

Data Sheet for Standby Generator for new Pump Station PS34

TECHNICAL DECLARATIONS FOR SPECIFICATION AND DESIGN (Extract from SANS 8528 Part 7)

Tenderers shall fill in under Column M for all items unless N/A has been inserted by the Engineer.

No	Term	Item	Reference	C	M
4.1	Basic data	Power demand		375 kVA	
		Power factor		From 0.8 to 1	N/A
		Rated frequency		50 Hz	
		Rated voltage		400 V	
		Type of system earthing	SANS 10142	TNS	
		Profile of the connected electrical load	9.1 of SANS 8528-5	Continuous	N/A
		Required steady-state frequency and voltage behaviour	16 of SANS 8525-5	Class G2	
		Required transient frequency behaviour	16 of SANS 8525-5	Class G2	
		Type of fuel available	12 of SANS 8528-2	Refer South African Suppliers	
		Starting	15.1 of SANS 8528-5 and C.3.11 of SANS 8525-7	Electrical	
		Cooling and room ventilation	15.6 of SANS 8525-5		
4.2	Engine	Speed	6.2 of SANS 8525-2		
		Fuel specification	12 of SANS 8525-2	Diesel: Refer South African Suppliers	
		Nature and type of speed governor	6.3 of SANS 8525-2		
		Nature of engine cooling		Water cooled	
		Required operating time without refuelling	15.3 of SANS 8525-2	To be discussed	
		Required engine instrumentation	7.4 of SANS 8525-4	a,b,c,d,e,h	
		Required protection system	7.3 of SANS 8525-4	Over current, underspeed, control circuit protection	
		Fuel consumption	14.5 of SANS 8525-1		
		Starting system and ability	11 of SANS 8528-2	Refer Clause 8.4 above	
		Heat balance	9 of SANS 8525-2		
		Air consumption			

No	Term	Item	Reference	C	M
4.3	Generator	Nature and type of excitation and voltage regulation	14.7.2 of SANS 8528-1 a and 12 of SANS 8525-3nd 8	Class G2	
		Required mechanical protection	IEC 34-5	IP 22	
		Required electrical protection	7.3 of SANS 8525-4	Over current, underspeed, control circuit protection	
		Nature of generator cooling	IEC 34-5	Air	
		Heat balance	9 of SANS 8525-3		
		Unsymmetrical load (unbalanced load current)	8.2 of SANS 8525-3	As given in Clause 8.2	
		Construction and mounting arrangement	IEC 34-7	Refer Clause 8.12 above.	
		Grade of telephone and radio interference suppression	8.5 and 8.6 of SANS 8528-3	As given in Clauses 8.5 & 8.6.	
4.4	Mode of operation	Continuous	6.1 of SANS 8525-1	Yes	N/A
		Limited time operation (emergency generating set, peak load generating set)		As 6.1.5	N/A
		Expected operating hours per year		1 200	N/A
4.5	Power rating classification	Continuous power	13.3 of SANS 8525-1		
		Prime power		Yes	
		Limited-time running power			
4.6	Site criteria	Land use	6.2.1 of SANS 8525-1	Yes	N/A
		Marine use	6.2.2 and 11.5 of SANS 8525-1	No	N/A
4.7	Performance class		7 of SANS 8525-1	G2	
4.8	Single and parallel operation	Parallel operation with other generating sets	6.3 of SANS 8525-1	No	N/A
		Parallel operation with mains		Seamless transfer back to mains	
		Type and execution of synchronising			

No	Term	Item	Reference	C	M
4.9	Mode of start-up and control	Manual	6.4 of SANS 8525-1 and 6 of SANS 8525-4	No	N/A
		Automatic		Refer Clause 18.4 of Part 4 above.	N/A
		Semi-automatic		No	N/A
		Additional control device proposed by the generating set manufacturer			
4.10	Start-up time	Generator set with no specified start-up time	6.5 of SANS 8525-1	No	
		Long-break set		Yes.	
		Short-break set		No	
		No-break set		No	
4.11	Installation features	Installation configuration	8.2 of SANS 8525-1	Fixed	
		Set configuration	8.3 of SANS 8525-1	Enclosure	
		Type of mounting	8.4 of SANS 8525-1	Rigid	
		Weather effects	8.6 of SANS 8525-1	Inside	
4.12	Site conditions	Ambient temperature	11 of SANS 8528-1	35°C	
		Altitude		1440 m above sea level	
		Humidity		20%	
		Sand and dust		No	
		Marine		No	
		Shock and vibration		N/A	
		Chemical pollution		No	
		Type of radiation		No	
		Cooling water/liquid		N/A	
4.13	Emissions	Noise limitation	9 of SANS 8528-1		
		Exhaust gas limitations			
		Vibrations			
		National legislation		RSA	

