

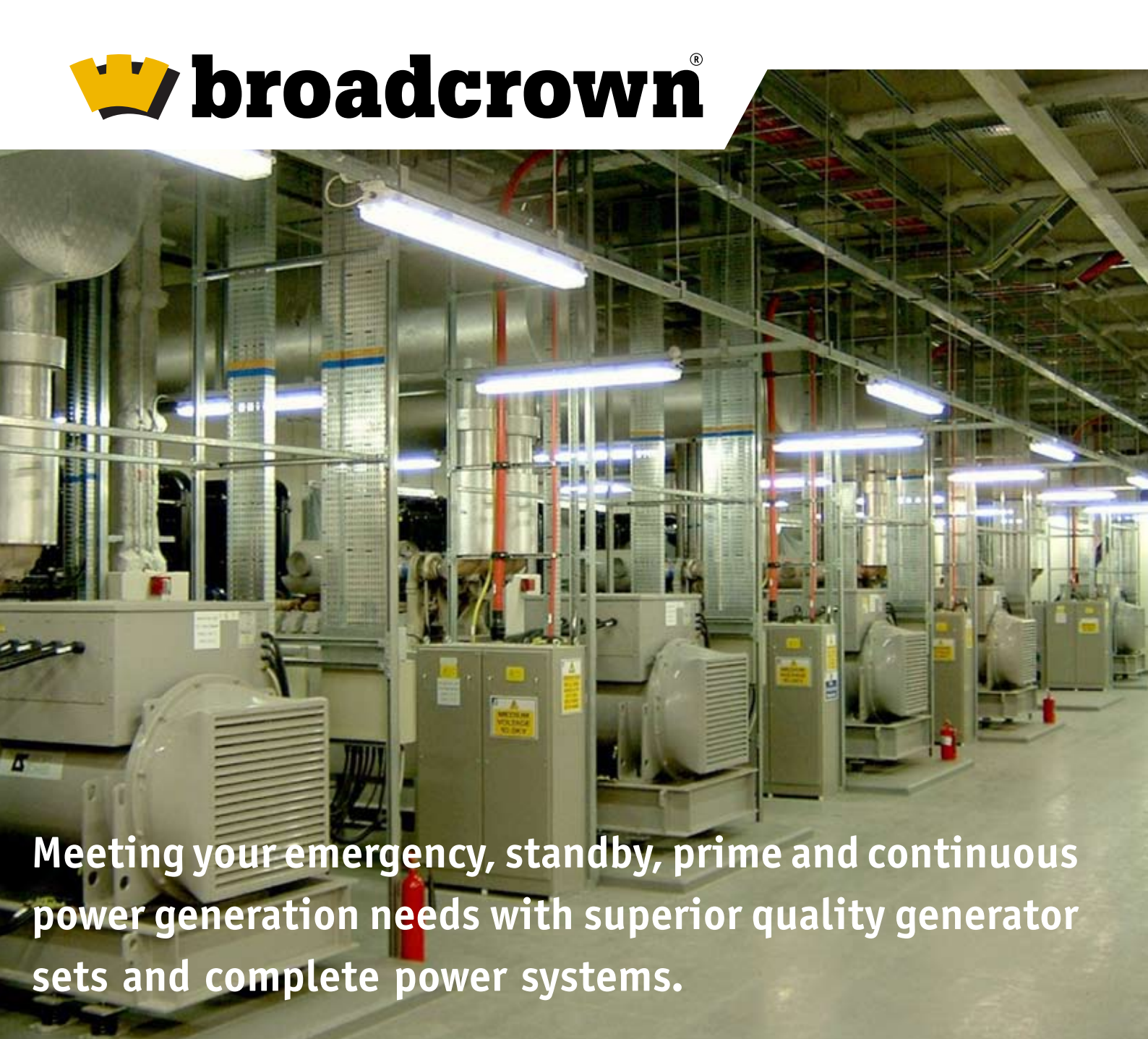


**broadcrown<sup>®</sup>**

leading world power

**Oil and Gas Solutions**

NOVEMBER 2010



Meeting your emergency, standby, prime and continuous power generation needs with superior quality generator sets and complete power systems.

