Centro Servizi Energia
BELTRAME
sistemi e apparecchiature
per il controllo e la gestione dell'energia
regolatori di tensione per alternatori
regolatori di giri per turbine
costruzione, vendita e riparazione
gruppi elettrogeni

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Quality and innovation in the compact G.E. family from 6.0 KVA to 43.0 KVA

Main characteristics of gen. sets powered by Lister Petter

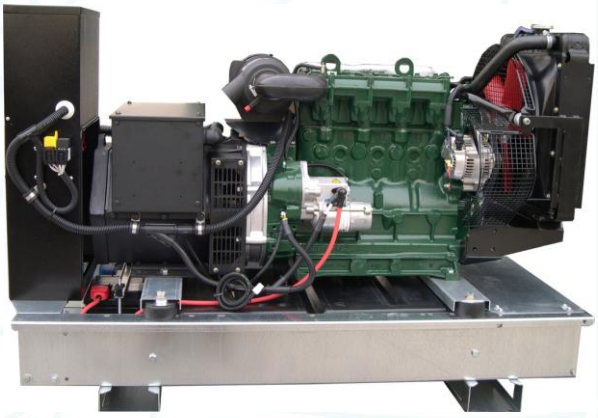
Water cooled three-phase or single phase 1500 or 3000 rpm. To run these generators less fuel is needed than running most of equivalent engines by competitors. Easy cold stared, the engine is able to manage loads quickly and sturdy. First rank alternators driven from Lister Petter engines generates power going from 7.7 KVA to 20 KVA.

Standard equipment for open gen. Set

Zink plated sheet base with crossbars, easy to move with the fork-lift on four sides; 66 liters polyethylene fuel tank fitted into the base; fuel lift pump, four vibration dampers, battery charge alternator, battery, starting engine 12 V; speed governor, residential silencer, lube oil first filling and cooling liquid first filling, manual control panel (see control panel instructions), control screen showing 15 parameters (see control panel instructions); safety devices: hot parts insulation, low oil pressure switch-off, engine high temperature switch-off, overload switch-off, short circuit switch -off .

Canopy

The canopy has an exceptional little dimension (only mm 1693x743x1143) with a lifting hook on the top for easy moving in narrow spaces. The sound is deadened so efficiently that the generator can be placed in a residential area, and the canopy is designed for long lasting protection from weather. The iron sheet is 3 mm thickness and the base is made of zinc plated sheet. The 3000 rpm version of the gen. set has a wider canopy.



For rental

These machines are very easy to run, equipped with a last generation and complete control system that also a non professional customer can use intuitively. They are fit for quick and agile rental to medium size power use. They can be lifted from four sides, and the hook on the top allows movement in narrow spaces. An outward socket board (optional) allows the customer to connect the load just inserting a plug.

Optional devices

Some optional are available on request: low fuel level alarm, fuel pre-filter, water pre-heating, self blocking-sockets board, automatic changeover control board, mains gen. set changeover-device in a separate metal box, power leakage stop switch, terminal box for connecting the loads, remote emergency push button, remote start by external signal.

Engine main feature

Two cylinders, three cylinders and four cylinders are available, and a turbo charger version of the four cylinder too. Fit for heavy duty work, these are all diesel engines, four stroke, water cooled, with counter-clockwise rotation (flywheel side). Mechanical speed governor class A1, dry air filter with changeable elements.

Engine standard equipment

Rim gear flywheel, flywheel housing SAE 5, suction and exhaust pipes, centrifugal oil separator filter, fuel agglomeration filter, air filter for prime usage, fuel lift pump, pre heater plug, engine oil low pressure protection switch, engine high temperature protection switch, starting engine, muffler with residential silencer.

Operational conditions

Generators can work no stop within 52 C° environment temperature, the fuel lift pump is auto-ventilated to prevent depression into the fuel tank; each cylinder has a fuel injection pump. Engine water cooling is equipped with a radiator and a blowing fan thoroughly protected against accidental contact. Lube oil pump is gear driven by engine itself to guarantee lubrication under any work condition. Maintenance is recommended after any 500 work hours.

Alternator's performance

Single bearing alternator, 4 poles, 12 re-connectable terminals, 50Hz with electronic voltage regulator. It can stand 10% overload for about 1 hour in 12 hours working time.

