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Standard Generator Control Systems – Generator Control & Paralleling System

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Standard Generator Control Systems – Generator Control & Paralleling System

Systems Insight is a generator systems specialist, with extensive experience in design engineering, manufacture and installation of custom built generator control packages. Systems Insight has designed a range of standard generator control systems that are suitable for use in a variety of applications and incorporating the most commonly requested features.

A key product in our range is our generator paralleling control system. The system features a manufactured control cubicle, basic engine sensors, engine wiring looms and local site commissioning.

The package is ideally suited for use with all major generator manufacturers, and can be installed to a basic generator, without the need for manufacturers proprietary control panels. In all, the overall package forms a complete 'turn-key' system.

The system is primarily designed for use with multiple, paralleled generators. However, the system can also be employed for stand alone standby power generators and for parallel operation of generators with supply authority mains. (Contact Systems Insight for additional information regarding mains paralleled systems).

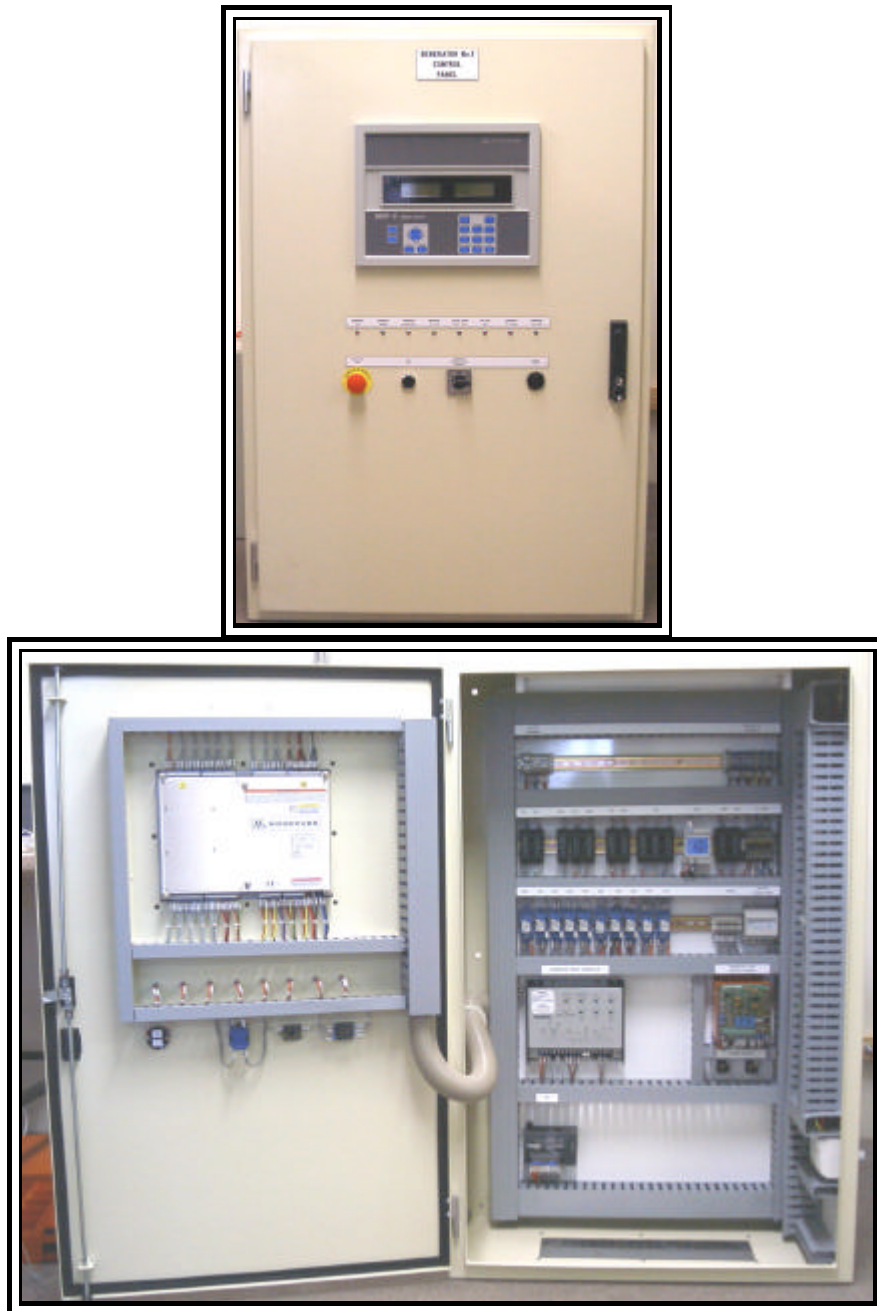


The main control and monitoring device used for the standard control system is a Woodward EGCP-2 'Engine Generator Control Package'. This device is a self contained, microprocessor based, generator load control and engine management unit. When used for multiple generator set installations, the EGCP-2 can be networked to automatically control up to eight generator sets.

