

IG/IS-NT GeCon

GENERATOR CONTROLLER FOR MARINE AND
LAND-BASED APPLICATIONS



Description

IG/IS-NT GeCon provides comprehensive generator protection and control for single or multiple gen-sets based on field proven IntelliGen^{NT} and IntelliSys^{NT} platforms. Special configurations optimized for use in marine and land-based installations allow customers to select a tailored solution for their application with the option of modified options for critical applications.

A built-in synchronizer and digital isochronous load sharer allow a total integrated solution for gen-sets in standby, island parallel or mains parallel. Native cooperation of up to 32 gen-sets is a standard feature.

A powerful graphic display with user-friendly controls allows any user whatever their ability to find the information they need. Arrangement with redundant controllers is available for critical applications. The 'hot standby' controller takes over generator protection and control in case of failure of the main controller.

Benefits

- ▶ Excellent configurability enables users to customise to the needs of their application
- ▶ Choice of communication options ensures easy remote supervising and servicing
- ▶ Optional redundant 'hot standby' controller guarantees uninterrupted generator control in case of failure of the primary controller
- ▶ Built-in PLC functions remove the need for an external PLC controller
- ▶ Perfect price/performance ratio
- ▶ Gen-set performance log for easy problem tracing



RINA



ComAp is a member of AMPS
(The Association of Manufacturers
of Power generating Systems).



ComAp products meet the highest standards, with every stage of production undertaken in accordance with the ISO certification obtained in 1998.

InteliGen^{NT} GeCon, InteliSys^{NT} GeCon

Generator monitoring and control

- ▷ Independent engine controller (e.g. ID-DCU) is required
- ▷ Generator measurement: U, I, Hz, kW, kVAr, kVA, PF, kWh, kVAh
- ▷ Bus/Mains measurement: U, I, Hz, kW, kVAr, kVA, PF
- ▷ Manual, Semi-auto and Automatic operational modes
- ▷ Automatic VAr sharing and Load sharing – in all modes
- ▷ Automatic synchronizing and Voltage control – in Auto and Semi-auto modes

