.001 W Voltage 10 V to 12000 V LC 0.1 V (at 40 to 72 Hz) Current 0.2A to 3000A

LC 0.01 A (at 40 Hz to 72 Hz) Power factor ($\cos \phi$) 0.03 to 1.00 LC 0.001 Speed 60 rpm to 4600 rpm

LC 0.1 rpm Frequency 40 Hz to 72 Hz

LC 0.01 Hz Resistance: $0.002~\Omega$ to $200~\Omega$ /

 0.001Ω Temperature 15°C to 150 °C / LC 0.1 °C

60034-1

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	3 Phase Induction	Load test to determine	IS 325: 1996 Cl. 23.5	Input Power
	Motors	efficiency, power factor and slip	IS 4029:2010 Cl. 8.8	30 W to 3000 kW
	IS 325,		Dynamometer method	LC 0.001 W
	3 Phase Energy			Voltage:
	Efficient Squirrel		IS 12615: 2011 Cl. 19.6	10 V to 12000 V
	cage induction			LC 0.1 V
	motors –		IEC 60034-2-1:2010	(at 40 Hz to 72 Hz)
	IS 12615		Cl. $6.3 \le 1 \text{ kW Motors}$	Current 0.2A to 3000A
	&		Cl. 6.4 >1 kW Motors	LC 0.01 A
	Rotating Electrical			(at 40 Hz to 72 Hz)
	Machines – IEC			Power factor $(\cos \phi)$
	60034-1			0.03 to 1.00
				LC: 0.001
				Speed:
				60 rpm to 4600 rpm
				LC: 0.1 rpm
				Frequency:
				40 Hz to 72 Hz
				LC: 0.01 Hz
				Torque:
				0.5 Nm to 20000 Nm
				LC: 0.1 Nm
				Output Power:
				30 W to 3000 kW
				LC: 0.001 W
				Temperature
				15 °C to 150 °C /
				LC: 0.1 °C

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	3 Phase Induction Motors	Momentary overload test at 1.6 times rated torque for 15 Sec.	IS 325: 1996 Cl. 13.1.1	Input Power 30 W to 3000 kW
	IS 325, 3 Phase Energy	1	IS 12615: 2011 Cl. 19.8	LC: 0.001 W Voltage:
	Efficient Squirrel cage induction motors – IS 12615 & Rotating Electrical Machines – IEC 60034-1		IEC 60034-1: 2010 Cl.9.4	10 V to 12000 V LC: 0.1 V (at 40 Hz to 72 Hz) Current 0.2 A to 3000 A LC: 0.01 A (at 40 to 72 Hz) Power factor (cos φ) 0.0 3to 1.00 LC: 0.001 Speed: 60 rpm to 4600 rpm LC: 0.1 rpm Frequency: 40 Hz to 72 Hz LC 0.01 Hz Torque: 0.5 Nm to 20000 Nm LC: 0.1 Nm Output Power: 30 W to 3000 kW LC: 0.001 W

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	3 Phase Induction Motors IS 325, 3 Phase Energy	Reduced Voltage running up test on no load.	IS 325: 1996 Cl. 23.2 IS 12615: 2011 Cl. 19.4	Voltage: 10 V to 12000 V LC 0.1 V (at 40 Hz to 72 Hz)
	Efficient Squirrel cage induction motors –	No load test	IS 325: 1996 Cl. 23.1	Input Power: 30 W to 3000 kW
	IS 12615 &		IS 12615: 2011 Cl. 19.3	LC: 0.001 W Voltage:
	Rotating Electrical Machines – IEC 60034-1		IEC 60034-1: 2010 Cl. 9.1	10 V to 12000 V LC: 0.1 V (at 40 Hz to 72 Hz) Current: 0. 2A to 3000 A LC: 0.01 A (at 40 Hz to 72 Hz) Power factor: (cos \$\phi\$) 0.03 to 1.00 LC 0.001 Frequency: 40 Hz to 72 Hz LC 0.01 Hz
		Measurement of Vibration severity during no load running	IS 325: 1996 Cl. 15 IS 12075:2002 IS 12615: 2011 Cl. 19.11 IEC 60034-14:2003 Cl. 7.3	Vibration: 0.2 mm/s to 10 mm/s LC 0.1 mm/s
		Over speed test at 1.2 times rated RPM for 120 Seconds	IS 325: 1996 Cl. 26 IS 12615:2011 Cl. 19.15 IEC 60034-1:2010	Frequency 40 Hz to 72 Hz LC: 0.01 Hz 60 rpm to 6000 rpm L: 0.1 rpm

