



Global Solution Provider



IOT enabled Genset

The Complete Power Back-up Solution

EFFICIENCY HAS A NEW NAME

k*roskar
GREEN

Kirloskar Green Power Back-Up Solution

Kirloskar Green is pioneer in digital power back-up solution, designed for the users of tomorrow. Kirloskar Green promises world class performance with world class features such as robust design, digital connectivity, ultimate convenience of use, smart user interface, superior looks and one-stop solution for its esteemed customers.

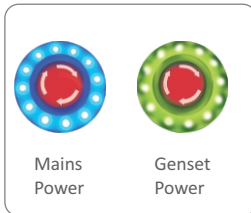
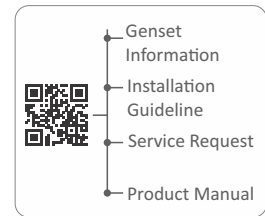
Ultimate Convenience with AMF

Kirloskar Green gensets comes with an Auto Main Failure panel which are specifically designed to deliver ultimate convenience to user. With mains power failure, this panel automatically starts the genset and once the mains power is restored this panel switch off the genset, providing hassle free experience with running cost optimization. This ensures uninterrupted power supply all the time.



QR Code Enabled Genset

Kirloskar Green gensets are first in the industry to introduce QR code enabled Genset. It provides genset relevant information to user on a single scan. This QR code can also be used for accessing product catalogue or raising product service requests. So now all the information of your genset is a scan away.



Status Indicator

Kirloskar Green gensets comes with a genset indicator which will help user understand the genset running status from a distance with just a glance. The genset status indicator is multicolour with each colour indicating a separate status of your genset. Green light indicates load is on Genset and blue light indicates that load is on mains power.

Aesthetically Enhanced Genset

Kirloskar Green Gensets are aesthetically enhanced range of gensets with improved product life. It comes with a bolt-less designed canopy which along with seamless appearance minimises the canopy deterioration. The new attractive colour scheme makes Kirloskar Green gensets more vibrant and green decals reminds of Kirloskar commitment to efficiency in conservation & going green in everything we do.



Single Point Of Ownership

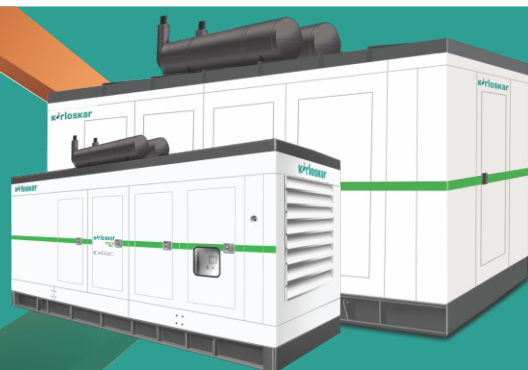
Kirloskar Green provides a single point ownership of your complete power back-up ecosystem. These systems are designed to work in coherence with each other and hence are capable of providing a seamless experience to customers. With wide network coverage Kirloskar Green provides a comprehensive warranty for all components of your power back-up ecosystem.



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WIDEST RANGE OF GENSET

200 - 250 kVA

| PARAMETERS | | UNIT | 200 to 250 kVA | |
|---|------------------|---------|----------------|-----------|
| Prime Rating at 0.8 pf | | kVA | 200 | 250 |
| | | kW | 160 | 200 |
| Voltage | | V | 415 | 415 |
| Frequency | | Hz | 50 | 50 |
| Overall Dimensions with canopy^ | Length | mm | 4340 | 4340 |
| | Width | mm | 1740 | 1740 |
| | Hight | mm | 1970 | 1975 |
| Dry Weight of genset with canopy^ | | kg. | 3900 | 4010 |
| Electrical starting system | | Volt-DC | 24V | 24V |
| Battery Capacity | | Ah | 2x150 | 2x150 |
| DG set Noise level as per CPCB Norms | | dBA | <75 | <75 |
| ENGINE SPECIFICATIONS | | | | |
| Parameters | Engine Model | | 6SL1500TASR2 | 6SL8800TA |
| | Unit | | | |
| Rated output (prime rating as per ISO 3046) | kW | | 184 | 228 |
| | HP | | 250 | 310 |
| No. of cylinder | Nos. | | 6 | 6 |
| Bore x Stroke | mm | | 118x135 | 118x135 |
| Aspiration | | | TA | TA |
| Governing Class | | | G2 | G2 |
| Fuel Consumption at 100% load* | ltr/hr | | 42.3 | 55.12 |
| Fuel Consumption at 75% load* | ltr/hr | | 31.94 | 42.22 |
| Lub oil Sump capacity | Ltrs | | 27 | 27 |
| Engine coolant capacity | Ltrs | | 13 | 13 |
| ALTERNATOR SPECIFICATIONS | | | | |
| Parameters | Alternator Model | | KG38 1S4A | KG38 M4A |
| | Unit | | | |
| Rating | kVA | | 200 | 250 |
| Insulation Class | | | H | H |
| Ingress Protection | | | IP23 | IP23 |
| Time to built up rated voltage at rated RPM | sec | | <5 | <5 |
| Alternator Efficiency at 100% load | % | | 93.5 | 93.6 |
| Alternator Efficiency at 75% load | % | | 93.9 | 93.9 |
| Voltage regulation | % | | ±1 | ±1 |
| Permissible transient voltage dip at full load 0.8 pf lag | % | | <20 | <20 |



