



Enriching Lives

Kirloskar Green Gensets

DV Series

Liquid Cooled Silent Gensets



320 to 625 kVA



Salient Features of Genset

■ Customized product range:

- Gensets powered by DV series liquid cooled engines.
- Available in wide range from 320 to 625 kVA.
- Gensets available in multiple configurations in synchronization for parallel operations.
- Remote Monitoring and BMS options.

■ Smart Aesthetics

- State - of - the - art design.
- Compact in size, smaller footprint hence more saving on space.
- Aesthetically superior and fully integrated weather proof acoustic enclosure.

■ Highest Reliability

- Utmost reliability ensuring continuous power for smooth operation.
- Electronic governor with Isochronous and synchronous governing for reliable, stable and paralleling operations.
- Extremely rugged and durable design.
- Safety against all the critical engine and genset parameters.

■ Unmatched Performance

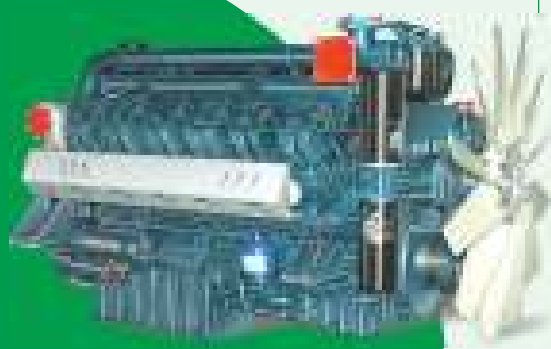
- Gensets powered by DV series engines having 4 valve HPCI technology that makes DV series gensets most fuel efficient in its class.
- DV series engines are with Centrifuge filter for extended oil change intervals and low operating cost.
- K-cool super plus coolant and K-oil super for best performance and longer engine life.
- Lower lifecycle cost.

■ Environment Friendly

- The power to preserve, save environment and the earth – Kirloskar Green Power Ideas.
- Gensets conforms to lowest noise pollution norms as laid down by MOEF / CPCB.
- Genset engine conforms with the latest stringent MOEF exhaust emission norms and International emission standards.
- 100% Bio-diesel compatibility.

■ Maintenance friendly design and Ease of Operation

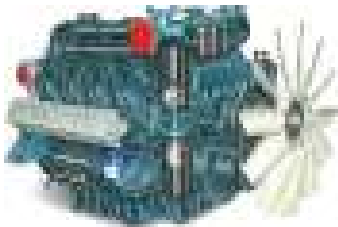
- Smart genset controller for close monitoring of engine and genset parameters for preventive maintenance and safety of genset.
- Remote monitoring system as a standard scope for real time monitoring of critical engine and genset parameters giving following benefits:
 - Prevent unscheduled breakdowns and downtime.
 - Improved response time.
 - Preventive maintenance.
- Ease in serviceability for routine maintenance and overhauls.
- Readily available spare parts across Nationwide network of authorized service outlets.
- Customized Annual Maintenance Contract (AMC) for specific customer service needs.
- Single window service.



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POWER IDEAS

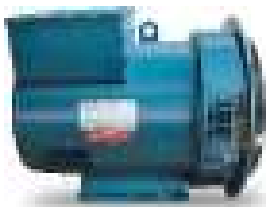
Standard Features

■ Engine



- Efficient liquid cooled technology
- Offering a wide comprehensive range with power output covering from 320 to 625 kVA
- Available in 6,8,10 and 12 cylinder compact configurations
- Most compact, extremely robust and rugged design
- 500 Hrs. of Longer lub-oil change period
- Lowest fuel consumption in it's class
- Compliance with latest Emission norms of MOEF
- Four valve technology with central Injection system
- 100% Bio-Diesel compatibility with 100% power for lower emissions

■ Alternator



- Kirloskar Green Alternator
- Compact design with sealed bearings for longer life and lesser maintenance
- Best in class efficiency
- Positive voltage built-up
- Special windings to reduce harmonics
- Electronic AVR
- High short circuit current capacity upto 300% ensuring controlled regulation even at variable loads
- Epoxy gel coating to suit various environment conditions