Control Panel

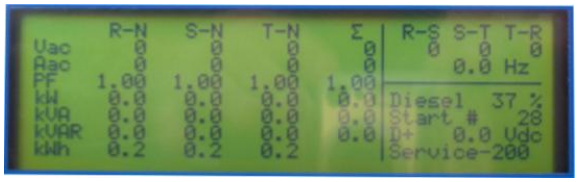
Manual or automatic versions are available. Transformation from manual to automatic is made just adding an electronic card kit to the manual control panel. This means that a customer who bought a manual generator can decide to have it fully automatic whenever he needs with very little changes, keeping the same software and the same cabling. This is a major advantage of these generators, reflecting on the running and maintenance expenses, and also on the generator's versatility under different use conditions.

Display of the control system

The control screen can show twelve functional parameters simultaneously, which helps to check the machine also in difficult situations. All alarms are shown on the screen while a sound warning is on. If necessary, an instruction is displayed about the most suitable operation to following the situation. Very useful are the battery low level alarm, the fuel low level alarm, the lube oil low level alarm, the engine high temperature alarm. Customer can select six different languages on the control screen.

Warranty

Warranty is two years from selling date, only for questions related to manufacturing problems, or materials defects. Warranty is not valid for improper use, for damages because of partial or forgotten maintenance and for running more than 12 work hours a day.



Main features on single bearing alternator

Insulation, winding and construction mechanic are the three key elements making a good alternator. In these alternators all wound components are impregnated with materials specifically designed for work in harsh environments, and resins are selected to provide the high build required for static winding and the high mechanical strength required for rotating components. Stators are wound to eliminate third grade harmonics on the waveform and other disturbances in parallel mode with the main. A fully connected damper winding reduces oscillation during parallel work. The rotor is dynamically balanced to better than BS6861. Using high quality AVR (and the absence of brush-gear) ensure low level of interference with radio transmission. Telephone interference (as defined by BS4999) is better that 2%, and is better that 50 (as defined by Nema MG1-32). Generator is three-phase, 12 ends reconnect able, with all electronic components placed into an easy access iron box.

Note:

All information explained in this folder can undergo changes and be updated by Beltrame C.S.E. without previous advice.

Prime and Standby power Ratings

	RPM/min		1500		1800		3000	
			Tree Phase	Single Phase	Tree Phase	Single Phase	Tree Phase	Single Phase
LPW2	Prime	kVA	7.7	5.9	9.2	7.1	13.7	10.2
		kW	6.2	5.9	7.4	7.1	11.0	10.2
	Standby	kVA	8.5	6.5	10.2	7.8	15.1	11.2
		kW	6.8	6.5	8.2	7.8	12.1	11.2
LPW3	Prime	kVA	11.9	9.1	14.3	10.9	20.3	15.4
		kW	9.5	9.1	11.4	10.9	16.3	15.4
	Standby	kVA	13.0	10.3	15.6	12.3	22.4	16.9
		kW	10.4	10.3	12.5	12.0	17.9	16.9
LPW4	Prime	kVA	16.0	12.0	19.2	14.4	28.1	20.9
		kW	12.8	12.0	15.3	14.4	22.5	20.9
	Standby	kVA	17.6	13.2	21.1	15.8	30.9	23.0
		kW	14.1	13.2	16.9	15.8	24.8	23.0
LPWT4	Prime	kVA	20.0	15.4	24.0	18.5	39.5	--
		kW	16.0	15.4	19.2	18.5	31.6	--
	Standby	kVA	22.0	17.0 f	26.4	20.4	43.5	--
		kW	17.6	17.0	21.1	20.4	34.8	--

Sound Pressare Levels
Directive 200/14/EC

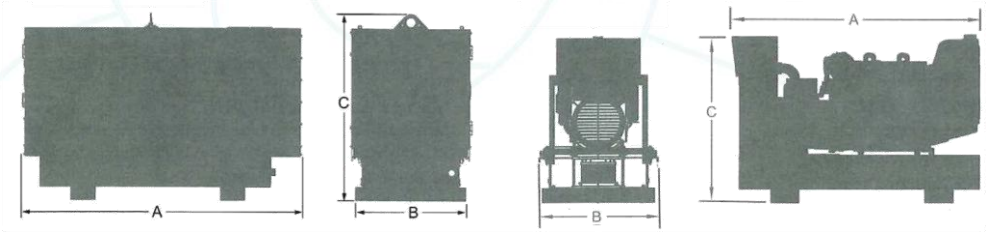
PW2	64 dB
LPW3	64 dB
LPW4	65 dB
LPWT4	62 dB