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WIDEST RANGE OF GENSET

Thoughtful Design. Unmatched Features. Immense Benefits.

Kirloskar generating sets have been designed giving highest consideration to end users, offering unmatched features and immense benefits to them. From easy installation and increased reliability to faster service, lower maintenance costs and increased uptimes. Kirloskar generating sets offer distinct advantages which set new standards in engineering.

That's Kirloskar Generating Sets for You!



Unmatched Features



Extended service intervals



Easy installation



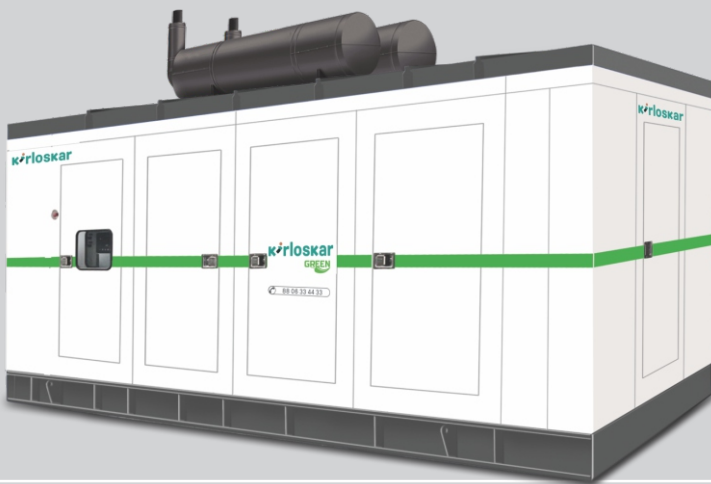
Low fuel consumption



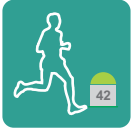
Low maintenance cost



IOT enabled genset



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WIDEST RANGE OF GENSET



Prime rating and Stand-by rating¹

'Prime power' is designed for Unlimited hours, as compared to 'Emergency stand-by power' designed for 200 hours in a year. Prime rated Gensets also permit 10% temporary overloading. Users need to carefully select the Genset rating to meet their requirement. Kirloskar offers Prime power as a standard offer. Contact Kirloskar for stand-by ratings.



Best-in-class Fuel Efficiency

Kirloskar Green Gensets offer a unique combination of latest CPCB norm compliance and enhanced fuel efficiency. Across the range, Kirloskar Green Gensets offer substantial savings in fuel cost.

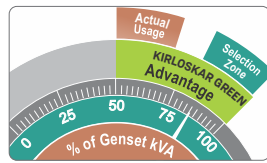
02E Series (Optimal Operating Efficiency):

Genset ratings are selected based on the present load and future expansion. Fuel efficiency of most Gensets is optimized at the full rating of the Genset.

In practice, Gensets rarely get loaded to full capacity. Power demand variations across day & night, weekdays & weekends, summer & winter lead to an average 50-70% loading on the Gensets.

Considering this practical situation, Kirloskar has extended fuel efficiency optimization from 100%, right up to 50% of rated load.

Combination of best-in-class efficiency & 02E provides a double advantage.



