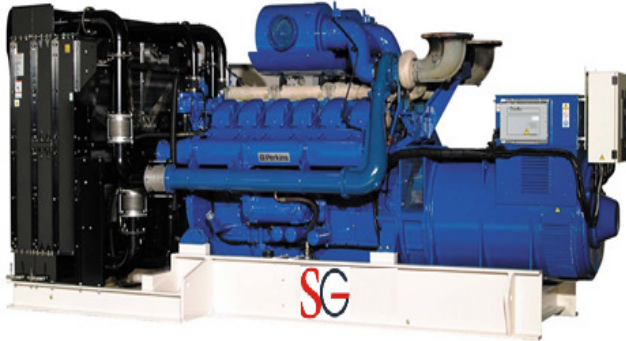


GENSET MODEL
SGP 2050P / 2250S

STERLING

GENERATORS (P) LTD
(A Shapoorji Pallonji Company)



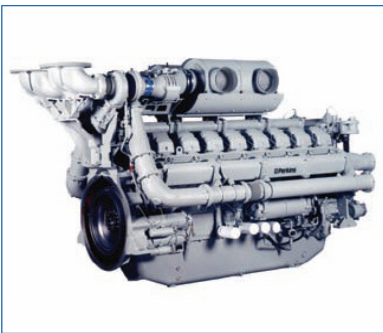
Powered by



ENGINE MODEL : 4016-TAG2A

ALTERNATOR : LeroySommer / Stamford

GENSET RATING (Radiator/HE Cooled)



Prime - kVA/kWe

Standby - kVA/kWe

50 HZ

2050/1640

2250/1800

FEATURES

The 4016-TAG2A is a turbocharged and air-to-air chargecooled, 12 cylinder diesel engine. Its premium feature provides economic and durable power resulting in exceptional fuel consumption, low emissions and single step block load acceptance

The 4000 Series has been developed using the latest engineering techniques and addresses today's uncompromising demands of the Power Generation industry. Developed from the proven heavy duty industrial base these products offer superior performance and reliability

Perkins Diesel Engines

Perkins history dates back to 1930's
Headquartered in Peterborough, UK
Greater than 2 Billion GBP in sales in 2008
More than 375,000 engines produced annually
Perkins is part of Caterpillar Enterprise worldwide

About Sterling Generators

A Shapoorji Pallonji Company
One of the largest integrated genset manufacturing facility in Asia with separate EOU & DTA unit
Facilities to test upto 3000 kW on 415V, 3.3 kV, 6.6 kV & 11 kV
Inhouse acoustic enclosure and control panel (LT/HT/C&R) manufacturing
Nationwide installation and network for Sales and Support

Perkins Powered Sterling Gensets

Sterling provides the range of Perkins powered gensets which are recognized globally
Gensets are designed and tested as per Perkins guidelines
Single window responsibility for Sales, Service and Spares
Genset warranty : Standard 1 year with Unlimited hours of operation

Rating Definitions

Performance based on ISO 8528/1, ISO 3046/1, BS 5000

Prime Power : Variable load not exceeding 80%. Overload of 10% permitted for 1 hour in every 12 hour of operation