Where system size and complexity demand, a system 'Master Control' cubicle can also be provided, as an extension to the basic system. The 'Master Control' cubicle provides a Programmable Logic Controller for supervisory control of shared and ancillary equipment. Its features include selectable duty cycle for multiple generators, power distribution management (eg: load shedding) and management of fuel transfer and storage systems.

Systems Insight has introduced these standard generator control systems to provide ready made, flexible and adaptable packages to suit a variety of generator control applications. On request, our systems can be further customised to comply with the customer's specific requirements.

Standard Generator Control Panel:



Standard Generator Control Systems

Main Features:

Engine Control & Management:

- ❖ Local and/or Remote Engine Start and Fuel Control
- ❖ Engine oil pressure & temperature monitoring
- ❖ Engine speed monitoring
- ❖ Battery voltage monitoring
- ❖ Protection and alarming for:
 - High/Low Coolant temp.
 - High/Low Oil Pressure
 - Engine over rated speed
 - Start Fail
 - Emergency Stop

Synchronising & Metering:

- Safe 'Dead Bus' closing logic
- Digital signal processing
- Synchronisation of multiple isolated generators
- Adjustable phase & voltage windows and dwell times
- Optional manual speed and voltage adjustment
- Digital display of Electrical Metering Parameters
- Supply & Installation of Metering Current Transformers
- Synchronisation of generators with a mains supply **

Real kW Load Control:

- True RMS power calculations
- Configurable load bias signal to engine speed control
- Soft load/unload with adjustable ramping rates
- Base load control for improved fuel efficiency **
- Optional import/export control **
(Import kW transducer fitted)
- Soft load/unload transfer to utility **

Reactive kVAR Control:

- VAR sharing on isolated load buses
- Configurable voltage bias signal to voltage regulator
- Power factor or VAR control when base loaded

Generator Sequencing:

- Automatic start/stop of generators according to load demand
- Configurable start/stop demand levels and run timers
- Configurable engine priority sequencing

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Electrical Protection:

- Over/Under Voltage
- Over/Under Frequency
- Reverse Power
- Loss of Excitation
- Over Current (Inverse time delay)
- Loss of Utility supply detection
- Load Surge
- Speed/Frequency mismatch

Communications:

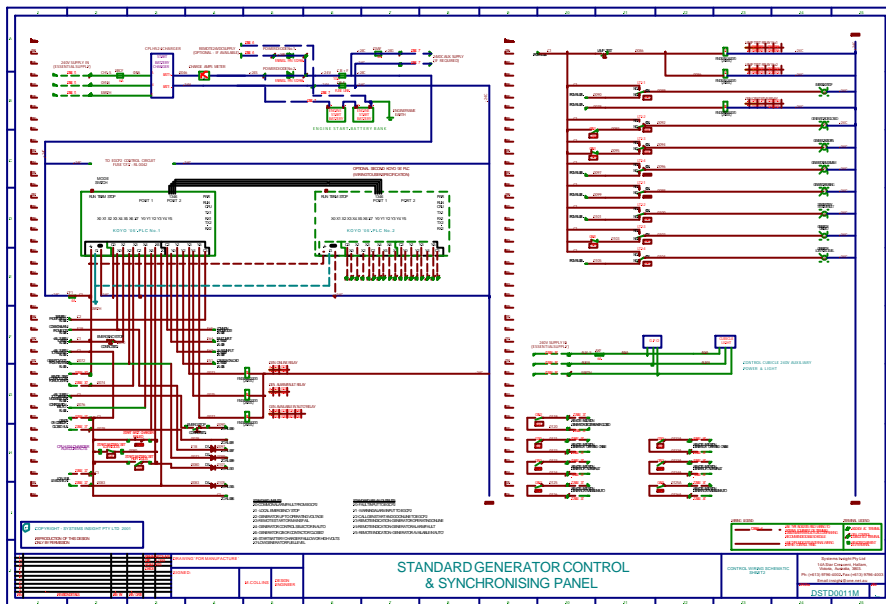
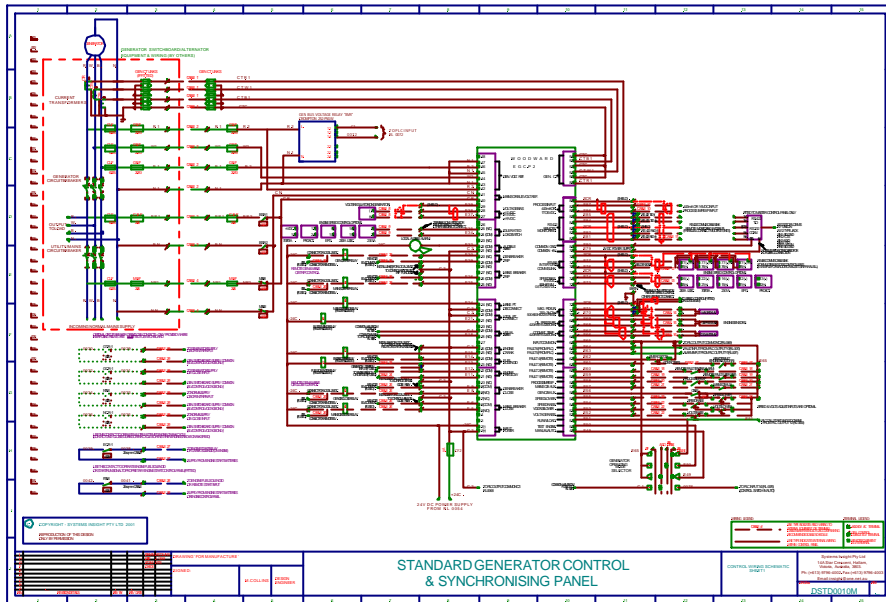
- RS-422 or RS-232 serial communications on 'Modbus' protocol.
- RS-485 EGCP to EGCP load sharing communications network.
- EGCP-2 Configuration upload/download via PC interface.

Other Features:

- Electronic audible alarm
- Generator Operating Mode Selector Switch:
 - Stop/Off (Generator offline & disabled)
 - Auto (Gen. started remotely – eg: Mains fail relay)
 - Run Offline (Gen. Started with sync. C/B open)
 - Run Online (Gen. Started with sync. & close C/B)
- Emergency Stop button on control panel door
- Engine start battery charger with charge fail & low/high volts alarm & charge amps meter
- Installation of engine speed control to system control cubicle
- Low fuel level monitoring & alarming
- Provision and installation of engine temperature and oil pressure sensors & associated wiring looms
- Fluorescent light fitted inside control panel
- 240V power point fitted inside control panel
- LED indicators to control panel door
 - Emergency Stop
 - Generator Circuit Breaker Closed
 - Generator Circuit Breaker Open
 - Generator Fault/Alarm
 - Generator Running
 - Start Battery System Fault
 - Generator 'Off Auto'
 - Generator Low Fuel Level
- Synchronising circuit breaker/contactors open & close control interposing relays (optional inclusion)
- Remote indication via volt free contacts:
 - Generator operating online
 - Generator alarm/fault (common)
 - Generator 'Available in Auto'
 - Generator Circuit Breaker Closed
- Provision of electronically drafted construction drawings & wiring schematics with all systems.

Standard Generator Control Systems

Wiring Schematics:



Electronically drafted wiring schematics are supplied with all standard generator control systems.

A recommended site cable installation schedule is also provided, referenced to the wiring schematics.

Standard Generator Control Systems

Notes:

- Each package is inclusive of one complete control system per generator.
- Each system includes supply and installation of engine temperature and oil pressure sensors.
- Each system includes installation of a basic wiring loom on the engine to oil pressure & water temperature sensors, fuel actuator and magnetic pickup. (Provision of a magnetic pickup and fuel actuator is optional and not included as standard).
- Each system includes up to a maximum of 16 labour hours to test and commission the installed system.
- All installation and commissioning inclusions are based on works within the Melbourne Metropolitan area. Travel and other associated costs apply for interstate and overseas work.

** Where mains paralleling is employed, the local utility mains supply authority or project engineer may impose specific electrical protection requirements. Incorporation of this protection into the control systems would be additional, based on specific project details.

Exclusions:

The following items are normally excluded from our standard package but are available as options:

- Provision of engine speed controller (by generator supplier or customer)
- Transport and delivery to customer or project site
- Provision and set-up of load banks for testing