

G & M Power Plant Ltd
MARINE GENERATORS



10kw – 1500kw

Hi-SPEC Acoustic Enclosures

A-SMART Control Panels





Contents

- 3-4 Company Overview & Capabilities
- 5 Marine Market Sectors
- 6-7 Full Design, Build and Aftersales Service
- 8 **A-SMART** Marine Control Panels
- 9 **Hi-SPEC** Marine Acoustic Enclosures
- 10-11 Reference Projects

Company Overview & Capabilities

Worldwide Pedigree

For over 70 years, G&M Power Plant has designed, manufactured, tested and supplied power generation equipment for marine, industrial and military applications throughout the world. This is supported by a unique capability to undertake systems engineering and to manufacture ancillary equipment and control systems.

Comprehensive Facilities

With unique design, manufacture and test facilities based in Suffolk, UK, G&M is self sufficient in:

- Mechanical and electrical design with 3D CAD facility
- Metal fabrication - fully coded welding staff
- Mechanical and electrical assembly
- Testing and inspection
- Painting and finishing
- Lloyds

Advanced Research & Development

G&M conducts a continuous research programme with an emphasis on the development of more advanced components, contributing to enhanced performance and reliability under the severest operational conditions.

Worldwide Aftersales & Spare Parts Service

We provide comprehensive spares provisioning and a continuing programme of in-service support, delivered through our team of service engineers who operate world-wide.

Outstanding Quality, Value and Technical Excellence

G&M's focus has been a commitment to quality, value for money engineering and technical excellence.

Customer Specific Solutions

G&M provides custom designed and individually manufactured solutions to meet our customer's requirements. G&M holds strategic relationships with most major engine and alternator manufacturers. We can offer customers the most cost-effective and technically compliant solution for their requirement. Power sources typically utilized include Caterpillar, Cummins, MAN, MTU, Perkins/Sabre, Scania and Volvo. These are engineered offering a choice of high quality alternators from market leaders such as Amco Marrelli, Mecc-Alte and Newage Stamford.

Strategic Partnerships

G&M sales and technical staff work with our prospective customers to refine their specifications ensuring operational objectives are achieved both efficiently and economically, whilst ensuring conformance with test and installation requirements.

Global Quality Accreditations

Comprehensive and consistent quality management systems are in place conforming to ISO9001: 2008 approved and certified by Lloyds for design, manufacture and servicing of generators.

Every generator is manufactured to exacting standards and fully load tested before dispatch to ensure the designed performance is attained.

G&M products can be built to conform to any required Commercial, Industrial, Marine, Environmental or Military standards and to meet the requirements of all the primary marine Classification Societies.



World Leader In Marine Generator Design

G&M Power Plant is an acknowledged world leader in the design and manufacture of marine diesel generating sets and controls for the provision of:

- Main Power.
- Ancillary Power.
- Emergency Power.
- Diesel Electric Propulsion.

G&M offers marine generators from 10kW to 1500kW in both standard form and to customer specific requirements.

Compact With Reduced Vibration

Close coupling of the engine and alternator on a single piece base rail ensures permanent alignment and reduced vibration. This results in compact dimensions and a high power to weight ratio, particular features of all G&M equipment. Our flexibility of choice across a wide range of engine manufacturers allows us to match the generator engines to those of the main propulsion system.

Comprehensive Solutions

Within the power range our customer base extends across the full range of marine operations, our skills being in particular demand where space and weight, noise or access are major considerations. We provide both main and auxiliary generators supported by specialist skills in emergency generator packages.

Our generator sets are designed to be heat exchanger, keel or radiator cooled depending on requirements.