Engine capacity does matter²

Engine capacity (cc) plays a vital role in Genset performance. Higher engine capacity leads to a robust and stable Genset performance.

Higher engine capacity also enables the Genset to respond quickly & positively to sudden load additions.



State of the art Genset Controller

Kirloskar Green Genset put the command in your hands. Micro-processor based Genset controllers display a host of genset parameters and put all controls at your fingertips.

Monitoring Features: Phase Voltage, Phase Current, kVA, kW, kWh, kVAR, Power Factor, Lube Oil Pressure, Engine Temp, RPM, Run Hours, Battery condition etc.

Diagnostic Features: Battery Charging failure, Over speed and Under speed, Over Current, Over voltage and Under Voltage, Over kilo Watt, Phase Seq., Phase missing, Earth Fault Trip.

Low lube oil Pressure, High Engine Temperature, Low and High battery voltage, Low Fuel Level, Over Crank protection, Genset Test Facility, Mains Frequency.

Optional Features: Modbus Communication, Synchronization, canopy Temperature



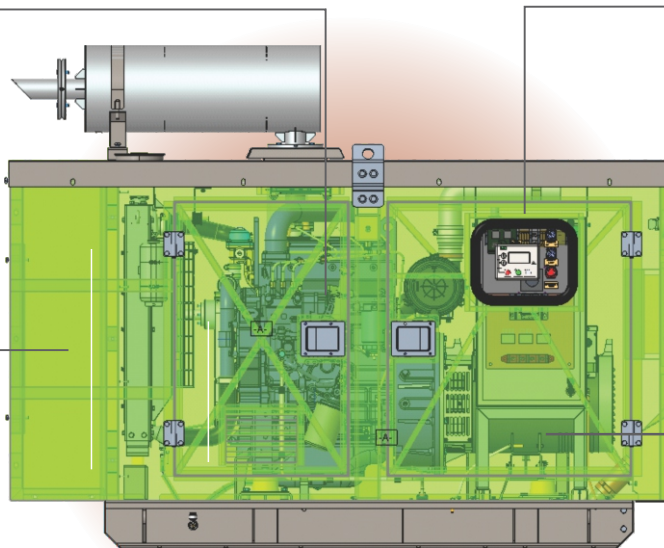
Genset Controller

Engine

- Industries most reliable engines, proven over decades
- Low emission, high efficiency engines
- Compact, robust and rugged design
- 500 hours lube-oil change period

Canopy

- Aesthetically designed bolt-less canopy for enhanced product life
- Weather and sound resistant enclosure
- Ease of access and serviceability
- Insulation conforms to UL94-HF1 class for flammability



Controller

- Microprocessor based with graphical LCD display
- Best in class monitoring and diagnostic capability
- Communication configuration enabled

Alternator

- Best in class efficiency
- Minimum harmonics interference
- Vacuum pressure impregnation
- Epoxy gel coating on the winding

Kirloskar Green Generating Set Specifications

Control System Features and Safeties

| Controller Module | DSE4522 A2 | DSE7320MKII |
|-----------------------------------|--------------|----------------|
| kVA | 15 - 160 kVA | 200 - 1010 kVA |
| On display screen | | |
| Generating set Volts, Amps, Hz | ✓ | ✓ |
| Generating set kW, kVA, kVAR | ✓ | ✓ |
| Generating set per phase PF | ✓ | ✓ |
| Generating set kWhr meter | ✓ | ✓ |
| Earth current (A) | No | ✓ |
| Grid (Mains) Voltage (L-L) | ✓ | ✓ |
| Battery Voltage (V) | ✓ | ✓ |
| Engine start attempts | No | ✓ |
| Engine Temperature (°C) | ✓ | ✓ |
| Engine speed (RPM) | ✓ | ✓ |
| Engine Run Hours (Hours & Min.) | ✓ | ✓ |
| Lube oil Pressure (kPa, PSI, bar) | ✓ | ✓ |
| Diesel fuel level (%) | ✓ | ✓ |
| Communication ports | | |
| RS485 | No | ✓ |
| RS232 | No | ✓ |