Standby Power : 80% load factor with a maximum of 500 hours running per year



ISO 9001:2000



SGP-2050P / 2250S

ENGINE TECHNICAL SPECIFICATIONS

Description	Units	50 HZ	
Manufacturer			
Type		Perkins-4016TAG2A	
Cylinder arrangement	Vee	Turbocharged, Air-to-Air Charge Cooling	
Displacement	Litres	16	
Bore and stroke	MM	61.12	
Compression ratio	Ratio	160 X 190	
Rated speed	RPM	13.6 : 1	
Altitude capability above MSL	Mtrs	1500	
Lube oil & filter change period	Hours	1500	
Minimum continuous load	%	500	
Piston speed	Mtrs/Sec	20	
Engine kW at rated RPM	kW (HP)	9.5	
Fuel stop power as per ISO-3046	kW (HP)	1766 kW (2368HP)	
Frequency regulation, steady state	%	1937 kW (2598 HP)	
BMEP	kPa	+/- 0.25	
Governor type	-	2310	
Governor class	-	Electronic, Isochronous (Droop adjustable to 4%)	
Engine overspeed shutdown	RPM	ISO 3046-4 Class A1	
Exhaust System			
Exhaust gas flow	m ³ /min	1800	
Exhaust gas temperature	Deg C	387	
Exhaust back pressure - Max	kPa	493	
Exhaust outlet size - Internal	mm	6.6	
Fuel System			
Type of Injection		Combined Unit Injectors	
Injection Pressure	Bar	1400	
Lift pump	Type	Gear Driven	
Lift pump delivery flow	LPH	1380	
Lift pump delivery pressure	kPa	300	
Maximum suction head at pump inlet	Mtrs	2.5	
Fuel filter filtration capacity	Microns	10	
Heat retained in engine return fuel to day tank	kW	8	
Lube Oil System			
Total System Capacity	Litres	237	
Lube oil pressure - at rated speed	kPa	400	
Nominal lube oil pressure - Minimum	kPa	340	
Lube oil flow rate	LPS	6.7	
Maximum oil temperature	Deg C	105	
Recommended oil grade		API-CH4	
Heat Balance @ 100% Load			
Energy to Exhaust	kW	1245	
Energy to Coolant and Oil	kW	660	
Energy to radiation	kW	130	
Energy to Charge air cooler	kW	560	
Overall Thermal efficiency (nett)	%	40	
Mechanical efficiency	%	92	
Combustion/Air Intake			
Combustion air flow	m ³ /min	137	
Boost pressure ratio		3.49	
Max air restriction with clean filter	kPa	2	
Max air restriction with dirty filter	kPa	4	
Air filter	Type	Dry paper element - 2 Nos.	
Coolant System			
Total system capacity	Litres	316	
Nominal pressure in jacket water	kPa	170	
Maximum top tank temperature	Deg C	98	
Thermostat operating temperature	Deg C	71 to 85	
Coolant flow	LPS	19.0	
Radiator Fan power	kW/m	64.0	
Radiator Fan air flow (With 15 mm of H2O restriction)	m ³ /min	2430	
Radiator ambient capability	Deg C	50	
Recommended coolant		Perkins extended life coolant	
Radiator pressure cap setting (Minimum)	kPa	70	
Engine Electrical System			
Type		24V negative earth	
Charging alternator volts / Current	VDC / Amps	28 / 40	
Starter power	kW	16.4	
Consumptions		Litres per Hour	
		SFC	Radiator
			HEC
Fuel consumption @ 100%	Gms/kWh / LPH	209	434
Fuel consumption @ 75%	Gms/kWh / LPH	203	320
Fuel consumption @ 50%	Gms/kWh / LPH	202	218
Lube oil consumption	Gms/kWh	0.52	
Specific gravity of fuel considered - 850 gms/Litre		Tolerance of +5% applicable for the above consumptions as per BS-5514/ISO-3046	