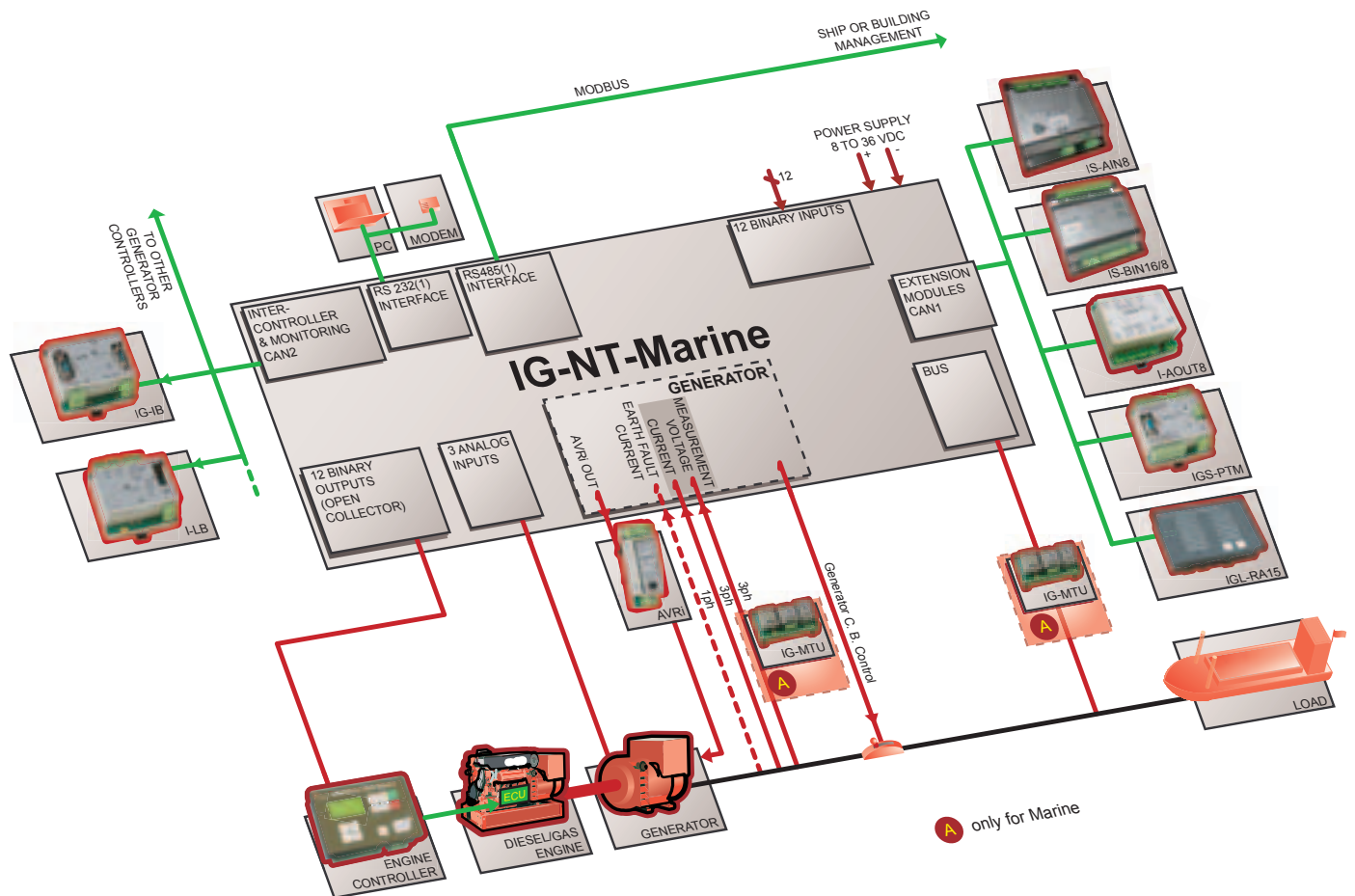
- ▷ Power management: kW, kVA or % load based – in Auto mode
- ▷ Baseload, Import/Export, Peak shaving – for land based applications
- ▷ All binary/analog inputs are configurable for various protection types

Generator protections

- ▷ 3 phase generator over/under frequency
- ▷ Generator overcurrent and IDMT overcurrent
- ▷ Additional 160 user configurable generator and bus/mains protections

Communication and PC tools

- ▷ RS232/RS485 interface with Modbus support
- ▷ Analog/GSM/ISDN/CDMA modem support
- ▷ Ethernet/Internet interface via IG-IB module
- ▷ **InteliMonitor** – free PC SCADA software for supervision of single or multiple controllers, configurable site structure, easy site overview, common history log, direct/modem/Internet connection



InteliGen^{NT} GeCon

General features

- ▷ Panel mounted device
- ▷ Dimensions 180 × 120 mm (front panel)
- ▷ Sealed to IP65 (front panel)
- ▷ Event-based history with configurable list of stored values up to 500 records deep
- ▷ Integrated standard PLC programmable functions

Inputs and outputs

- ▷ 3 × U generator – 400 V ph-ph
- ▷ 3 × U bus – 400 V ph-ph
- ▷ 3 × I generator – CT 5 A
- ▷ 1 × I earth/I bus – CT 5 A
- ▷ 12 binary inputs
- ▷ 12 binary outputs
- ▷ 3 analog inputs
- ▷ 1 × RS232/485

InteliGen^{NT} GeCon, InteliSys^{NT} GeCon

- ▷ **GenConfig** – free configuration tool; allows full configuration of an NT controller and it's peripherals
- ▷ **WinScope** – PC oscilloscope with up to 32 traces, any signal available in controller can be visualized