■ KG 545 Genset Controller



- State - of - the - art compact Micro-processor based fully configurable genset operating, monitoring, metering and protection control system with LCD display
- Complete safety for genset on operating faults
- Real time and 100 event logging facilities for performance monitoring
- AMF option in the controller as standard scope with control for mains and DG set circuit breakers
- User friendly operating systems on manual, auto and test modes with touch buttons
- Provision for additional 3 digital inputs and 2 digital outputs
- Compatibility for remote monitoring and remote start – stop options

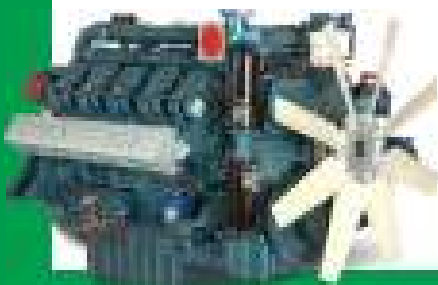
■ Acoustic Enclosure



- Smart, standardized and dynamic Kirloskar Green Power Ideas modular design for ease of serviceability
- Aesthetically designed weather proof, sound proof acoustic enclosure meeting stringent and latest MOEF noise pollution norms
- PU Based powder-coated enclosure, manufactured on high-tech special purpose CNC machines to ensure highest quality on fit, form, finish, function and durability
- Specially designed with adequate air flow to operate at full load, even at 50 deg. C air inlet temperature
- Noise and thermal insulation material conforms to UL94 - HF1 class for flammability
- Green passivated / black ionized hardware for manufacturing to withstand salt spray and corrosion test as per ASTM B-117
- Designed for low noise, high reliability, lowest vibrations and user-friendly installations

■ Optionals

- Remote monitoring and BMS
- Auto mains failure panel
- Cold starting aid
- Parallel operations and synchronization of multiple genset.
- Special air filtration system for dusty atmosphere
- Facility for external agency inspection as per custom and IS standards
- PMG for non-linear loads
- Power house design support for varying load patterns



Technical Data Sheet

Overall Specifications of DV Series Gensets

320 to 625 kVA

DG Set Specifications

Parameters	Unit	Genset Model					
		KG320 WS4	KG380 WS	KG400 WS2	KG500 WS3	KG600 WS3	KG625 WS3
Prime Rating at 0.8 pf	kVA(kW)	320 (256)	380 (304)	400 (320)	500 (400)	600 (480)	625 (500)
Voltage	V	415	415	415	415	415	415
Frequency	Hz	50	50	50	50	50	50
Overall Dimensions with canopy (L×W×H)	mm	5700×2000×2555	5700×2000×2555	5700×2000×2555	6200×2000×2555	6660×2000×2705	6660×2000×2705
Dry Weight of genset with canopy (Aprox)	kg	5200	6000	6000	6655	7500	7500
Electrical starting system	Volt-DC	24 (2 x 12 V)	24 (2 x 12 V)	24 (2 x 12 V)	24 (2 x 12 V)	24 (2 x 12 V)	24 (2 x 12 V)
Battery Capacity	Ah	180	180	180	180	180	180
DG set Noise level asper CPCB Norms	dBA	< 75	< 75	< 75	< 75	< 75	< 75

Engine Specifications

Parameters	Unit	Engine Model					
		DV6I TA SR1	DV8 SR2	DV8	DV10	DV12	DV12 SR1
Rated output (Prime rating as per ISO 3046)	kW(hp)	284 (386)	346 (470)	360 (490)	448(608)	532 (723)	552 (750)
No. of cylinder	Nos	6	8	8	10	12	12
Bore × Stroke	mm	123 × 155	130 × 150	130 × 150	130 × 150	130 × 150	130 × 150
Aspiration		TA	TA	TA	TA	TA	TA
Governer / Class		Electronic A0	Electronic A0	Electronic A0	Electronic A0	Electronic A0	Electronic A0
SFC at 75% load*	(g/Hp-hr)	147	145	144	146	144	144
SFC at 100% load*	(g/Hp-hr)	147	143	143	143	143	143
Lub oil Consumption*	LPH	0.11	0.10	0.10	0.13	0.16	0.16
Lub oil change period**	hrs	250	500	500	500	500	500
Lub oil Sump capacity	Ltrs	23	41	41	45	50	50