SGP-2050P / 2250S

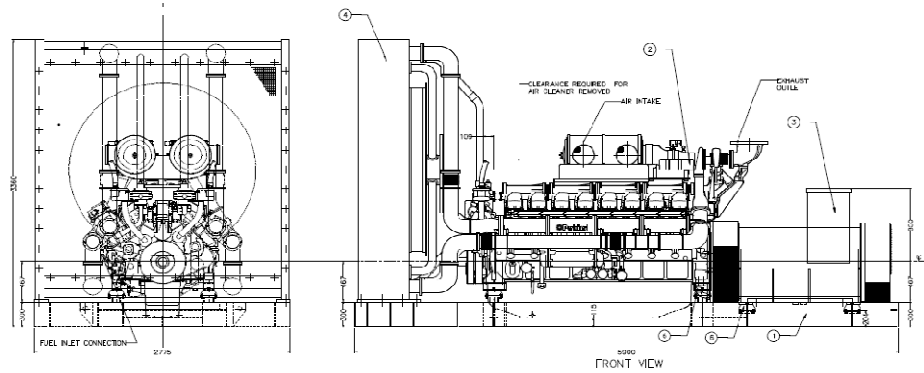
Genset Controllers

SGDS-C2		SGDS-C3	
SGDS-C1 : AMF Controller (Standard Supply)		SGDS-C2 Automatic Genset Controller (Optional).	
<p>Features: Auto Start /Stop. Local & Remote Start/Stop Genset Breaker and Mains Breaker Control. Easy accessible. Modbus for BMS connectivity.</p> <p style="text-align: center;">Display</p> <p>Engine Parameters. - RPM, Oil Pressure, Coolant Temperature, Hour Meter, Battery Volts, Battery Charging Voltage Running Status. Event Recording. Fault Code display.</p> <p>Electrical Parameters Voltage, Current, Hz, KW, KVA, Pf, kWh and KVAr. Breaker Status.</p> <p style="text-align: center;">Engine Protection</p> <p>High Water Temperature Low Lube oil Pressure Engine overspeed shutdown</p> <p style="text-align: center;">Electrical Protection</p> <p>kW Overload Unbalanced Load Under/Over Frequency Under/Over Voltage</p>		<p>Features: AMF & Synchronising Controller Synchronising up to 16 Genset each with individual controller Momentarily Mains paralleling Auto load sharing Load dependent start /stop Load limiting Device Need based Priority change over / power management (Programmable) Genset Breaker and Mains Breaker Controller Auto Start / Stop Local & Remote Start/Stop Modbus for BMS connectivity Engine ECU diagnostics via CAN interface</p> <p style="text-align: center;">Display</p> <p>Engine parameters RPM, Engine Oil Pressure, Coolant Temperature, Battery Volts, Hour Meter Battery Charging Volts, Fuel Level, No. of Start Attempts, Event Recording , Fault code display, Running status</p> <p>Electrical parameters Voltage, Current, Frequency, kVA Total, kW Total, PF, kWh, kVAr, Phase sequence, Synchroscope display, Bus Volts, Bus Frequency, Bus phase sequence Breaker status</p> <p style="text-align: center;">Protection</p> <p>Engine protection High Water Temperature, Low Lube oil Pressure, Engine Overspeed, Warning & Shutdown for High Battery voltage and current, Crank failure,</p> <p>Electrical protection Under voltage / over voltage (27/59) Under frequency/ over frequency (81) Reverse power (active and re-active) (32) Over Current (2 Level) (51) Loss of excitation (40) Negative Phase sequence Generator phase sequence Generator Earth fault Current unbalance (46) ROCOF/Vector shift Sync fail</p>	

SGP-2050P / 2250S

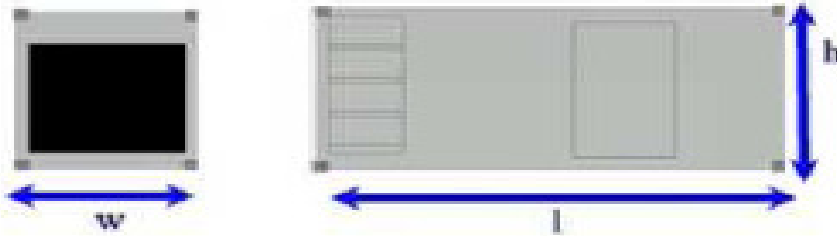
Sterling Standard Scope of Supply	OPTIONALS
Basic Engine Cylinder block Flywheel housing - SAE 00 High inertia flywheel - SAE J620 size 18 Oil pan Forged crankshaft Forged connecting rods Four-valve per cylinder, Individual cylinder head Aluminium Pistons Piston cooling via oil spray nozzle Dry exhaust manifolds Vibration damper Mounted air filter All necessary on-engine air, exhaust, coolant, fuel and oil pipework	Engine Jacket water heater - 110V/240V Lube oil heaters Dual electric starters Critical Silencers Additional Manuals
Starting System Electric starter Battery charging alternator, V-belt driven Battery, Battery stand & Leads Engine wiring harness and sensors	Control Panel Standard Breaker Panels Remote Annunciators AMF Panel Auto/Manual Synchronising Panel Auto Load Sharing/Load dependant Panel IP 54/55 Enclosure Isolator Panel Project Specific/Custom built Panels H T Panels for 1000 kVA & above ratings L T Distribution Boards PCC/MCC Panels PLC Panels
Fuel System Combined unit Injectors Heinzman Digital Governor and Pandaros actuator mounted on engine Governing to ISO 8528-5 class G3 with isochronous capability Replaceable fuel filter elements with primary filter and water separator Fuel Cooler	Alternator Space Heaters RTD/BTD with Scanners Oversized alternator IP 54/55 Enclosure HT Alternators - 1000 kVA & above PMG Differential CT mounted on alternator Different cooling options
Lube Oil System Lube oil circulation pump with safety valve Lube oil filter Lube oil cooler Oil filler neck and oil dipstick for measurement Open crankcase venting system	Others Accoustic enclosures - For 1010 kVA and above Additional Spare Parts Manuals Additional O&M Manuals Ni-cad Starting Batteries & Chargers Fuel level sensors
Combustion Air System Exhaust turbocharger Air-air-cooler - Inbuilt with radiator Exhaust flexible bellows - 2 nos. Exhaust Silencers - Residential Air filter with contamination indicator	Lube Oil Priming Pump - Electric/Manual Heavy Duty Air Cleaners Soot Arrestors Exhaust Scrubbers
Cooling System Gear driven coolant pump Belt driven fan Radiator with Fan, fan drive and fan guard	Containerized Gensets Duplex fuel filters Multi spring vibration Isolators DG Sets for special applications
Engine Mounting Front engine mounting bracket Resilient engine mounts (Rubber Elements) on engine free end and driving end Alternator mounts (Rubber Elements) (AVM between eng/alt and base frame)	Genset Controllers SGDS-C1 Controller - Digital display module SGDS-C3 Controller - Auto Sync Module SGDS-C4 Mains Controller - For Grid Paralleling PLC based load management system
Genset Management System - SGDS-C2 (Supplied as standard) Electronic controller for indicating genset parameters Emergency stop push button Genset monitoring and display of Engine-alternator operating parameters and alarms Genset protection against critical operating parameters - Automatic start sequence control - Acquisition and display of plant-related measuring data - Communication with an external system	
Generator 415 Volts, 50 HZ, 1500 RPM, 4 pole, Double Bearing, 3 phase connected with IP23 protection. Alternator conforms to IS-4722 or equivalent	
Paintwork Standard paintwork, single-coat, water-based	
Documentation Standarad Factory test report Engine alternator test certificate Warranty certificate Set of standard operating and maintenance documentation & Spare parts manual	