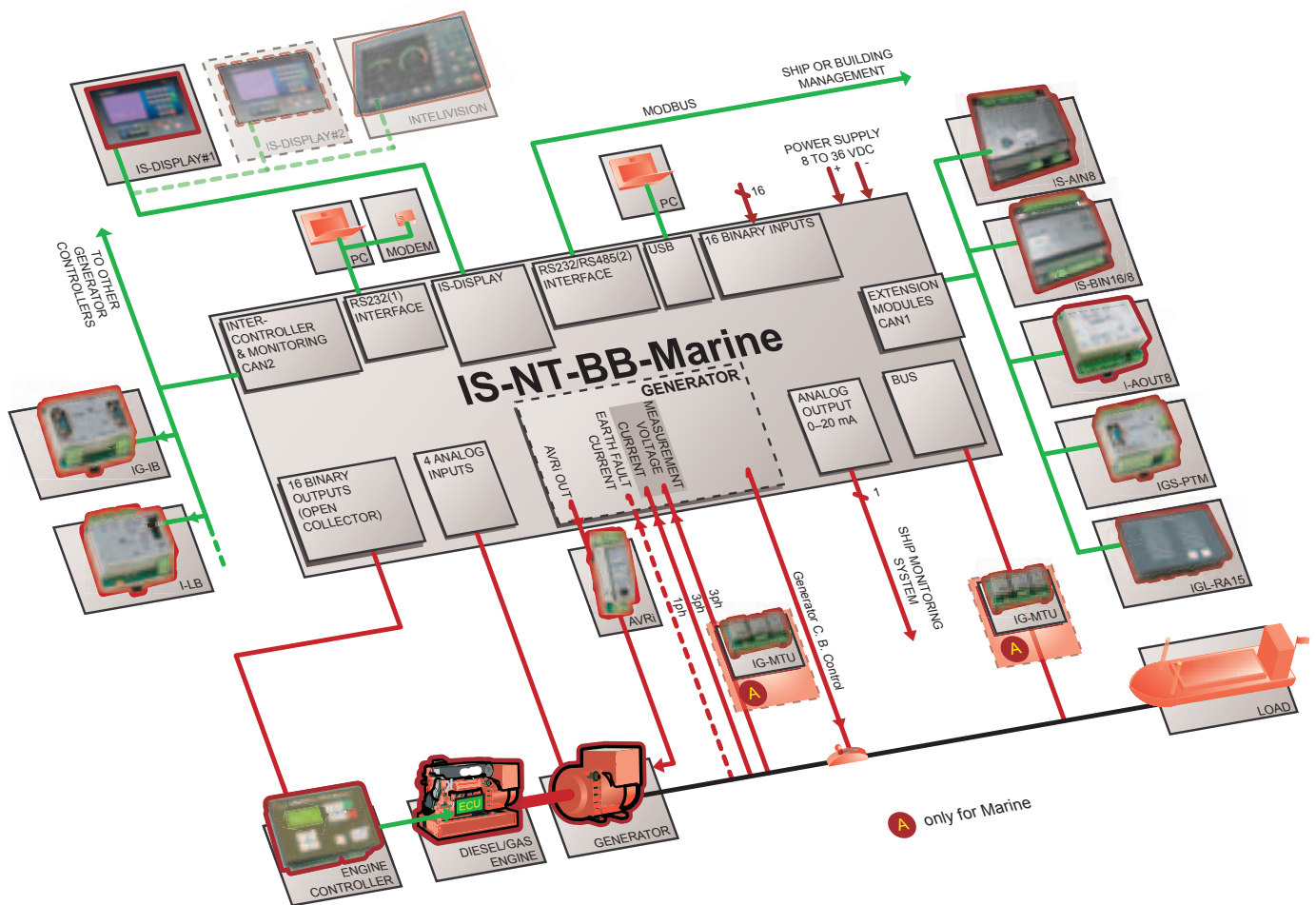
Extension modules and remote displays

- ▷ up to 4× **I-AOUT8** – 8 analogue configurable outputs
- ▷ **IGL-RA15** – remote annunciator
- ▷ up to 4× **IGS-PTM** – input/output module