Complex Marine Installations

- Individual and multiple set systems
- Choice of engine cooling options including remote radiator systems
- Internal acoustic enclosures
- Weatherproof / acoustic enclosures / containers
- Fire suppression systems (mist / gas)
- Gas retention / Fire dampers
- Vibration control and TVC analysis
- Control panels
- Synchronising / distribution switchboards
- Fuel management
- Reduction in exhaust gas emissions
- Motorised / gravity louvres for radiator cooled sets

Marine Market Sectors

Naval & Government / Military applications

G&M has a pedigree extending more than seventy years which has encompassed ship fits on over seventy warships and auxiliaries in service around the world. Expertise has been gained in main generator installations ranging from Offshore Patrol Vessels (OPV), Mine Counter Measure Vessels (MCMV), Fast Patrol Boats (FPB) and Fast Attack Craft (FAC) to Landing craft and auxiliaries. G&M were commissioned to design, supply and install the emergency generators for the UK Royal Navy's latest Type 45 Destroyer.

Refits & Upgrades

Particular expertise exists where power upgrades are required during ship life extensions or re-role. In this application our design expertise is used to produce a solution which meets the requirement to fit new, often larger, generators within the constraints of the original engine rooms and systems whilst still meeting shock and noise parameters.

Commercial

G&M Commercial Vessel expertise covers a wide range of applications each with their specialist requirements. These requirements are often unique, ranging from the particular space and weight constraints of hydrofoils and fast ferries to the specialist requirements of low noise and vibration of survey vessels and research ships to the high load, variable demands of support ships, dredgers and tugs.

Super & Mega Yachts

G&M is a market leader in supplying generators to the leisure boat industry with roots back to the early years of superyacht development. We have long experience of producing solutions to complex and demanding requirements. Recently G&M supplied the auxiliary and emergency power systems to a \$200m, 96 metre yacht.

Having been involved since the infancy of the market G&M is proud to have supplied many successful, reliable installations. Several of which serve the demanding needs of the charter yacht market. G&M expertise has developed alongside the increasing demands for both quality of finish and reduced noise and vibration in this ever more sophisticated arena.

G&M now concentrates on providing power solutions for class builds and custom made vessels over c.20m loa. As well as meeting the exacting standards of new build G&M's expertise is called upon to retrofit and upgrade original installations.



Full Design, Build and Aftersales Service

Main and Auxiliary Generators

G&M can:

- design and manufacture base frames in aluminium where weight is a prime consideration or stainless steel to resist corrosion.
- develop sophisticated anti-vibration techniques to minimize the transmission of vibration and noise.
- ensure that instrumentation and monitoring of the generating set is suitable for connection via a J1939 (CAN bus) to the remote monitoring system on the bridge.
- manufacture the best acoustic enclosures in the world. Subject to space and weight constraints we can supply generators which are virtually silent in operation.
- design and build using all available engine/alternator combinations. This gives G&M the ability to meet customer requirements for logistic commonality with main propulsion or fleet wide installations

Emergency Radiator Cooled Generating Sets

G&M manufactures radiator cooled emergency generating sets to any classification society requirement. These sets are also SOLAS compliant and thus stand alone. Typical builds can include:

- Integral base frame fuel tank
- Independent emergency starting facilities (Electric/Hydraulic/Mechanical)
- Automatic start under dead-ship conditions
- Sound attenuation if required
- Exhaust silencing / systems

Refit & Upgrade Capabilities

In addition to meeting the exacting standards of new builds G&M expertise is called upon to retrofit where original installations require a power upgrade, often within the same physical constraints, or replacement of unserviceable or obsolete equipment is required.

Apart from bringing our standard design attributes to the forefront our abilities to design and construct include:

- Termination of critical service functions above deck plate height for easier access and connection to existing services.
- Design and Provision of control, instrumentation and monitoring systems that will make the generating set suitable for connection and interface to the current or a replacement remote monitoring system in the MCR (Machinery Control Room) or bridge
- The design and manufacture of revised base frames together with suitable antivibration mounts and connections to ensure that the new generating set will be suitable for installation onto the existing beds and fit the ships existing systems

Other Applications

Independent radiator cooled marine generator configurations have also been provided for other applications. These include Oil Rig Support Barges working in riverine conditions and specialist applications such as one of the largest DC generator sets built for many years which is now powering dockyard equipment.

