



PLANT HEALTH AND PROTECTION
WEEDS RESEARCH DIVISION
ROODEPLAAT

Technical Specification for Supply, Installation and Commissioning of 150Kva Diesel Generator for Weeds mass rearing at ARC Roodeplaat

Scope of the work

- Confirm correct size selection of generator for back up of mostly electrical motors and compressors.
- The contractor must first do load balancing to check if the generator will be able to carry the entire load in the building at site conditions.
- Installation of a new proposed 150kva diesel generator and connect the entire load.
- The contractor must ensure that there are sufficient circuit breakers to support all load in the entire building; if need be staged switching can be applied on the load.
- All the circuit breakers must be labelled.
- The contractor must make sure that the cable supplying power from the generator to the building can carry the entire load.

NB.

- Certificate of Compliance must be issued after installation.
- The contractor must run generator when on load and when not on load.
- Provide generator set Operator and Maintenance instruction manuals.
- Guarantee period: One year or 1000 hours whichever comes first.
- Remove all rubble from site.
- Service Provider responsible for adherence to all Health and Safety requirements of staff during installation period.
- Service Provider are responsible for security and safekeeping of all equipment and tools during installation process.

The quotation must be fully specified and include the following:

- Generator with minimum of 1-year guarantee.
- Please provide evidence of replacement part availability in SA.
- Supply, installation and commissioning.
- Crane hire.
- Power supply cables and accessories.
- Transport /delivery.
- Certificate of Compliance (electrical).
- CIDB grading 2EP or 2EB.

A. Engine specifications

Diesel generator	: Specify make and model
Engine output power	: Sufficient to run the load, e.g. 120 Kw
Cooling method	: Radiator water-cooled
Starter	: 24v DC
Governor system	: Electronic

B. Alternator specifications

Alternator	:	Please specify make and model
Prime power output	:	150 Kva
Insulation class	:	H
Type	:	Brushless
Phase and connection	:	Three phase, four wire
Voltage regulation	:	± 1%
Voltage	:	230/400v
Rated frequency	:	50Hz
Voltage regulate change	AS	: ≤ ±10% UN
Phase change rate	:	± 1%
Power factor	:	0,8
Protection class	:	IP23
Stator	:	2/3 pitch
Rotor	:	Single bearing

C. Control system specifications

Control supervision and protection panel to be equipped as follows:

- **Auto mains failure control panel**
 - Automatic transfer switch module (specify make and model)
 - Controller (specify make and model)
 - Emergency stop push button
 - Static battery charger
 - Four-pole electrically and mechanically interlocked ATS
 - Event logging and shutdown alarms
 - STOP/RESET-MANUAL-AUTO-TEST-START
- **Metering via LCD display**
 - Mains volts (L-L/L-N)
 - Generator amps (L1, L2, L3)
 - Generator frequency; generator cos
 - Engine hours run; plant battery (volts)
 - Engine oil pressure (psi and bar)
 - Engine speed (rpm)
 - Engine temperature (degrees C)
- **Automatic shutdown and fault conditions**
 - Under/over speed; fail to start
 - High engine temperature; fail to stop
 - Low oil pressure; charge fail
 - Under/over generator volts; over current
 - Under/over generator frequency; emergency stop
 - Under/over mains frequency
 - Under/over mains voltage
 - Low/high battery volts

D. Installation

- Insulated engine exhaust system
- Exterior emergency stop push button.
- To be installed on existing concrete foundation inside existing generator room (Fig. 1).



Figure 1. Existing generator room and distribution point.

E. PLEASE TAKE NOTE

1. Improvements to the proposed system, including design elements and the proposed equipment that will be installed are welcomed where those changes will increase the overall efficiency of the system, usability and/or cost saving. Please clearly indicate on your proposal any suggested improvements with a brief motivation.
2. Any alterations to walls, ceilings or other surfaces necessitated shall be 'made good' upon completion of the project. This shall include the repairs of any damage and repainting if necessary.
3. The specifications of equipment listed above may contain errors or omissions. Potential service providers should arrange for a site visit to familiarise themselves with the requirements of the system and scope of work required prior to quoting. Visits can be arranged with:
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