No	Term	Item	Reference	C	M
4.14	Test methods	Standard	4 of SANS 8528-6	Yes	
		Special requirements		No	
4.15	Maintenance intervals	Routine (e.g. oil changes)		3 monthly	
		Mechanical (e.g. filters)			
		Electrical (e.g. controls)			
		Service life to major overhaul			
4.16	Auxiliaries	Power consumption of the auxiliary devices (e.g. fan, compressor)			
		Pre-heating			
		Pre-lubricating			
		Auxiliary and starting battery			
4.17	Control gear and switchgear	Rated current capacity	4.5 of SANS 8528-4	400 A	
		Neutral earth scheme	7.3.7 of SANS 8528-4	N/A	
		Fault-current rating	5.3 of SANS 8528-4	15 kA at changeover	
		Nature of protection device	7.3 of SANS 8528-4	Circuit breaker	
		Nominal operating voltage for control circuit.	4.6 of SANS 8528-4	48 V	
4.18	Factors affecting generating set's performance	With respect to power	9.2 of SANS 8528-5 and 14.2 of SANS 8528-1	Automatic starting of motors	
		With respect to frequency and voltage	9.2 of SANS 8528-5 and 14.2 of SANS 8528-1	Automatic starting of motors	
4.18	Other regulations and requirements		3 of SANS 8528-7	N/A	

Item	Description	
5.2.2	Other protection	
5.3	Alternator labelling (adjacent to alternator)	
	a) Danger label	
	b) Terminal label and colours	
	c) Information labels	
	d) Rating plates	
5.4	Transient output variations	
5.4.1	Maximum voltage drop during a load step of 225 kVA	%
	Maximum frequency deviation during a load step of 225 kVA	%
5.6	Alternator construction	
5.6.1	Number of bearings	
5.6.2	Are there special bearing and lubrication requirements?	
	a) If Yes, details of requirements	
	b) If No, details of bearings offered	
5.6.3	Alternator cooling	
6	MECHANICAL BUILD	
6.1	Base frames	
	a) Length	mm
	b) Width	mm
6.2	Equipment mounted on the base frame or separately	
6.2.1	Control cubicle	
6.2.2	Day fuel tank	
6.2.3	Battery for starter motor	
6.2.4	Battery for control circuits	
6.2.5	Other accessories	
6.3	Overall mass of set (for lifting purposes)	
6.3.1	Cable entry positions	
6.4	Coupling method	
6.5	Vibration damping mounting details	

Item	Description	
6.6	Enclosure	
6.6.1	Sound-reducing	
6.6.2	Weather protection	
6.6.3	Material used for soundproofing	
6.6.4	Corrosion-protected material used for the enclosure	
6.6.5	Internal illumination details	
6.6.6	Overall dimensions and mass	mm
	a) Length	mm
	b) Width	mm
	c) Height	mm
	d) Mass	kg
	e) Layout of proposed construction supplied	