- ▷ up to 10× **IS-AIN8** – analogue input module
- ▷ up to 4× **IS-BIN16/8** – binary input/output module
- ▷ up to 2× **InteliVision** – controller colour display unit
- ▷ **IG-Display LT GC** – additional remote display

Upgrade kits

- ▷ **IGS-NT-GECON-LSM+PMS dongle:**
 - Enables Multiple isolated parallel or multiple parallel with mains
 - Power management operation (with CAN bus)
 - Digital Load Sharing
 - Digital VAr Sharing
- ▷ **IGS-NT-GECON-PCM dongle:**
 - Enables single parallel with mains



InteliSys^{NT} GeCon

General features

- ▷ Basic unit + detachable display
- ▷ Dimensions 284 × 180 mm (front panel)
- ▷ Sealed to IP65 (front panel)
- ▷ Event-based history with configurable list of stored values up to 1000 records deep
- ▷ Integrated extended PLC programmable functions

Inputs and outputs

- ▷ 3× U generator – 400 V/170 ph-ph
- ▷ 3× U bus – 400 V/170 ph-ph
- ▷ 3× I generator – CT 5/1 A
- ▷ 1× I earth/I bus – CT 5/1 A
- ▷ 16 binary inputs
- ▷ 16 binary outputs
- ▷ 4 analog inputs
- ▷ 1 analog output
- ▷ 2× RS232/485
- ▷ 1× USB

Typical applications

Generator control with independent Protection and Master controllers

Engine is controlled by independent controller. Two GeCon controllers are used to control and protect the generator. First GeCon is in PROT configuration, the second is in MINT (Master) configuration.

Generator can be operated in three basic modes:

▷ MANUAL

- ▷ Both PROT and MINT controllers protect the generator
- ▷ Synchronization and load control of the generator are done manually
- ▷ Start and Stop are manual

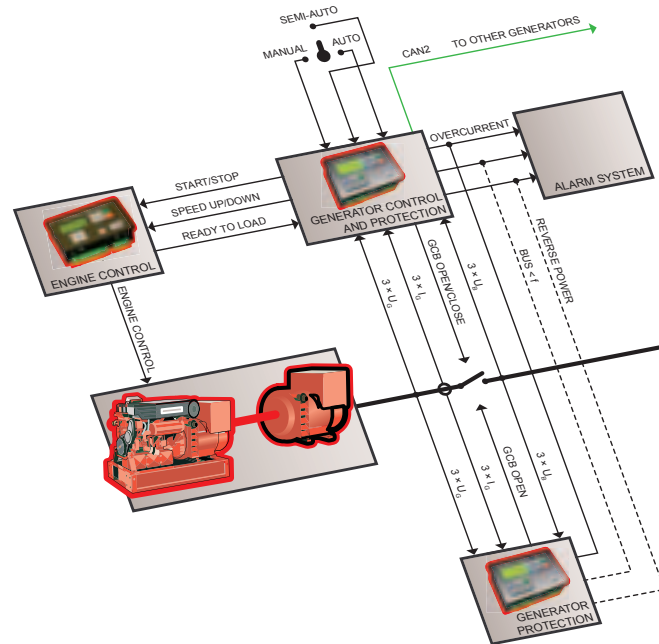
▷ SEMI-AUTO

- ▷ Both PROT and MINT controllers protect the generator
- ▷ Synchronization and digital load-sharing via CAN bus are done by MINT controller
- ▷ Start and Stop are manual

▷ AUTO

- ▷ Both PROT and MINT controllers protect the generator
- ▷ Synchronization and digital load-sharing via CAN bus are done by MINT controller

- ▷ MINT controller automatically start and stop the genset in dependence on bus load, requirements to start heavy consumers, transfer the load between Auxiliary and Shaft generators etc.