✓ - Available No – Not available ---- - Not applicable WR –Warning SD- Shutdown Ind – Indication DI – Digital Input

| Controller Module | DSE4522 A2 | | | | DSE7320MKII | | | |
|-----------------------------|------------|------|------|------|-------------|------|------|------|
| | WR | SD | Ind | DI | WR | SD | Ind | DI |
| Protections | | | | | | | | |
| Low oil pressure | No | ✓ | ✓ | ---- | ✓ | ✓ | ✓ | ---- |
| High coolant temperature | ✓ | ✓ | ✓ | ---- | ✓ | ✓ | ✓ | ---- |
| Low fuel level | ✓ | ✓ | ✓ | ---- | ✓ | No | ✓ | ---- |
| Low coolant level | No | ✓ | ✓ | ---- | No | ✓ | ✓ | ---- |
| Under / over speed | ✓ | ✓ | ✓ | ---- | ✓ | ✓ | ✓ | ---- |
| Low / high battery voltage | ✓ | No | ✓ | ---- | ✓ | No | ✓ | ---- |
| Low charge alternator | ✓ | No | ✓ | ---- | ✓ | No | ✓ | ---- |
| Emergency stop | No | ✓ | ✓ | ---- | No | ✓ | ✓ | ---- |
| Fail to start/ stop warning | ✓ | No | ✓ | ---- | ✓ | No | ✓ | ---- |
| Auto remote start/stop DI | ---- | ---- | ---- | ✓ | ---- | ---- | ---- | ✓ |
| Under / over voltage | ✓ | ✓ | ✓ | ---- | ✓ | ✓ | ✓ | ---- |
| Under / over frequency | ✓ | ✓ | ✓ | ---- | ✓ | ✓ | ✓ | ---- |
| Over kW / Overcurrent | No | ✓ | ✓ | ---- | No | ✓ | ✓ | ---- |
| Low load | No | No | No | ---- | ✓ | ✓ | ✓ | ---- |
| Incorrect phase sequence | No | No | No | No | No | ✓ | ✓ | ---- |
| Reverse power | No | No | No | No | No | ✓ | ✓ | ---- |
| Short circuit | No | No | No | No | No | ✓ | ✓ | ---- |
| Earth fault | No | No | No | No | No | ✓ | ✓ | ---- |

✓ - Available No – Not available ---- - Not applicable WR –Warning SD- Shutdown Ind – Indication DI – Digital Input

Customize Your Power Needs - Optional Accessories

Generating set

- External bulk fuel tank of 1000L, 5000L, 10000L, 15000L
- Fuel transfer pump
- Fuel priming manual pump

Engine

- Cold start kit
- Battery isolator switch
- 1000hrs service interval kit for select ratings

Alternator

- Alternator space heater
- RTD, BTD (for select ratings)
- Droop current transformer (for select ratings)

Controls

- Static battery charger 12V 5A / 24V 10A
- AMF / ATS panel
- Synchronization panel for higher kVA solutions



KIRLOSKAR OIL ENGINES LIMITED

Kathmandu Business Park
1st Floor, Block C, Plot 6 & 17, Teku
Kathmandu, Nepal
Tel.: +977-9811992763
Email : koel.helpdesknepal@kirloskar.com
Website : www.koel.co.in

KIRLOSKAR DMCC

JBC - 5, Cluster W, Jumeirah Lake
Towers, P.O. Box 37745 Dubai U.A.E
Tel.: +971 4 443 8591
Fax : +971 4 441 4532
Email : enquiry@kirloskarib.com
Email : enquiry@kirloskar.ae
Website : www.kirloskarib.com

KIRLOSKAR TRADING SA (PTY) LTD.

Unit B1, The Stables Business Park,
Cnr of Third Avenue & Second Road,
Limbro Park, Modderfontein,
Johannesburg.
Tel. : +27 11 553 6900 / 6903
Email : prem.shankar@kirloskar.com

KIRLOSKAR KENYA LTD.

P.O Box 60061, Off Dunga Road,
Nairobi, Kenya,
Tel. : +254 20 653 6632
Fax : +254 20 653 3390
Email : raj.patil@kirloskar.com

**KIRLOSKAR AMERICAS
CORPORATION**

33300 Egypt Lane, Suite C300
Mangolia, TX 77354
Tel. : +1 346 248 5777
Cell Ph : +1 832 675 1595
Fax : +1 830 423 8060
Email : info@koelamerica.com



KIRLOSKAR OIL ENGINES LIMITED

A Kirloskar Group Company

Regd. Office : 13, Laxmanrao Kirloskar Road, Khadki,
Pune, Maharashtra 411 003 INDIA
Tel.: +91(20) 2581 0341 Fax: +91(20) 2581 3208, 2581 0209
Helpline: +91 8806 33 44 33
Email: koel.helpdesk@kirloskar.com Website: www.koel.co.in



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- Mark 'Kirloskar' used in any form as prefix or suffix is owned by Kirloskar Proprietary Limited and Kirloskar Oil Engines Limited is permitted user.

