# Case Story

Project : Parallel operation of 1500 KVA and 725 KVA **CAT** DG set by **DEIF AGC 242**.
Customer : System Control and Automation Pvt. Ltd, Kolkata
End User : Emami Bio-Tech Ltd, Nellore Andra Pradesh.
DG Suppiler : TIPL [Tractor India Pvt. Ltd], Kolkata.

**1x1500 KVA + 1x725 KVA CAT DG set in Acoustic Enclosure :**



**725 KVA DG 1**

**1500 KVA DG 2**

This is 1500 KVA and 725 KVA DG set in Acoustic Enclosure. The rated speed and Voltage is 1500 RPM and 415 VAC and the DG set supplied by **TIPL [Tractor India Pvt. Ltd], Kolkata**.
Alternator Make : Leroy Somer with R448 AVR.

725 KVA Engine Model : 3412 DITA-GP-3 with EMCP 3.2 Controller.
1500 KVA Engine Model : 3512 with EMCP 2+ controller.

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**1500 KVA & 725 KVA DG set AMF + Auto Synchronization+ Auto Load Sharing Panel :**

**GC 1F [AMF] Unit** **AGC 242 [Auto Sync+Auto Load Sharing+ PM] Unit**

This is AMF + Auto Sync+Auto Load Sharing with Power Management logic panel supplied by **M/s System Control and Automation Pvt. Ltd, Kolkata.**

**AGC 242 Auto Sync+Auto Load Sharing with Power Management controller :**

**Front Side**

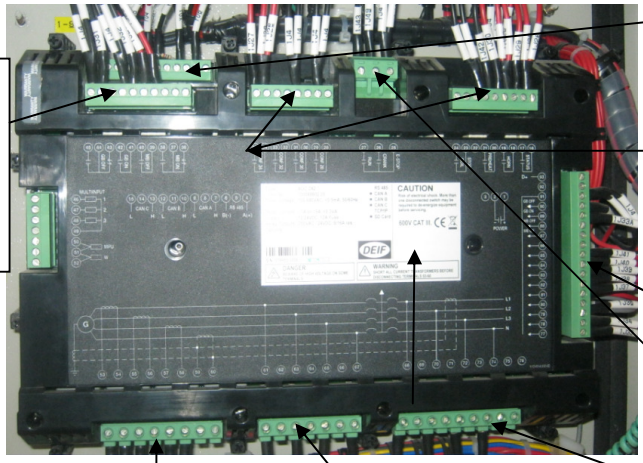
**Back Side**

## Case Story

**DEIF AGC 242 is used for :**

- Starting of DG set in Auto/Semi-Auto/Manual Mode.
- Auto Synchronization and Auto Equal Load Sharing.
- Synchronization & Load Sahring in Semi –Auto Mode.
- Power Management Operation.
- Generator Protections & parameters Measuremments.
- To control the other auxiliaries or external logic and circuits.

**AGC 242 Terminal Details:**




Description of AGC 242 Terminals :

Crank Relay Coil : Not Used.

Run Relay Coil : Connected to CAT EMCP controller to for Auto Start/Stop.

Configurable Output Relays : Used for Alarm and Horn.

Digital Input : Used for Auto Start/Stop, Breaker Feedback , Engine common Fault input etc...

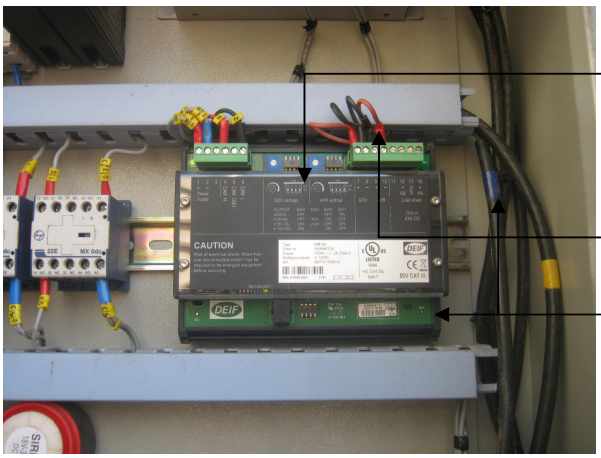
CANBUS : CAN A – Connected between both unit for Power Management [Load Dependant Star/Stop]
CAN B – Connected between both ubit for Load Sharing.
CAN C – Connected to IOM 230 and EPQ96-2 for Voltage regulation and Speed Regulation.

CT Connection : CT inputs for Measurement.

PT Connection : PT inputs from alternator incoming and Busbar for Voltage measurement and control.