Broadcrown is a **leading global manufacturer** of high quality generator sets and a provider of complete power generation systems.

We have **over 30 years experience** in power generation. We are trusted to deliver a wide range of standard and bespoke systems – from diesel generators to Uninterruptible Power Supplies (UPS) – plus turnkey power supply solutions, worldwide.

Broadcrown was one of the first power generation companies to be approved to **ISO 9001 standards** and quality drives every aspect of our business.

Our superior designs use **high quality components** throughout; not just in the generator sets but also the baseframes, canopies, containers and control panels.

Our full product range of single units extends from 6kVA to over 5MVA. All units can be combined to meet the requirements of larger projects for a broad range of applications delivering standby, prime or continuous power.

We will work with you to implement any **product modifications** that you may need specifically for your project.

Our generator set range includes:

- **Diesel and gas powered**
- **Trailer mounted, diesel powered**
- **Gas and co-generation**
- **Oil and gas**
- **Marine**
- **Medium speed**
- **Gas turbines**
- **Bespoke**
- **Rental**

We also provide a wide range of static and rotary Uninterruptible Power Supply (UPS) systems.



The Broadcrown oil and gas team operates from company headquarters in Hixon, England. Our specialist team includes sales and tendering staff as well as dedicated engineers in our engineering, design and project execution teams. The Hixon site facilities include specialist panel building, fabrication, a full packaging shop, large test centre and parts storage.



### ENGINEERING AND PROJECT EXECUTION

From your initial sales enquiry through to final plant hand over, our engineering teams are on hand to support our sales, tendering and project execution teams. Our mechanical and electrical design teams are staffed by experienced engineers providing you with a full software development capability and 3D modelling tool expertise. Our execution and support teams include expert project and installation engineers as well as a comprehensively-resourced document control and technical authoring facility.



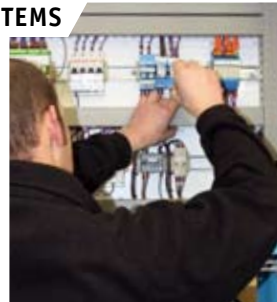
### FABRICATION AND PACKAGING

Our packaging is split between two facilities. Standard product is built at our Newtown factory while our larger bespoke packages are built at Hixon. Most of the fabrication work is carried out at our separate fabrication shop which is equipped with state of the art welding and machine tools which our qualified, coded welders and machinists use to manufacture structural skids, fuel tanks and pre-designed piping and ducting. We routinely carry out SMAW, GMAW and GTAW along with non-destructive testing and pressure testing of pipework and tanks. The fabrication is then either transferred to our packaging facility or to site for installation.



### CONTROL SYSTEMS

We design and produce in excess of 500 control panels per year starting from our basic BC7210 Autostart Panel through to complete PLC system control and monitoring, as well as load management and breakers. We build all Broadcrown control systems in our large dedicated control panel shop. We package LV switchgear and bespoke Bus systems. Panels and systems can be designed and built to comply with marine and hazardous area standards and can be specified up to IP66.



### TEST FACILITIES

We test all our packages before delivery either by following our standard factory test or using client specific string testing which can be witnessed. At our Hixon site, we have the capacity to test on three open generating sets to a maximum size of 11MVA using our purpose-built test facility. Our load equipment consists of resistive and reactive load banks which can be configured via various transformers for HV or LV. Our test capability includes gas fuel as well as diesel. For testing larger, modular type projects we have a large laydown area which is also in free field conditions making it ideal for noise testing.