Alternator Specifications

Parameters	Unit	Alternator Model					
		KG 284 C	KG 354 S1	KG 354 S2	KG 354 MI	354 L1	354 L2
Rating	kVA	320	380	400	500	600	625
Insulation Class		H	H	H	H	H	H
Protection	IP	IP23	IP23	IP23	IP23	IP23	Ip23
Time to built up rated voltage at rated RPM	sec	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Alternator Efficiency at 100% load	%	93.8	94.1	94.1	94.8	95.5	95.5
Voltage regulation	%	± 1	± 1	± 1	± 1	± 1	± 1
Wave form Distortion at No load and at Non-distorting balance linerar Load	%	< 1.8 & < 4	< 1.8 & < 4	< 1.8 & < 4	< 1.8 & < 4	< 1.8 & < 4	< 1.8 & < 4
Permissible transient voltage dip at full load 0.8 pf lag***	%	< 18	< 18	< 18	< 18	< 18	< 18

In view of continuous product updation and design changes, all above specifications and dimensions are subject to change without prior notice.

Notes :

- Genset ratings as per ISO 8528 performance class is G3.
- Prime Power Rating is the maximum power available continuously for a variable electrical load for unlimited number of hours per year under standard operating conditions.
- For the site conditions other than standard operating conditions, consult KOEL for available prime power.
- *+5 % tolerance as per ISO 3046. For LPH calculation specific gravity of diesel is considered as 0.845.
- All canopy dimensions have tolerance of ± 50 mm.
- **First oil change at 50 hours.
- ***Permissible transient % voltage dip at full load 0.8 pf lag (alternator tested alone) as per IS 4722.



SCOPE OF SUPPLY:

Factory assembled Unpacked "KOEL GREEN SILENT DG SET" comprising of Kirloskar Make above model Diesel Engine directly coupled To "KIRLOSKAR GREEN" make Alternator mounted on Common Base Frame fitted with AVM Pads complete with Fuel Tank, Standard Control Panel, Battery with leads and Acoustic Enclosure (C A N O P Y) as per CPCB Norms along with K-Oil & K-Cool (Coolant).

Note: These prices are governed by Commercial Terms & Conditions given in Annexure-"II".

- After First Oil Change Next LUB Oil Change Period is 500 hrs/3 Months whichever is earlier
- Free 1+3 Service Check (CSP Check) as per KOEL Policy

COMMERCIAL TERMS & CONDITIONS

<u>WARRANTEE</u>	The Warranty of the offered DG Set is applicable as per KOEL Policy. However The DG Set comprising of Engine & Alternator carries a warranty against defective material Manufacturing defects for a period of 24 months from the date of supply or 5000Hrs whichever occurs earlier. The terms of KOEL warranty policy will have precedence under all circumstances & the Warrantee Will Be applicable if customer sources K-Oil Super, Cool Super and avail the services from authorized service dealers.
<u>INSTALLATION</u>	Unloading of "D G" and installation work like Exhaust Piping, Earthing, Cabling, Change Over Switch initial Battery Charging, Diesel Oil has to be arranged by Customer.
<u>INSURANCE</u>	Extra at cost, if required.
Note	If the order is cancelled after one month, for whatever reason may be the advance amount will not be refunded

COMMISSIONING

Commissioning of DG Set shall be done by our service engineer (will visit once for commissioning)
Extra visit will be on chargeable basis.

TECHNICAL SPECIFICATION OF KOEL GREEN WATER COOLED DG SETS

DIESEL ENGINE:

"KOEL GREEN" make diesel engine rated at 1500 rpm, Water Cooled, Four Stroke Electric Start Six Cylinders Diesel Engine conforming to BS 5514 with capacity Of 10% over loading for one hour in twelve hours duration having following accessories As scope of supply:

AIR INTAKE SYSTEM

- *Air intake manifold
- *Dry type air cleaner.
- *Vacuum indicator.

