

		LOW VOLTAGE INDUCTION MOTORS TECHNICAL SCHEDULE A&B TEMPLATE				
		Project Name:				
		Project No:				
PLANT DESCRIPTION (e.g. Boiler, Turbine, Coal overland, etc.)						
APPLICATION (e.g. Fan, Pump, Mills, Conveyor, etc.)						
ITEM	DESCRIPTION		UNITS	ESKOM or SUPPLIER	ESKOM Comments	SUPPLIER Comments
1.0	Driven Load Requirements					
1.01	Driven machine manufacturer		Name			
1.02	Power required at duty point (referred to motor shaft)		kW	0.75		
1.03	Speed at duty point (referred to motor shaft)		RPM	1390		
1.04	Speed range (Variable Speed application)	1.061) Minimum speed	RPM			
		1.062) Maximum speed	RPM			
1.04	Load moment of inertia at motor shaft		kgm2			
1.05	Required starting torque		Nm			
1.06	Rated load torque		Nm			
1.07	Shaft Rotation (viewed on motor drive end shaft) Clockwise or Anticlockwise		Name			
1.08	Bearing type (Antifriction or sleeve bearing)		Ball/Roller/Sleeve			
1.09	Lubrication type (Grease or oil)		Name			
1.10	Area classification	(Zone 0-2, 20-22) (e.g. Zone 22 (dust), Zone 2 (gases)	Zone			
1.11	Application environmental conditions	1.1901) Indoor or Outdoor	Indoor/Outdoor			
		1.1902) Clean or Dusty	Clean/Dusty			
1.12	Starting method (Direct-on-line starting, Soft starting or Soft starting with speed variation)		DOL/Softstater/VSD			
1.13	Method of stopping (Coast to stop, Mechanical braking or Electrical braking)		Method			
1.14	Drive coupling method (e.g. direct, gearbox)		Name			
1.15	Coupling type (e.g. belt, chain)		Name			

2.0	Power Supply	UNITS	ESKOM	SUPPLIER	ESKOM Comments	SUPPLIER Comments
2.1	Normal Supply		Schedule A	Schedule B	Eskom Spec - 240-57617975	
2.101	Supply Voltage, 3-phase, ± 5% (e.g. 380V, 400V, 525V, 660V and 690V)	V	400 ± 5%		Tender Phase (Section 3.3.1)	
2.102	Supply frequency, 50Hz ± 2%	Hz	50 ± 2%		Tender Phase	
2.103	Voltage unbalance: Negative sequence voltage up to 2 % of positive sequence voltage (Vp).	%	2%		Tender Phase	
2.104	Voltage harmonic distortion	%	<= 5%.		Tender Phase	
2.2	Abnormal power supply (prevailing simultaneously for up to 6 hours)					
2.201	Supply Voltage, 3-phase, ± 10% (e.g. 380V, 400V, 525V, 660V and 690V)	V	400 ± 10%		Tender Phase	
2.202	Supply frequency, 50 Hz ± 2% for 80 minutes	Hz	50 ± 2%		Tender Phase	
2.203	Voltage unbalance: Negative sequence voltage up to 3 % of nominal positive sequence voltage.	%	3%		Tender Phase	
2.204	V/F ratio < 1.1pu	pu	<= 1.1		Tender Phase	
2.3	Transient - voltage within 10% of nominal within 3 seconds after the transient:					
2.301	Complete loss of supply for 0.2 seconds	s	0.2		Tender Phase	
2.302	Voltage depression up to 85% of nominal for up to 60 second	%	85% for 1minute		Tender Phase	
2.303	Voltage depression up to 75% of nominal for up to 1 second	%	75% , 1second		Tender Phase	
3.0	Environment	UNITS	ESKOM	SUPPLIER	ESKOM Comments	SUPPLIER Comments
3.01	Altitude above sea level (e.g. 1000, 1600)	m			Tender Phase	
3.02	Average temperature	°C			Tender Phase	
3.03	Maximum temperature	°C			Tender Phase	
3.04	Minimum temperature	°C			Tender Phase	
4.0	Motor General Information					
4.01	Applicable SANS standard	Code	SANS60034, SANS 1804		Tender Phase	
4.02	Applicable Eskom Specification	Number	240-57617975		Tender Phase	
4.03	Motor manufacturer	Name			Tender Phase	
4.04	Motor manufacturer reference code/serial number	Code			Tender Phase	