Marine & Industrial Hybrid Applications

Certain applications such as research facilities in universities or operations within areas of high seismic activity or dual frequency operation have unique requirements which draw on both Marine and Industrial generator technology. G&M is able to apply its broad range of skills and expertise within the Marine and Industrial sectors in these situations either aboard ship or land based.

Full Pre and In-Service Support

G&M Power Plant provides customers with a complete range of pre and in-service support. The range extends from the provision of initial pre-specification advisory services through installation and commissioning support to in-service maintenance and problem resolution. G&M inspection, installation and commissioning services include:

- Full factory testing on load
- Classification witnessing and Certification
- On-board installation inspection
- Full commissioning and sea trials
- Verification trials for classification conformance
- In Service support

d-SMART

Marine Control Panels

d-SMART is a comprehensive range of Generator Control and Monitoring Systems which employ the very latest in digital and communication technology.

The d-SMART Range is ideal for use with both Electronic Engine Management and more traditional 'hard wired' Engine Systems whilst also providing total control of Electronic or Mechanical Governor types.

With full capability for interfacing with CanBus enabled prime movers d-SMART offers unlimited potential for the control and monitoring of either single or multiple generator set installations in all applications. Our Customers may also specify other VFC or Redundancy Options for additional functionality including Ethernet Remote Telemetry.

d-SMART features Performance History logs, Fault Diagnoses, Intuitive Engine Interrogation, LCD Scrolling Screen displays and very much more, combining the best of available technology with the practicality of proven reliability.

Designed by the G & M Electrical Team, d-SMART is approved by the major Classification Societies and controls, monitors and reports on all the essential functions of a modern AC Generating Set and even provides DC Power to Electronic Governors to allow manual starting of Emergency Sets when no other electrical power source is available.

3 Versions are available:

- Standard
- Full Class Approved
- Class Compliant



Standard Marine Control Panel

Shutdowns

- Low oil pressure shutdown
- High engine temperature shutdown
- Emergency stop shutdown
- Over-speed shutdown
- Under-speed shutdown
- Multiple start failure

Alarms

- Low Lube oil pressure
- High engine temperature
- Charge Alternator failure
- Battery Under/Over Voltage

Displays

- Lube oil pressure and temperature
- Hours run clock
- RPM
- Mode of operation
- Status of engine/generator
- Alarm list
- Event timer

Controls

- Remote start/stop
- Access Switch

Other Standard Features

- Speed pick-up sensor is used for over-speed protection; this sensor monitors the engine speed and initiates an over-speed shutdown to protect the engine.
- One spare digital input available for customer requirement.
- One spare Normally Open output contact available for customer requirement.
- Potentially three analogue inputs (if CanBus/J1939 is used, if not then one analogue) available for customer requirement, this can be expanded.
- Full CanBus is available, which enables the use of CanBus/J1939 enabled engines management systems for monitoring purposes.
- RS232 port available (PC/MODEM Remote Controller)
- The standard system can be expanded

Hi-SPEC

Marine Acoustic Enclosures

G & M Hi-SPEC Acoustic Enclosures have long been recognised as market leading products of outstanding quality and sound attenuation performance.

Designed and crafted to individual Customer requirement G & M Acoustic Enclosures can be specified with sound levels from 65 dB(A) to as low as 55 dB(A) @ 1 metre for super critical performance.

Constructed from corrosion resistant and non-combustible materials and finished in a durable two pack Acrylic paint system, our Hi-SPEC

Our Hi-Spec Marine Enclosures typically feature -

- Super Soft Anti Resonant Mountings
- G & M's unique Easy Access Sliding Doors - (not lift off panels)
- Exterior connection points for Fuel, Sea Water, Battery and Exhaust services
- Heavy Duty AC Extraction Fan for optimum temperature control
- Automatic Fire Extinguishing System
- Local and Wheelhouse d-SMART Control and Mimic Panel arrangement

G & M does not have a 'standard' mass produced Acoustic Enclosure. The only standard feature we offer is high quality – everything else is optional. From a simple 40kW engine room installation to a Class Approved Deck Mounted Attenuated Container for a 500kW Emergency Set, all our Hi-SPEC enclosures are detailed by our G & M Design Team to suit individual applications thus ensuring smooth and reliable power generation whilst providing 'a quiet life' for our Clients.