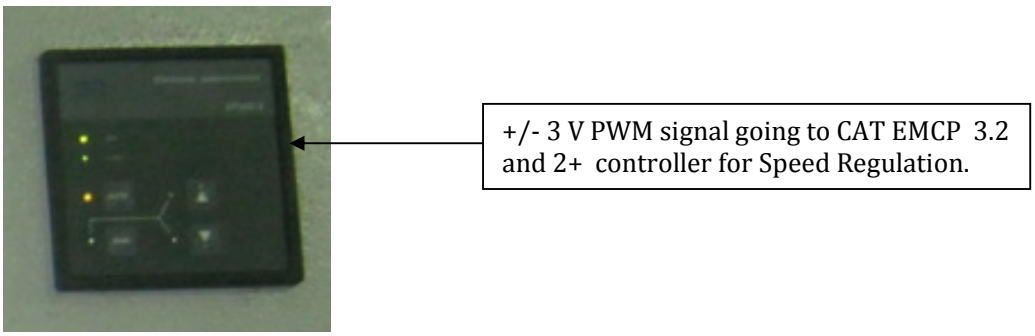
## Case Story

### IOM 230 Analogue module for Voltage biasing :




The IOM 230 Analouge Biasing unit is communicating to AGC 242 by CANBUS.
The 9 and 10 terminals of IOM 230 module has used to R448 Leroy Somer AVR for Voltage regulation.

### EPQ 96 -2 PWM module for Speed Regulation :




### CAT EMCP 3.2 Engine Controller with Governor for 725 KVA DG set :

## Case Story

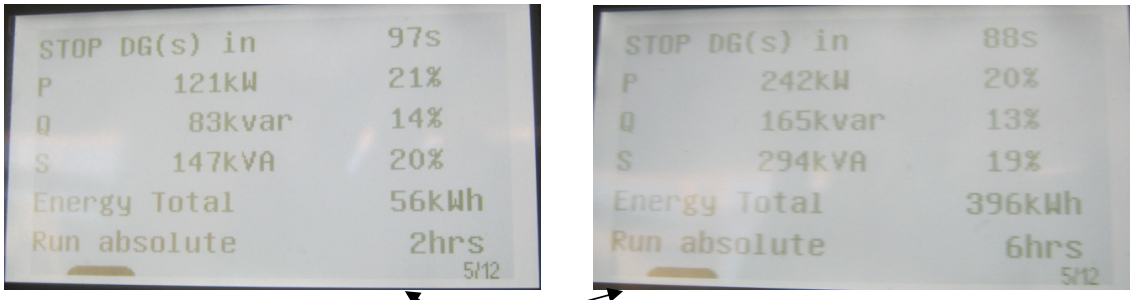
**CAT EMCP 2+ Engine Controller with Governor for 1500 KVA DG set :**


The connection from EPQ 96-2 PWM Module to CAT EMCP 2+ controller for Speed Regulation.

**GC 1F/2 AMF Unit for Grid Power Monitoring and for Grid breaker controlling :**


Grid Voltage.

This is GC 1F/2 controller for Grid power Monitoring and to Start the both DG set automatically in case power failure.
The Unit is also controlling the Grid Breaker in case Grid Fail and restore.




KW and KVAR Load sharing of both DG set.

# Case Story

## Plant Operational Logic :

During Normal condition :
In normal condition the plant would be in Island + Auto Mode from AGC 242.
There is Priority selector switch on the sync. Panel for DG set priority selection. This is operator responsibility to put the selector switch on priority DG set which has to run.
There is GC 1F/2 controller for Grid power Monitoring and Grid breaker controlling.

In case Grid Power Fail :

Incase Grid Power fail, GC 1F/2 controller will monitor thr failure of Grid Power for 5 sec and thenafter will generate trip command to Grid breaker.
On the open feedback of Grid breaker, the GC 1F/2 will generate command to AGC 242 for start the DG set in Auto.

The priority DG set will start automatically and will close the respective breaker.
The other DG set will work on load management.
If the load on Master DG set exceeds above the 70% then after 10 sec the other DG set will start and will sync and share the load with Master DG set.

If the Load is below less than and equal to 60%, then the other DG set will open the breaker after 300 sec and will get off after 180 sec cool down time.

Incase Drid Power Restore :

In case Grid Power come back, the GC 1F/2 controller will monitor the power restoration for 30 sec and then after will remove the auto start/stop input from AGC 242.
After this both the DG set will open the respective breaker and will get off after cool down time.

GC 1F/2 will moniotor the open feednabk of both DG set and after 10 sec will close the Grid breaker.