EXHAUST SYSTEM

- *Turbo-charged After cooled
- *Expansion bellow.
- *Exhaust manifold
- *Exhaust silencer.

COOLING SYSTEM

- *Engine water pump.
- *Radiator with pusher type fan and mounting.
- *Coolant.

LUBRICATING SYSTEM

- *Lube oil cooler
- *Lube oil filter "Spin-on" type as well as bypass type
- * Centrifuge filter

FUEL SYSTEM

- *Fuel Filter
- *Replaceable fuel filter
- *Inline mono-block fuel injection pump. And Fuel Feed Pump.
- *Governor – Electronic / Mechanical
- *24 DC solenoid coil.

STARTING SYSTEM

- * 160 KVA 12 Volt Starter
- *12 Volt DC solenoid coil & 12 Volt DC Battery charging Alternator
- * 180 KVA & Above 24-Volt Starter
- *24 Volt DC solenoid coil & 24 Volt DC Battery charging Alternator

ELECTRIC INSTRUMENT PANEL

- *Start / stop key switch.
- *Lube oil pressure indication.
- *Water temperature indication.
- *RPM indication.
- *Engine hour indication.
- *Low lube oil trip indication.
- *High water temperature trip indication.
- *Battery charging indication.

SAFTY CONTROLS

- *Low lube oil pressure trip.
- *High water temp.

OTHERS

- AVM pad.
- Engine suitable for closed couple alternator
- Front and rear engine-mounting supports.

ALTERNATOR:

Synchronous alternator of "KIRLOSKAR GREEN" make suitable for Continuous operation at 1500 PM generating 415 volts at 0.8 p. f (lag) suitable for 50 Hz, three phase, 4 wire system. The alternator shall be brushless, self excited & self regulated with an AVR .The alternator will be suitable for tropical climate and shall generally confirm to IS: 4722. The silent feature of the alternator are:

- +-1% voltage regulation (max) in static conditions.
- IP: 23 protections with class 'H' insulation.
- Permanent lubricating bearing.
- Permissible overload of 10% for one hour in 12 hours of operation.

CONTROL PANEL:**SPECIFICATION FOR STANDARD MANUAL CONTROL PANEL****SCOPE OF SUPPLY:**

The standard control panel is fabricated from 16 SWG sheet and powder coated after seven tank treatment process. The panel is equipped with:

- (A) Digital Genset Control Unit ,
Digital Control Unit is Special Deigned to Standardize most of control Panels components in Single Unit.

Salient Features of Controller

Gen –set Display Parameters	Engine Display parameters	Electrical safeties (along with display)	Mechanical safeties (along with Display)
1) Phase Voltage	1) Oil Pressure	1) Genset Under / Over voltage	1) Under/Over speed
2) Line current	2) Engine coolant Temperature	2) Battery Under/Over voltage	2) Low Lube oil pressure
3) Frequency	3) Fuel Status	3) Under/Over frequency	3) High Lube oil Temperature (optional)
4) Average Voltage	4) Engine Speed	4) Phase Failure	4) High engine coolant temperature
5) Average Current	5) Oil Temperature (optional)	5) Phase sequence reverse	5) Charging Alternator fail
6) Phase kW & Total kW	6) Canopy Temperature	6) Over Current	6) Low coolant level
7) Kwh & PF	7) Engine run Hours	7) Over kW	7) Low fuel level
8) KVA / KVA r	8) Total starts	8) High Earth Current	8)High canopy temperature
9) Earth Leakage Current	9) Battery Voltage Minimum Battery Voltage required	9) short circuit	9) Start / Stop fail

(B) The Control Panel is equipped with MCB/MCCB of Suitable rating

(C) The Control Panel consists with CT, PT along with Aluminum bus bars & wires.

D). Set of Push Buttons

- (a) Engine start/stop,
- (b) Emergency Stop

BASE FRAME:

Engine and alternator are mounted coupled and aligned on a common channel Iron fabricated base frame with pre-drilled holes.

FUEL TANK:

Daily service fuel tank of 8 hours of continuous operation, fabricated form 14 SWG sheet metal complete with drain valve, inlet and outlet connection.