Approximate Weight

LPW2	Kg. 396
LPW2S	Kg. 520
LPW3	Kg. 417
LPW3S	Kg. 540
LPW4	Kg. 456
LPW4S	Kg. 580
LPWT4	Kg. 466
LPWT4S	Kg. 590

Approximate Dimensions

		Length (A)		Width (B)		Height (C)	
		Open Set	Acoustic Set	Open Set	Open Set	Acoustic Set	Open Set
LPW2 LPW3 LPW4 LPWT4	mm	1442	1693	715	743	984	1143
	Inc.	56.8	66.6	28.1	29.2	38.7	45.0



Approximate Fuel Consumption

	LPW2			LPW3			LPW4			LPWT4		
R/min	1500	1800	3000	1500	1800	3000	1500	1800	3000	1500	1800	3000
100%	1.9	2.3	3.9	2.8	3.4	5.9	3.8	4.6	7.8	4.9	6.0	10.6
75%	1.5	1.8	3.1	2.2	2.7	4.6	2.9	3.6	6.1	3.7	4.6	8.3

CONTROL BOARD

The control board in stainless steel has an upper box and a lower box. In the upper box there are the control panel, the display of the control system, the key, the emergency stop button; overall protection class IP44. In the lower box there are the Amp. transformers, the earth leakage-switch off , the clamps to connect the power cables, the clamps for ground connecting, the clamps for auxiliary connections; overall protection class IP20.

SOFTWARE MAIN FEATURES.

Microprocessor technology gives: parameters, alarms and stops automatic diagnostic; easy to read display on the control screen; thoroughness in electrical figures and measures; possibility to add other functions; manual running or automatic running; automatic running under mains failure; from remote input, fuel automatic filling; special applications. All information are displayed on the control screen about electrical parameters, engine parameters, about start/stop, work steps, with written message and sound warnings. It's also possible to analyze and compare all data and also to connect the control board to a P.C. through a SR485 door for remote checking and using of the generator.

FITTINGS OF THE MANUAL VERSION

TECHNICAL CARACTERISTICS

Microprocessor: microchip 16 MHz
Working temperature: -20 + 70 C°
Display: Liquid crystals 240x64 pixel 320 types
Stand by consumption: 70 mA medium

PARAMETERS AVAILABLE

Generator tension on the three phases (phase-phase, phase-neutral)
Generator current on the three phases
Speed counter
Generator frequency
Work hour count
Count down for maintenance service (selection)
Active power (KW) on each phase, and ∑
Engine temperature
Apparent power (KVA) on each phase, and ∑
Engine lubricant oil pressure
Reactive power (KVA) on each phase, and ∑
Energy production (KWh) on each phase, and ∑
Lubricant oil temperature *
Battery tension
Power factor on each phase , and medium
Alternator's excitation tension c.b.
Starting counter
Date and hour *
Automatic fuel refilling *
Fuel level in %
Records box (last 400 events memory)

PROTECTIONS AND ALARMS

In case of malfunctioning or breakdown the generator stops and all parameters necessary for problem solving are shown on the display:

Fuel low level *
Starting failure
Engine stop failure
Mechanic stop / engine breakdown
Engine over-speed / over-tension
Engine lower speed / lower-tension
Engine coolant low level
Engine high temperature
Lubricant oil low level *
Lubricant oil low pressure
Lubricant oil high temperature
Breakdown of Lubricant oil sensor
Average of D+ cable
Generator over-voltage
Generator low voltage
Asymmetry of generator voltage
Generator exceeding load *
Alternator not excited
Alternator high temperature
Microprocessor memory damaged
Battery low tension
Battery high tension
System block-down, engine stop
System overall failure
Emergency stop
Maintenance required

*These functions need special sensors or software implementation available as optional. Other data can be shown, as for example the exhaust gas temperature, lubricant oil temperature, fuel level.

OTHER STANDARD FUNCTIONS OF THE CONTROL SYSTEM

Language selection, active feeding when engine stops, password selection to enter the user's menu, maintenance time countdown, alarm lights selections, display of mode in use, acoustic alarm, remote cumulative alarm, P.C. connection, storage of last 16 alarms.

AUTOMATIC VERSION

Besides all the functions of the manual control panel, the automatic one also allows to connect the generators with the mains. In this case it's possible to select time and thresholds about line parameters and related functions among which the most commonly used are:

Time of absence or presence of tension on the mains
Tension threshold for the automatic start
Time intervals for automatic tests
Duration of automatic tests
Test mode selection: idle or under load
Engine cooling down time
Maintenance intervals
LCD display contrast regulation

Moreover, it's possible to select the modes of generator functioning : Blocked, Manual, Automatic, Test.
For details and further explanations see instruction of control board user's manual attached to the generator's hadbook

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