SCOPE OF SUPPLY:

Factory assembled DG Set comprising of "KOEL GREEN" make above model Diesel Engine directly coupled to "KIRLOSKAR GREEN" make Alternator mounted on Common Base Frame, Complete with Standard Control Panel, Fuel Tank, Battery with Leads, AVM Pads and Acoustic Enclosure [C A N O P Y] as per CPCB Norms & along with First fill of K-Oil & K-Cool.

| | |
|--|--|
| <u>WARRANTY</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 K-Cool and avail the services from authorized service dealers |
| INSURANCE | 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 |
| <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. | |

COMMISSIONING

Commissioning of DG Set shall be done by our service engineer

- 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

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 neilsen) with:
 - 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 Service like Annual Maintenance Contracts, Stand-by DG Sets, Customer training program – 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.*

Specification of KOEL GREEN Canopy

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 are 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 n 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 in 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 sound level, when measured in green field condition (ISO 3744 OR 8528 PT 10) at 1-metre distance shall be less than 75 - DBA or as per CPCB norms.

The average stabilized hot air temperature rise with in the canopy is maintained within 7°C 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 imported machines with dimensional accuracy of 0.1 mm.
- Canopy is powder coated after passing through seven tank processes.
- Canopy is lined with acoustic foam / rock wool, which is non-igniting / Fire Retardant (confirming to BS 4375/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.
- 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.

Exhaust System:

The exhaust system and noise suppressor shall be provided with thermal insulation by using fire retardant / non igniting foam conforming to BIS 7888/BS 4375 to prevent excess heat radiation on the engine and safe for operator.

Silencer:

Absorption type non-resistance Residential Silencer insulated from inside with glass wool shall be provided to suppress exhaust noise from the engine.

Wiring and Lighting:

PVC Copper wire concealed in flexible conduit with florescent tube light/bulb with MCB shall be provided.

Surface Treatment – Painting:

The enclosure surface shall be suitably treated for degreasing, derusting and phosphating. High quality powder coat treatment / paint shall be used.

Fuel Tank:

Fuel tank shall be fabricated out of 14SWG CRCA MS Sheet and is part of base frame. It is duly painted and fitted with inlet and outlet connections. Float gauge and fuel float switch is provided.

Kirloskar Brand Stickers with Green band as per Kirloskar design.

Canopy lights: One No. DC bulb to be fitted with suitable toggle switch and wiring.

Emergency Push Stop Button

The canopy shall have provision of emergency push button, which shall be housed in a protective enclosure with a glass front.

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 Specially Designed to standardize most of control Panels components in Single Unit.

Salient Features of Controller

| S. No | Display Parameters | Mechanical Safeties | Electrical Safeties |
|--------------|--|--|----------------------------|
| 1 | Engine Running Hours | Under / Over Speed | Under / Over Voltage |
| 2 | Lub. Oil Pressure | Low Lube Oil Pressure | Under / Over Frequency |
| 3 | Water Temperature Centigrade & Fahrenheit | High Engine Coolant temperature for liquid cooled engines | Phase Failure |
| 4 | Battery Voltage | High Cylinder Head temperature for Air cooled engines | Phase sequence reverse |
| 5 | Phase Voltage | Fan Belt failure for Air cooled Engine | Over Current |
| 6 | Line Current | Low coolant level for liquid cooled engines | Over KW |
| 7 | Frequency | Low fuel level (alarm) | - |
| 8 | Average Voltage | High canopy temperature | Battery Charging Failure |
| 9 | Average Current | | Low Fuel Level |
| 10 | KW | | |
| 11 | K Watt Hour Meter | | |
| 12 | KVA | | |
| 13 | KVAR | | |
| 14 | Power Factor | Fuel Level in Liters | Number of Engine starts |

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

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

a). Set of Push Buttons

- Engine start/stop,
- Emergency Stop