Item	Description	
7	EXHAUST SYSTEM	
7.1	General	
7.1.1	Maximum flow resistance of exhaust system	kPa
7.1.2	Exhaust line diameter	mm
7.1.3	Maximum outlet noise level	dBA
	At	m
7.1.4	Silencer details	
	a) Manufacturer	
	b) Type/model number	
	c) Diameter	mm
	d) Length	mm
	e) Mass	kg
8	Materials	
	Exhaust line material	
	Details of expansion bellows	
	Lagging	
	Type of lagging offered	
	Thermal capabilities of lagging offered	
9	SWITCHGEAR	
9.1	Switchgear equipment	
	Equipment to be supplied	
9.1.1	Voltmeter	
9.1.2	Frequency meter	
9.1.3	Maximum demand ammeters	
9.1.4	kW meter	
9.1.5	Battery voltmeter	
9.1.6	Battery ammeter	
9.1.7	Mains isolator	
9.1.8	Alternator circuit breaker, details	
9.1.9	Changeover circuit breaker or contactor	
9.1.10	Cable termination terminals	
9.1.11	Neutral and earth bar	
9.1.12	Other equipment deemed necessary or recommended	
10	CONTROL PANEL AND SYSTEM	
8.1	Mechanical construction	
8.1.1	Panel height	mm

Item	Description	
8.2	Protection alarms and indications	
8.2.1	Alarm system, general requirements	
	a) Type of display offered	
	b) Remote control and indication alarm system	
8.2.2	Engine alarms	
	a) Low oil pressure	
	b) High engine temperature	
	c) High bearing temperature	
	d) Low coolant/water level	
	e) Engine overspeed	
	f) Engine start failure	
	h) Engine running	
	i) Day fuel tank low	
	j) Engine management system	
	k) Other alarm (including low battery voltage)	
8.2.3	Alternator alarms	
	a) Overload	
	b) High winding temperature	
	c) High output voltage	
	d) Low output voltage	
	e) Phase unbalance	
	f) High/low frequency	
	g) Earth fault	
	h) High bearing temperature	
	i) Unbalanced load	
	j) Reverse power	
8.2.4	General	
	a) Battery charger failure	
	b) DC fail	
	c) Mains fail	
	d) Fire valve(s) operated	
	e) Protection trip	
	f) Protection off/normal	
	g) Alarm system failure	
8.2.5	Engine alarms, indications and controls: recommendations	

Item	Description	
8.2.6	Alternator alarms, indications and controls: recommendations	
11	CONTROL AND TIMERS FOR STANDBY SETS	
11.1	Mains fail	
11.2	Changeover delay timer range to s
11.3	Off-load run timer range	s
11.4	On-load run timer range	s
12	CONTROL EQUIPMENT	
12.1	Type of control system offered	
12.2	If system is PLC based	
12.2.1	Software documentation provided	
12.2.2	Writer of software	
12.2.3	Flow chart to be submitted	
12.2.4	Hard wired manual override facility	Yes/No
13	BATTERIES AND BATTERY CHARGER	
13.1	Batteries	
13.1.1	Starter battery	
	a) Type	
	b) Manufacturer	
	c) Voltage	
	d) Capacity	V
	e) Location	Ah
13.1.2	Control and alarm batteries	
	a) Type	
	b) Manufacturer	
	c) Voltage	
	d) Capacity	V
	e) Location	Ah
13.1.3	Other battery (if required)	
	a) Type	
	b) Manufacturer	V
	c) Voltage	Ah
	d) Capacity	
	e) Location	
	f) Purpose	
13.1.4	Battery charger	

Item	Description	
14	EARTHING	
14.1	Alternator neutral earthing	Yes/No
14.2	Battery earthing	
14.2.1	Is negative pole earthed to frame?	
14.3	Is bypass earthing of bearings recommended and provided?	
15	CORROSION PROTECTION AND FINISH	
15.1	Final colour of finishes	
15.1.1	Engine	
15.1.2	Alternator	
15.1.3	Frame	
15.1.4	Enclosure (if applicable)	
15.1.5	LV switchgear	
15.1.6	Control panels	
15.1.7	Other	
16	SPARES AND SPECIAL TOOLS	
16.1	Confirmation that all spares will be available for ten years from equipment delivery	
17	MARKING/LABELLING/DOCUMENTATION	
17.1	Labelling	
17.1.1	Are labels language or pictorial type?	
17.2	Documentation	
17.2.1	Number of copies of O&M Manual	
17.2.2	Number of copies of works test certificates	

SCHEDULE OF RECOMMENDED PARTS AND SPARES

ITEM	DESCRIPTION	CATALOGUE PART NO
1	ENGINE PARTS:	
2	ALTERNATOR PARTS:	
3	AUXILIARIES:	
4	OTHER:	