Oil and Gas





# Broadcrown combines over thirty years of power generation experience with a commitment to high quality solutions making it the ultimate safe and reliable choice for demanding Oil & Gas applications, worldwide. We deliver prime and emergency power solutions for all onshore and offshore applications.

## **Prime Power**

Broadcrown designs, manufactures and supports solutions that deliver safe power with absolute reliability, every time. From durable medium speed, high speed diesel or gas turbine generator sets to full turnkey solutions incorporating custom-designed power solutions tailored to your specific requirements, you can trust Broadcrown to deliver.

We offer a comprehensive range of options which cover most if not all of your specific needs for all our high-quality generator packages in addition to highly effective acoustic packages and sophisticated but simple to use control panels.

All our power solutions are fully tested and commissioned before they are shipped to you and are backed by fast response expert service technicians and parts support via our worldwide dealer network.

## **Emergency Power**

Broadcrown's range of emergency power solutions is designed and manufactured to give you total peace of mind knowing that your operations are guaranteed an uninterrupted power supply, whatever happens.

Our generator sets include an exhaustive range of options suitable for the Oil & Gas industry including CACA/CACW, IP55, HV & LV generators, secondary start systems, exhaust gas coolers and spark arrestors, stainless steel fuel tanks, local and remote cooling systems and heavy duty air filtration systems.

## **Drilling**

Broadcrown provides a range of generator packages specifically designed for onshore and offshore drilling applications. The heavy-duty design is packaged to handle the most arduous and intense demands that go hand in hand with the drilling process. The packages can be configured with oversized low power factor generators typically used with SCR drives or can be configured to suit drive systems which utilise VSDs.

Broadcrown combines simple design and heavy-duty components, which minimise wear and tear, and along with 1200 rpm generators and engines provide lower operating costs.

## **Special Projects**

Broadcrown supply special power solutions for specific Oil & Gas requirements. We can provide generator sets that can run for extended periods between maintenance for applications such as normally unmanned installations (NUIs).

We have the experience to deliver generator sets which are adapted for operation within zoned areas and include features such as wet manifolds, gas coolers, flame protection on all intakes and outlets as well as special monitoring and protection systems. Our zoned area packages can include zoned area electrics and low mechanical skin temperatures.

Broadcrown's in-house design and engineering team can advise on and specify any special needs for extreme load applications. We can supply diesel generator sets with oversized generators for special motor-starting applications such as offshore electric-driven fire pumps and seawater lift pumps.



**Your path to success** At Broadcrown, we provide total solution engineering – delivering expert advice and dedicated resources at every point in your project’s lifecycle. We offer a dedicated engineer to work with you through all the development stages. From the broad



### 1. FEASIBILITY

Broadcrown assesses the technical, economical and operational possibilities. We evaluate the technical or commercial return versus investment benefits. We analyse your exact requirements and identify a 'best fit' solution.

- Application analysis
- Technical, operational and projected performance studies.

### 2. F.E.E.D.

During **Front End Engineering & Design**, we identify performance and equipment specifications and a programme schedule, with targets and cost estimates, providing you with a preliminary solution and design plan.

- Preliminary planning
- Equipment specification
- Programming schedule
- Budget costing

### 3. DETAILED DESIGN

Broadcrown offers definitive, detailed designs with full technical, material and component specifications.

- Mechanical, electrical and systems design
- Finalisation of component sourcing and scheduling

Preliminary Documentation

Preliminary Design

Technical Specifications

outline requirements, identified during feasibility, through to detailed design, production, installation and into the operational life of the package or system. All aspects of the process – financial, contractual and logistical – are controlled, scheduled and managed by us.

#### 4. E.P.C.

During the **Engineer, Procure & Construct** stage, we finalise all necessary engineering design and planning. A dedicated project management team will execute the package build and manage the documentation process.