Generator control with Master and Hot standby controllers

Engine is controlled by independent controller. Two GeCon controllers are used to control and protect the generator. Both GeCon controllers are in MINT (Master) configuration. One controller provides complete control and protection of the generator. The second controller is used as 'Hot standby', always ready to take over the control of the generator in case of failure of the master controller.

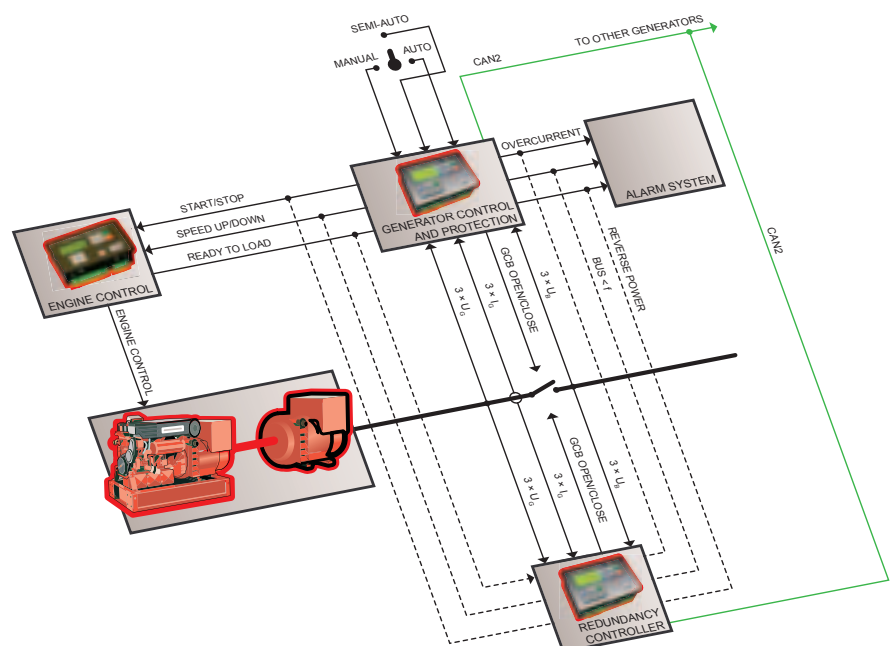
Generator can operate in three basic modes:

- ▷ **MANUAL**
- ▷ **SEMI-AUTO**
- ▷ **AUTO**

The same way as in the installation described above. Both Master and Redundancy controllers are connected to CAN bus. The Redundant controller checks and evaluates CAN bus messages from the Master controller. It immediately takes over control of the generator in case of

detection of failure of the Master controller. A short period between failure of the Master controller and take over of control by Redundancy

controller, less than 300 ms, guarantees minimal disturbance of generator voltage and current.



