



GROUND POWER UNIT

40/60/90/140/180 KVA 400 HZ AC & 28.5V DC
(OTHER MODELS AVAILABLE ON REQUEST)

SMART & FUTURISTIC GSE



MAK CONTROLS & SYSTEMS (P) LTD., INDIA
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MAK GPU-AN OUTLINE

MAK manufactures GPUs for commercial and defense applications since last 3 decades and is a pioneer of digital 400Hz GPUs across the world.

A diesel engine/electric motor coupled to MAK's highly reliable alternator provides a perfect output to your aircrafts. With a touchscreen control panel and interactive GUI, this GPU is easy to operate and effortless to maintain.

MAK AC GPUs can be supplied with additional 28.5V DC module and small 50Hz invertors for obtaining commercial power voltage for tools, appliances.... etc during aircraft maintenance.

MAK RDMS - comes as a standard feature with all GSE, it is a feature-rich software built for remote operations of MAK GSE viz parameter details, fault alarms, alerts and periodic maintenance schedule. For more details please look at our MAK RDMS brochure.

28.5V DC GPU:

MAK 28.5V DC GPUs built with a diesel engine is used for smaller turbo-prop aircrafts requiring 600A/800A DC and starting current of 1500A/2500A DC. These units are made compact keeping in mind the space constraints around small aircrafts.



BATTERY CART:

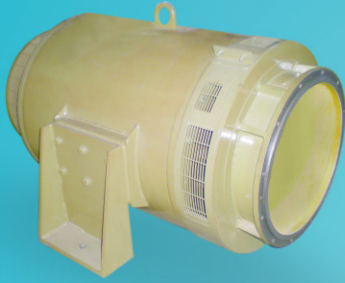
MAK Battery carts provide 28.5V DC output through its specially manufactured high discharge batteries. These battery carts contribute to environmental friendliness, noiseless operation and need regular maintenance activities.



SELF-PROPELLED GPU:

MAK designs and manufactures self-propelled type GPUs for customers requiring quick shuttle across aircraft bays and also to cover long distance between GSE workshop and aircraft bays. Self-propelled systems operates on electric or hydraulic system and can also be made skid mounted for fitting on standard commercial trucks based on customer discretion.





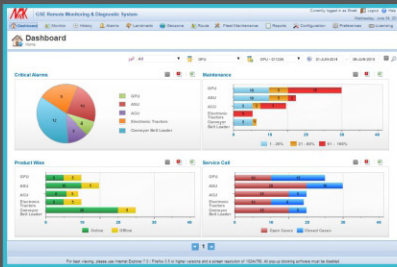
400Hz ALTERNATOR:

MAK's indigenously designed double bearing brushless alternator with supreme quality insulation guarantees operational robustness and long life.



CONTROL PANEL:

MAK GSE Monitor – A touch screen control panel with interactive GUI to showcase summary of all parameters in graphical format with in- built maintenance chart, fault log chart and troubleshooting guide.



MAK RDMS:

A unique feature of MAK that comes as standard with MAK GSE. It is feature rich software and hardware built for remote monitoring and diagnostics with parameter monitoring, Geo locations, fault alarms, maintenance alerts etc. It is a complete management tool for a GSE-Head. On touch of a button one can communicate with the equipment and complete history is made available at finger tips



STANDARDS:

MAK GPU's are designed to comply with stringent standards such as AHM, ARP, MIL..etc. MAK GPU's are CE Certified enabling universal usage and provides customers a unit par excellence.



PROTECTIONS:

There are various operational and physical protection mechanisms designed & Incorporated in MAK GPUs making them operationally fail-safe and secure during any untoward faults or basic mishandling.



STRUCTURE:

MAK GPU's are built with strength to handle tough operating conditions under any weather whilst being compact and effortless maneuverable facilitating smooth towing.

TECHNICAL SPECIFICATION

PRIME MOVER

ENGINE	:Cummins / Deutz or Equivalent diesel engine
ALTERNATOR	:MAK brushless, 3 phase, constant voltage alternator with in-built MAK AVR
INSULATION	:Class H
OUTPUT CHARACTERISTICS	
AC OUTPUT	:40/60/90/140/180 KVA at 0.8 pf lagging
POWER	3 phase 4 wire system
VOLTAGE	:115V (Line to Neutral) and 200V (Line to Line).
VOLTAGE UNBALANCE	:a)1% at balanced load. b) Within 4% with 1/3rd load on one phase with two other phases unloaded.
VOLTAGE REGULATION	:±1%
VOLTAGE MODULATION	: ±1%
VOLTAGE TRANSIENT	: ±20% and ±1% of steady state value recovery within 200 milli seconds.
PHASE DIFFERENCE	: 120°±1.50°
FREQUENCY	: 400 Hz
FREQUENCY REGULATION	: ±1%
FREQUENCY MODULATION	: ±0.5%
FREQUENCY TRANSIENT	: 385 to 415 Hz, ±1% of steady state value recovery within 2 seconds.
THD	: <2%

Electric motor as prime mover option available

MOUNTING CONFIGURATION :

Towable trailer mounted / Self propelled / Skid mounted for truck

* Due to continuous development, the dimensions, layout, configuration and specifications are subject to change without notice.

MONITORING

Following parameters are displayed through GUI touch screen on a graphical format for quick understanding

- Engine lube oil pressure
- Engine coolant temperature
- Engine RPM
- Fuel level
- Engine hours run
- Battery voltage
- Output voltage
- Output frequency
- Load currents across all 3 phase
- Maintenance Schedule

OPERATIONAL PROTECTIONS

A. For Engine

- Low lube oil pressure shutdown
- High coolant temperature shutdown
- Over speed shutdown
- Low fuel shutdown
- Charge fail (only indication)

B. For Output

- Under voltage trip
- Over voltage trip
- Over load trip
- Neutral open trip
- Phase rotation trip
- Under frequency shutdown
- Over frequency shutdown

ONE STOP DESIGN AND SYSTEM INTEGRATION HOUSE FOR ALL YOUR ENGINEERING NEEDS

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