- Procurement
- Project execution
- Construction
- Fabrication
- Package
- Testing
- Installation
- Commissioning
- Handover

Equipment delivered,  
installed and handed over

#### 5. OPERATION

Certification and handover is not the end of the Broadcrown service. Maintenance contracts can be set up and operational staff offered training programmes to ensure all systems are monitored and continue to operate at maximum efficiency.

- Testing
- Maintenance
- Training

Certification and  
Maintenance Contract

# 400kWe to 2418kWe generator sets

OIL & GAS RANGE 50Hz

3 PHASE										
Genset Model	Engine Manufacturer	Prime Continuous Rating		Engine Specifications					Alternator Model	Open Set Version Dimensions Length x Width x Height (mm)
		kWe	kVA	Engine Model	MCS Ap	Emissions	Cylinder Arrangement	Cubic Capacity (litres)		
BC-PET 400-50	Cummins	400	500	QSK 15	N	EPA	6 In Line	15.0	Leroy Somer / ABB	3410 x 1150 x 2110
BC-PET 600-50	MTU	630	787	12V 2000	Y	IMO/TA Luft	12 Vee	23.9	Leroy Somer / ABB	4160 x 1600 x 2115
BC-PET 800-50	MTU	820	1025	16V 2000	Y	IMO/TA Luft	16 Vee	34.8	Leroy Somer / ABB	4500 x 1690 x 2240
BC-PET 900-50	Cummins	908	1135	QSK 38	Y	IMO/EPA	12 Vee	38.0	Leroy Somer / ABB	4400 x 1850 x 2520
BC-PET 1050-50	Cummins	1063	1328	QSK 50	Y	IMO/EPA	16 Vee	50.0	Leroy Somer / ABB	5620 x 2045 x 2440
BC-PET 1350-50	Cummins	1365	1706	QSK 60	Y	IMO/EPA	16 Vee	60.2	Leroy Somer / ABB	6000 x 2325 x 3240
BC-PET 1450-50	MTU	1463	1828	12V 4000	Y	IMO/TA Luft	12 Vee	57.2	Leroy Somer / ABB	5260 x 2310 x 3220
BC-PET 1650-50	MTU	1672	2090	16V 4000	N	TA Luft	16 Vee	76.3	Leroy Somer / ABB	6080 x 2310 x 3220
BC-PET 1800-50	MTU	1821	2276	16V 4000	Y	IMO/TA Luft	16 Vee	76.3	Leroy Somer / ABB	6080 x 2310 x 3220
BC-PET 2000-50	MTU	2042	2552	20V 4000	N	TA Luft	20 Vee	95.4	Leroy Somer / ABB	6920 x 2360 x 3200
BC-PET 2400-50	MTU	2418	3022	20V 4000	Y	IMO/TA Luft	20 Vee	95.4	Leroy Somer / ABB	6921 x 2360 x 3200

# 503kWe to 2573kWe generator sets

OIL & GAS RANGE 60Hz

3 PHASE										
Genset Model	Engine Manufacturer	Prime Continuous Rating		Engine Specifications					Alternator Model	Open Set Version Dimensions Length x Width x Height (mm)
		kWe	kVA	Engine Model	MCS Ap	Emissions	Cylinder Arrangement	Cubic Capacity (litres)		
BC-PET 500-60	Cummins	503	628	QSK 19	Y	IMO/EPA	6 In Line	19.0	Leroy Somer / ABB	3740 x 1390 x 2050
BC-PET 700-60	MTU	728	910	12V 2000	Y	IMO/EPA	12 Vee	23.9	Leroy Somer / ABB	4160 x 1600 x 2115
BC-PET 900-60	MTU	912	1140	16V 2000	Y	IMO/EPA	16 Vee	34.8	Leroy Somer / ABB	4500 x 1690 x 2240
BC-PET 950-60	Cummins	965	1205	QSK 38	Y	IMO/EPA	12 Vee	38.0	Leroy Somer / ABB	4400 x 1850 x 2520
BC-PET 1050-60	MTU	1060	1325	18V 2000	N	EPA	18 Vee	35.8	Leroy Somer / ABB	4770 x 2130 x 2490
BC-PET 1250-60	Cummins	1275	1593	QSK 50	Y	IMO/EPA	16 Vee	50.0	Leroy Somer / ABB	5620 x 2045 x 2440
BC-PET 1600-60	MTU	1609	2011	12V 4000	Y	IMO/EPA	12 Vee	57.2	Leroy Somer / ABB	5260 x 2310 x 3220
BC-PET1650-60	Cummins	1660	2075	QSK 60	Y	IMO/EPA	16 Vee	60.2	Leroy Somer / ABB	6000 x 2325 x 3240
BC-PET 2100-60	MTU	2120	2650	16V 4000	Y	IMO/EPA	16 Vee	76.3	Leroy Somer / ABB	6080 x 2310 x 3220
BC-PET 2500-60	MTU	2573	3216	20V 4000	Y	IMO/EPA	20 Vee	95.4	Leroy Somer / ABB	6920 x 2360 x 3200