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	3 Phase Induction otors IS 325, 3 Phase Energy	Locked rotor test	IS 325: 1996 Cl. 23.4	Input Power: 30 W to 3000 kW LC: 0.001 W Voltage:
	Efficient Squirrel cage induction motors – IS 12615 &	a) Locked Rotor test at a voltage that will produce rated current.	IS 4029: 2010 Cl. 8.3	10 V to 12000 V LC: 0.1 V (at 40 Hz to 72 Hz) Current: 0. 2A to 3000 A
	Rotating Electrical Machines – IEC 60034-1	b) Locked Rotor Torque Test at suitable reduced voltages using Dynamometer method	IS 12615: 2011 Cl. 19.5 IEC 60034-1	LC: 0.01 A (at 40 Hz to 72 Hz) Power factor: (cos \$\phi\$) 0.03 to 1.00 LC 0.001 Frequency: 40 Hz to 72 Hz LC 0.01 Hz Torque: 0.5 Nm to 20000 Nm LC: 0.1 Nm Speed: 60 rpm to 4600 rpm LC: 0.1 rpm
		Insulation resistance test	IS 325: 1996 Cl.25 IS 4722:2001 Cl.30.2 IS 12615:2011 Cl. 19.9 IS 7816:1975 Cl.7	Insulation Resistance: $100 \text{ k}\Omega$ to $1T\Omega$ (0.5 kV to 5 kV) / LC: $1 \text{ k}\Omega$
		High voltage test	IEC 60034-1: 2010 Cl. 9.2 IS 325: 1996 Cl. 24	Voltage 0.5 kV to 30 kV LC: 0.01 kV

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	3 Phase Induction		IS 4029:2010 Cl. 6	
	Motors		IS 12615: 2011 Cl. 19.10	
	IS 325,		IEC 60034-1: 2010 Cl. 9.2	
	3 Phase Energy			
	Efficient Squirrel	Polarization Index test	IS 325: 1996 Cl.25	Polarization Index:
	cage induction		IS 4722:2001 Cl.30.2	0.1 to 10 / LC: 0.1
	motors –		IS 12615:2011 Cl. 19.9	
	IS 12615		IS 7816:1975 Cl.8.5	
	&		IEC60034-1: 2010	
	Rotating Electrical			
	Machines – IEC	Shaft Voltage measurement test	IS 4029:2010 Cl. 9	Voltage:
	60034-1		IS 12615: 2011 Cl.	10 mV to 5000 mV $/$
			IEC60034-1: 2010	LC: 1 mV
		Noise Test	IS 325: 1996 Cl. 22.3.1	Frame size:
				63 to 630
			IS 12065:1987 Cl.3	Noise
				60 dB to 114 dB (A) /
				LC 0.1 dB
			IS 12615: 2011 Cl. 19.12	Speed:
			10 12013. 2011 Ct. 17.12	60 rpm to 4600 rpm
				LC: 0.1 rpm
			IS 12065:1987 Cl.3	Input Power:
				30 W to 3000 kW LC: 0.001 W

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	3 Phase Induction Motors IS 325,	Noise Test	IS 12065:1987 Cl.3	Voltage: 10 V to 12000 V LC 0.1 V
	3 Phase Energy Efficient Squirrel cage induction motors – IS 12615		IEC 60034-9:2007 Cl.4 and Cl. 5 ISO 3744	Current: 0.2 A to 3000 A LC 0.01 A (at 40 to 72 Hz)
	& Rotating Electrical Machines – IEC 60034-1			Power factor: (cos \$\phi\$) 0.03 to 1.00 LC: 0.001
				Speed: 60 rpm to 4600 rpm LC: 0.1 rpm
				Frequency: 40 Hz to 72 Hz LC: 0.01 Hz