4.05	Fabrication place	Name			Tender Phase	
4.06	Motor life expectancy	yrs	>15		Tender Phase	
4.07	Motor colour	SANS 1091	G29 - Light Grey		Tender Phase	
4.08	Local testing facility	Name				
5.0	Motor Electrical Details (Refer to Section 3.1.2 of 240-56357518)					
5.10	Motor Rating					
5.101	Rated output power	kW	0.75		Tender Phase	
5.102	Supply voltage (e.g. 230V, 380V, 400V, 525V, 660V and 690V)	V	400		Tender Phase	
5.103	Frequency (e.g. 50 or 60)	Hz	50		Tender Phase	
5.104	Full load current	A	1.75		Tender Phase	
5.105	Rated Speed	RPM	1390		Tender Phase	
5.106	International Efficiency class code (e.g., IE1, IE2, IE3)	Code	IE3		Tender Phase	
5.107	Duty-class (e.g. S1, S2, S3, etc. as per IEC 60034-1)	Code			Tender Phase	
5.108	Utilization factor (Load power at duty point/motor rated power)	%	>=75%,<=90%		Tender Phase	
5.109	Ex rating (required for Zone 0-2,20-22 Classification) (e.g. Zone 22 (dust), Zone 2 (gases)	Yes / No			Tender Phase	
5.110	Ex Code (e.g. Ex td A22 T125°C IP65 (dust), Ex na II T3 (non-sparking), Ex d/de (Flameproof)	Code			Tender Phase	
5.20	Motor Performance Guarantees					
5.201	Full load torque	Nm			Tender Phase	
5.202	Locked rotor torque	pu			Tender Phase	
5.203	Breakdown torque	pu			Tender Phase	
5.204	Locked rotor current (<9pu for IE3)	pu			Tender Phase	
5.205	Efficiency at 100% Loading	%			Tender Phase	
5.206	Efficiency at 75% Loading	%			Tender Phase	
5.207	Efficiency at 50% Loading	%			Tender Phase	
5.208	Power factor at 100% Loading	%			Tender Phase	
5.209	Power factor at 75% Loading	%			Tender Phase	
5.210	Power factor at 50% Loading	%			Tender Phase	
5.30	Motor parameters (for motors 200kW and above)					
5.301	X/R Ratio	%			Contract Phase	
5.302	Stator Resistance @ Standstill (slip = 1)	Ω			Contract Phase	
5.303	Stator Reactance @ Standstill (slip = 1)	Ω			Contract Phase	
5.304	Rotor Resistance @ Standstill (slip = 1)	Ω			Contract Phase	
5.305	Rotor Reactance @ Standstill (slip = 1)	Ω			Contract Phase	
5.306	Stator Resistance @ Full Load	Ω			Contract Phase	
5.307	Stator Reactance @ Full Load	Ω			Contract Phase	
5.308	Rotor Resistance @ Full Load	Ω			Contract Phase	
5.309	Rotor Reactance @ Full Load	Ω			Contract Phase	
5.310	Full Load Slip	%			Contract Phase	
5.311	Specified Temperature	°C			Contract Phase	
5.312	Magnetic Reactance (Xm)	Ω			Contract Phase	
5.313	Magnetic Resistance (Rm)	Ω			Contract Phase	
6.0	Motor Thermal Details (Refer to Section 3.1.2 of 240-56357518)					
6.10	Temperature rise					
6.101	Stator winding insulation class (Minimum class F)	Name	F or H		Tender Phase	
6.102	Stator winding temperature rise	K	80		Tender Phase	
6.20	Allowable locked rotor time (s)					
6.201	Hot	s			Contract Phase	
6.202	Cold	s			Contract Phase	
6.30	Performance and Thermal Capacity					
6.301	Run-up time at 100% of rated voltage	s			Contract Phase	
6.302	Run-up time at 90% of rated voltage	s			Contract Phase	
6.303	Thermal time constant	s			Contract Phase	
6.304	Cooling time constant	s			Contract Phase	
6.305	Number of starts from Hot, within an hour	s	2		Contract Phase	
6.306	Number of starts from cold, within an hour	s	3		Contract Phase	

7.0	Mechanical Details (Refer to Section 3.1.3 of 240-56357518)					
7.1	Motor insulating system					
7.101	Method of stator winding Impregnation	Name	VPI/CRF		Tender Phase	