High performance acoustic enclosure with sliding door

Compliance Standards

G&M Power Plant can design and manufacture generator sets which are able to meet all of the main Marine Classification Societies and when unclassified sets are built to conform with G&M's ISO9001: 2008 registration. Military applications are designed to the appropriate National or International standards or DEFSTAN, MILSPEC and NATO standards.

Apart from meeting Safety of Life at Sea (SOLAS) and International Maritime Organisation (IMO) (Tier 1&2) requirements G&M has experience and expertise of building testing and obtaining certification by the major Maritime Classification Societies:

ABS	American Bureau of Shipping
BV	Bureau Veritas
CCS	China Classification Society
DNV	Det Norske Veritas
GL	Germanischer Lloyd
HRS	Hellenic Register of Shipping
KRS	Korean Register of Shipping
LRS	Lloyds Register of Shipping
RINA	Italian Register of Shipping
RS	Russian Register of Shipping

Reference Projects

Naval and Government Vessels

Type of Vessel	Country of Origin	Generators (engine)
Fast Attack Craft x 5	Greece	3 x 250kW + 1 x 50kW (MTU)
Destroyers x 6	UK	1 x 245kW (Cummins)
Coast Guard Vessels x 14	Spain	2 x 35kW (Perkins)
Landing Craft x 21	UK	1 x 6.5kW (Deutz)
Off-Shore Patrol Vessels x 2	UK	3 x 280kW (Cummins)
Coast Guard Vessels x 5	Middle East	4 x 186kW (Scania)
Coast Guard Vessels x 12	Middle East	1 x 55kW (Perkins)
Coastguard x 4	Middle East	1 x 50kW (Perkins)

Commercial Vessels

Type of Vessel	Country of Origin	Generators (engine)
Hydrofoil x 8	Italy	2 x 60kW (Perkins Sabre)
Catamaran x 3	Italy	2 x 83kW (Perkins Sabre)
Research Vessel	UK / NATO	1 x 600kW (Cummins) *
Research Vessel	Germany	2 x 114kW (Perkins Sabre) *
Hi-speed Ferry x 5	UK	2 X 75kW (Caterpillar)
Oil pollution x 2	UK	2 x 20kW (Perkins)



Leisure Craft

Yachts	Country of Origin	Generators
96M	USA	3 x 500kW (MTU)
Re-fit 62M	USA	3 x 215kW (Scania)
37M	UK	2 x 68kW +1 x 46kW (Perkins)
30M	Italy	2 x 46kW (Perkins) *
57M	UK	2 x 169kW (MTU)
Conversion 73M	UK	1 x 400kW (Cummins) *
28M	Italy	2 x 45kW (Perkins) *
44M	Spain	2 x 50kW (Sabre)
60M	USA	1 x Rad Cooled (Cummins)
50M	USA	3x 220kW (Caterpillar)
75M	Italy	3 x 65kW (Cummins)

Commercial Vessels

Installation	Country of Origin	Generators
University	UK	1 x 11kW (Lister)
Torque Converter (Marinised)	Egypt	2 x 336 kW (Cummins)
River Barge x 1	Egypt	1 x 350 kW (Cummins)
River Barge x 2	Egypt	1 x 650 kW (Cummins)





G & M Power Plant Ltd
Magnet House, 31 Anson Road
Martlesham Heath IP5 3RG

T: +44 (0)1473 662777
F: +44 (0)1473 662776
E: sales@gmpp.co.uk

www.gmpp.co.uk