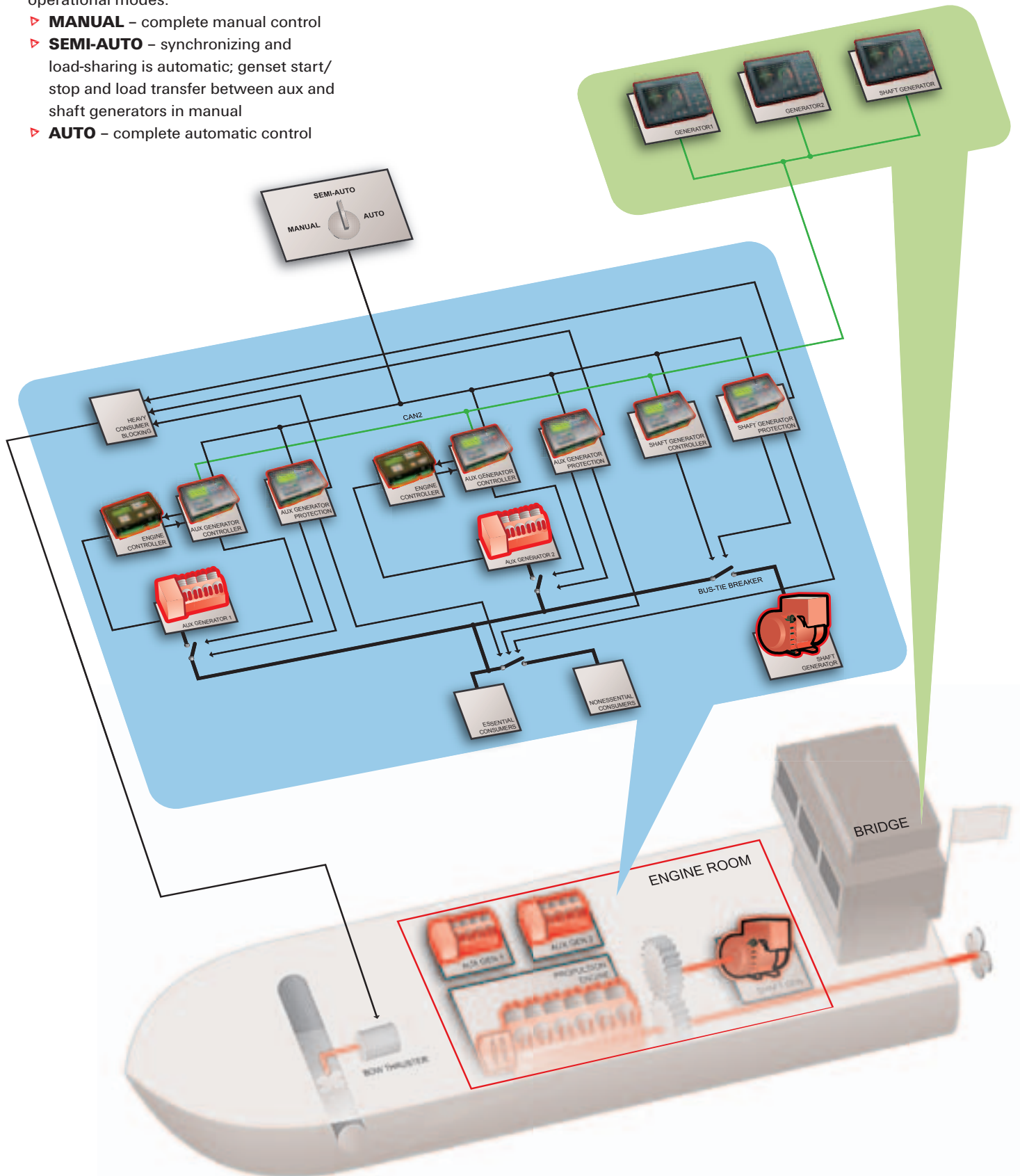
Power Management System of the ship

Two auxiliary generators and one shaft generator deliver electricity for systems of the ship. Generators are controlled by GeCon controllers in MINT (Master) configurations. PMS can work in three basic operational modes:

- ▷ **MANUAL** – complete manual control
- ▷ **SEMI-AUTO** – synchronizing and load-sharing is automatic; genset start/stop and load transfer between aux and shaft generators in manual
- ▷ **AUTO** – complete automatic control

PMS continuously evaluates load reserve on the bus and blocks start of the bow thruster if the load reserve is insufficient. PMS automatically trips the non-essential consumers, if the power system is overloaded.

PMS can control up to 10 independent circuits of non-essential consumers. Freely programmable built-in PLC functions are used to accomplish load transfer between shaft and auxiliary generators.



Product report

Norway, Northern Corona

Northern Corona is a supply vessel owned by Trico Shipping AS operating in Norway and was recently upgraded with a new generator synchronizing and load sharing system supplied by Industrimarin.

They have also specified and installed the GeCon controller system for several customers' vessels for 'on board' generator applications as they provide a higher level of flexibility, as Bjarte explains – *"We are continually amazed at the level of flexibility this controller offers us."*

Bjarte Steen

Director

www.industrimarin.com



For more information about our products and solutions visit our web-page

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