BATTERIES:

1 No in case of 160 KVA -2 Nos in case of 180 KVA & above Exide / Tata make batteries of 12 V 180 AH capacities in charged condition with its leads.

DOCUMENTATION:

One set of following documents shall be provided with each set.

- O & M Manual of Diesel Engine.
- Packing list of D. G. Set.
- Test certificate of diesel engine.
- Test certificate of alternator.
- Test certificate of D. G set.
- Test certificate of CPCB.

SALIENT FEATURES OF KOEL GREEN DG SETS

- Low ownership costs due to competitive upfront investment, optimal fuel, and Lube Oil & parts consumption.
- The best Lube oil Change interval in its class
- Diesel Engines meeting the CPCB norms for emission.
- Branded Sound-Proof Enclosures with standard warranty & serviced by company service dealer.
- The only DG set brand to offer consistent deliverables (all DG plants & most Service Dealers are ISO 9001 certified)
- The most extensive After Sales Service Network rated the best in the industry (according to a survey* conducted by AC Nielsen) with:
 - 65 Service Dealers & 195 locations. (41- cities 24*7 service)
 - Complement of trained engineers.
 - Easy parts availability with first pick at above 95 % level
 - Specially formulated Lube, the K-Oil for longer Change intervals.
 - Single Window Support for providing support Engine, Alternator and acoustic enclosure, another unique KGPI advantage.
 - Value added Services like Annual Maintenance Contracts, Stand-by DG sets, Customer training programme – to name a few

Industry best Warranty.

* The Customer Satisfaction Survey conducted by AC Nielsen, an independent market research firm of international repute has placed KOEL at the top of the charts consecutively for 2 years in a row. Our Customer Satisfaction Index (CSI) is one of the best in the world in manufacturing sector.

Specifications of KOEL GREEN Canopy Construction

ACOUSTIC ENCLOSURE:

KOEL GREEN Acoustic enclosure shall be powder coated and fabricated out of 16 SWG CRCA MS sheet. The silent canopy shall be of nut bolt type construction. Critical processes of punching is done on CNC machines to maintain dimensional accuracy of holes within 0.1 mm. Powder coating is done after seven-tank surface preparation process of sheet metal. Canopy panel and doors shall have inside lining of FIRE-RETARDANT foam as acoustic material up to 200 KVA & Rock wool for high ratings four hinged doors shall be provided to canopy, one door shall have glass window for control panel.

BASE FRAME:

Base frame is fabricated either in ISMC channel or in sheet metal. The base frame will be primer coated and painted. The base frame is rugged in construction and designed for mounting KOEL engine and KG alternator close coupled, with cross members mounted on AVM. The base frame shall have provision for mounting of acoustic enclosure & control panel on it. The base frame is having provision of lifting hook for convenient lifting of complete set, i.e. along with canopy, engine and alternator.

Color scheme

The base plate and top is painted with OXFORD BLUE/PEPSI BLUE, the canopy is powder coated with IVORY color.

Performance Parameters

- The average sound level, when measured in green field condition (ISO 3744 OR 8528 PT 10) at 1-meter distance from all four sides shall be less than 75-dBA averages or as per CPCB norms.
- The average stabilized hot air temperature rise with in the canopy is maintained with in 10° C over and above ambient temperature.

KOEL GREEN SILENT CANOPY FEATURES

- RTU canopy kits, which can be assembled on site within a time period of 90 minutes.
- Canopy fabricated on machines with dimensional accuracy of 0.1mm.
- Canopy is powder coated after passing through seven tank processes.
- Canopy is lined with acoustic foam, which is non-igniting /Fire Retardant (confirming to BS 4735/BIS 7888).
- No grouting required on the ground, only a level surfaces capable of withstanding the DG weight.
- Designed for installation in open-air conditions.
- Lockable doors provided.
- Lockable fuel filling arrangement provided external to the canopy.
- Residential Silencer is housed in the canopy.
- Externally accessible emergency stops button.
- The exhaust gases shall be taken out through a suitable flexible pipe to prevent any back pressure on the engine.