7.102	Squirrel cage rotor type (e.g. die cast aluminium or copper or fabricated rotor)	Name			Tender Phase	
7.2	Enclosure and cooling					
7.201	Enclosure - Degree of protection (IP Code) (General IP55, Dust - IP65)	Code			Tender Phase	
7.202	Cooling Method (IC code)	Code			Tender Phase	
7.3	Bearings					
7.301	Bearing type (e.g. Ball or Roller or Sleeve)	Name			Tender Phase	
7.302	Lubrication type (oil or grease)	Name			Tender Phase	
7.303	Lubrication interval	hrs	>= 4000		Tender Phase	
7.304	Bearing life (40 000hrs for <200kW, 100 000hrs for >200kW)	hrs			Tender Phase	
7.4	Motor Size					
7.401	Frame size	Code			Tender Phase	
7.402	Rotor Moment of inertia	kgm²			Tender Phase	
7.403	Motor total mass	kg			Tender Phase	
7.5	Vibration and Noise					
7.501	Bearing vibration limits	mm/s			Tender Phase	
7.502	Noise level	dB			Tender Phase	
8.0	Accessories (Refer to Section 3.1.4 of 240-56357518)					
8.1	Temperature Measuring Devices					
8.101	Stator Winding Embedded Temperature Detectors (ETD) installed	YES/NO			Tender Phase	
8.102	Stator Winding ETD Type (Thermistors or PT100 or thermocouples)	Name			Tender Phase	
8.103	Number of Stator winding ETDs	Number			Tender Phase	
8.104	Bearing ETD Installed	YES/NO			Tender Phase	
8.105	Bearing ETD Type (thermocouples or PT100 situated in the DE and NDE bearing).	Name			Tender Phase	
8.106	Bearing thermocouples or PT100 situated in the DE and NDE bearing (if required).	Number			Tender Phase	
8.107	Separate auxiliary box for the temperature measuring devices.	YES/NO			Tender Phase	
8.2	Space Heaters (see 3.1.4.2)					
8.201	Space heaters	YES/NO			Tender Phase	
8.202	Power rating of the space heaters to operate on 230Vac.	kW			Tender Phase	
8.203	Separate auxiliary box for the heaters. (see 3.1.4.2b)	YES/NO			Tender Phase	
9.0	Interface to Plant					
9.01	Motor mounting (Horizontal / Vertical) (Foot/Flange)	Name			Tender Phase	
9.02	Rotation (viewed on motor drive shaft) with U- V- W	Name			Tender Phase	
9.03	Suitable lifting devices	Number			Tender Phase	
9.04	Maximum cable size that can fit on the terminal box	mm2			Tender Phase	
9.05	Direction of cable entry	Describe			Tender Phase	
9.06	Cable type	Code			Tender Phase	
9.07	Cable size	mm2			Tender Phase	
9.08	Cable outside diameter	mm			Tender Phase	
10.0	Documentation (Refer to Section 3.3 of 240-56357518)					
10.1	Drawings					
10.101	Outline drawing reference number	Number			Tender Phase	
10.102	Power winding schematic diagrams and Auxiliaries schematic diagrams (PT100s, thermistor and heaters) reference number	Number			Contract Phase	
10.2	Motor Curves					
10.201	Torque-speed curves plotted over the driven machine torque-speed curve at rated Voltage reference number	Number			Contract Phase	
10.202	Current-speed curves at rated voltage reference number	Number			Contract Phase	
10.203	Efficiency and Power factor vs. load curves at rated voltage reference number	Number			Contract Phase	
10.204	Thermal limit curves reference number for Motors =>55kW reference number	Number			Contract Phase	
10.3	Manuals and Test Reports					
10.301	Inspection and Test Plan for Motors for motors =>200kW	Number			Contract Phase	
10.302	Required performance test certificates and Routine certificates (for all motor sizes)	Number			Contract Phase	
10.303	Installation, operating and maintenance manual (for all motor sizes)	Number			Contract Phase	