## RATING DEFINITIONS

### Prime Power (PRP)

These ratings are suitable for continuous operation in a variable load application. There is no limitation to the annual hours of operation. A 10% overload is available for 1 hour in every 12 hours of operation (See relevant data sheet for details).

## STANDARD REFERENCE CONDITIONS

Output ratings are based on gensets operating at: 25°C (77°F) air inlet temperature, 100kPa barometric pressure [100m (328ft) altitude] and 30% relative humidity. For de-rating, please consult Broadcrown Oil and Gas Department.

## NOTES

1. All data in accordance with ISO3046, DIN6271, ISO8528 standards. Other voltages available, please refer to Data Sheet or consult Broadcrown Oil and Gas Department. Specifications and design subject to change without notice.
2. All 3 phase ratings are at 0.8 Power Factor.
3. If IMO or MCS certification required derates may apply. Please contact Broadcrown Oil and Gas Department.

For updates refer to our website, [www.broadcrown.com](http://www.broadcrown.com)



# Specifications and Options

Broadcrown offers a comprehensive range of mechanical and electrical options for all generator sets. We will work with you to get precisely the right power solution for your needs.

The table below shows the main specifications for petroleum standard generator sets and the options available.

## Power Management and Load Transfer Panels

We can provide bespoke power management systems as well as a range of automatic load transfer panels. These incorporate either 3 pole or 4 pole electrically and mechanically interlocked contactors or circuit breakers (from 25 amps to 6300 amps) which are CE or UL Compliant.

## Special requirements

If you do not see exactly what you want, contact our sales department or local regional sales office. We can meet special requirements such as:

- Generator sets in excess of 3300kVA prime power
- Multi-set installations
- HV generation
- Stringent noise levels
- Special acoustic enclosure design
- Alternative engine and alternator combinations