SGP-2050P / 2250S



WEIGHT		14000 KG.(APPROX.)
6	AVM	POLYBOND PGS
5	FUEL PRE FILTER	SEPAR
4	RADIATOR	PERKINS
3	ALTERNATOR	LSC 74L1
2	ENGINE	PERKINS 4018TAG2 (PART NO. 213393)
1	BASE FRAME	SGPL
PART NO	DESCRIPTION	MAKE/MODEL

Acoustic Enclosure		STD 40 Foot Container for Export	
Length	10000	Length	12192
Width	3500	Width	2438
Height	4100	Height	2591
Weight in Kgs (Wet)	17000(apprx.)	Weight in Kgs (Wet)	21000(apprx.)



Head Quarters Sterling & Wilson Powergen (P) Ltd., 8, Sundaram Estate Govandi Station Road Govandi East Mumbai - 400 088 Tel : 022 - 2552 6100 Fax : 022 - 2552 6200 Website: www.sterlinggenerators.com	Works Sterling Generators (P) Ltd., Survey No. 59, 343/1 Village kala, Kherdi, Khanvel Silvassa 396230 U.T. of Dadra & Nagar Haveli Tel : 0260 - 2677408 / 419 Fax : 0260 - 2677408 E-Mail : silvassa@sterlinggenerators.com
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Marketing & Support offices			
Zonal Office - South	Zonal Office - North	Zonal Office - East	Zonal Office - West
Sterling & Wilson Powergen (P) Ltd., Sterling Towers, No. 4A/14, 4th Main Road Chikka Adugodi New Layout Tavarekere Main Road, Bangalore - 560 029 Tel : 080 - 67178600 - 609 Fax : 080 - 67178675	Sterling & Wilson Powergen (P) Ltd., Sterling & Wilson House, C-56/38, Institutional Area, Sector 68, Noida - UP Tel : 0120 - 407 1000 Fax : 0120 - 407 1030	Sterling & Wilson Powergen (P) Ltd., BF - 164, Sector 1, Salt Lake City, Kolkata - 700 064 Tel : 033 - 2337 3933 Fax : 033 - 4005 5416	Sterling & Wilson Powergen (P) Ltd., 8, Sundaram Estate Govandi Station Road Govandi East Mumbai - 400 088 Tel : 022 - 2552 6100 Fax : 022 - 2552 6200

BRANCHES			
Hyderabad Chennai Coimbatore	Jaipur Chandigarh	Bhubaneshwar	Baroda Pune

Authorized Dealer

Technical specifications are subject to change from time to time due to Design improvements without notice

July 2009