Specifications and Options		Model Designation	
		Non-MCS/IMO Compliant	IMO/MCS Compliant
<b>On engine</b>	Sump first fill of Fluids	○	○
	Manual lub oil drain pump	○	○
	Medium Duty air filter	●	●
	Heavy Duty air filter	○	○
	Air Inlet Shutoff	●	●
	Stainless Steel Air Inlet Housing and Duct	○	○
	Duplex Lube oil filter	○	●
	Lube Oil Heater	○	○
	Explosion relief Valve	▼	▼
	Automatic lub oil refill system	○	○
<b>Fuel</b>	Duplex Fuel filter and water separator	●	●
	Integral single skin fuel tank within baseframe	○	○
	Flexible fuel feed and return lines	●	●
	Baseframe with integral bund (without fuel tank)	○	○
	Baseframe with integral bund and drop in fuel tank	○	○
	SS braided flexis	○	○
	12/24hr Fuel Tank mild steel	○	○
	12/24hr Fuel Tank stainless steel	○	○
	Fuel Cooler	●	●
	Fire Wire type shut off	○	○
	Stainless Steel Fuel Pipework	○	○
	Smart/HART Transmitter	○	○
	Sight Gauge with Switches	○	○
	Manual fuel transfer pump	○	○
<b>Cooling</b>	Marine Environment Radiator	○	○
	Engine/ Belt driven radiator	●	●
	Fan Guards	●	●
	Remote Horizontal radiator	○	○
	IP56 Radiator Motors ATEX / Zone 2	○	○
	Heat Exchanger Cooling	○	○
	Jacket Water Heaters	●	●
	Coolant drain valve	●	●
	Coolant Drain Extended To Edge Of Baseframe.	○	○
	First Fill Of Coolant/Antifreeze	○	○
	Low level vent and fill pipework	○	○
	Low level manual fill pump	○	○
<b>Exhaust</b>	85@1 SS316 Spark Arrestor	●	●
	Critical reduction silencer upgrade	○	○
	Rain Flap	○	○
	Exhaust Lagging	○	○
	Turbo / Manifold Guards	●	●
	Flexible bellows supplied loose	●	●
	Set of connection flanges for silencer/bellows	●	●
<b>Start System</b>	24VDC electric start system inc H/D Lead Acid Batteries	●	●
	Battery charging alternator	●	●
	Duplex Battery With change over contactors	○	○
	100% Redundant Battery sys (two starters)	○	○
	Upgrade Lead acid Batteries to NiCads(per set)	○	○
	Secondary Air Start (ASME VIII)	○	○
	Secondary Hyd Start (ASME VIII)	○	○
	Dual Batt Charger Panel	○	○

Specifications and Options		Model Designation	
		Non-MCS/IMO Compliant	IMO/MCS Compliant
<b>Alternator</b>	Two bearing alternator	●	●
	Class F insulation system and Class B temperature rise	●	●
	IP23 Protection	●	●
	Digital Automatic Voltage Regulator	●	●
	PMG excitation	●	●
	IP55 CACA	○	○
	IP55 CACW	○	○
	Segragated Terminal Box	●	●
	Extra terminal box	○	○
	PT100s	●	●
	Vibration Sensing	○	○
<b>Control &amp; Power</b>	Dual AVR with bumpless transfer	○	○
	Marine Winding Protection	●	●
	Anti condensation heater	●	●
	Quadrature droop kit	○	○
	Output 3 pole circuit breaker	○	○
	Local Panel	●	●
	Remote Panel	○	○
	IP56 Panel Upgrade	○	○
	Siemens / Allen Bradley PLC	○	○
	Multilin Protection Relay	○	○
Synch & Loadshare	○	○	
<b>Enclosure</b>	Eng mechanical Gauge Panel	○	○
	Laptop & Software	○	○
	IP23 Weatherproof Enclosure	○	○
	IP55 Enclosure	○	○
<b>General</b>	Fire Rated A/H Enclosure	○	○
	MCS Cerification	■	▼
	Emmissions Certification	●	●
	Structural steel baseframe	●	●
	Built in anti-vibration mountings	●	●
	3 point mount and Base	○	○
	Crane lifting points	●	●
	Operation and maintenance manual	●	●
	Operation and maintenance manual (additional copies)	○	○
	Standard colour (black/yellow)	●	●
	Marine 3 Pack Paint	○	○
	Lifting Certification	○	○
	Spreader Beam	○	○
	Hazardous Area Electrics	○	○
	All Tie ins Ansi B16 Flanges	○	○
	Full Docs Package	○	○
	Winterisation Pack	○	○
	Coupling	●	●
Coupling TVA	●	●	
Standard Broadcrown FAT Test	●	●	
Extended client specified FAT witnessed	○	○	

- Standard Equipment
- Available as an option
- ▼ Model Dependent (refer to Broadcrown Sales Department)



## Service & Support

Every package is supplied with a world class warranty and comes with fast, 'round the clock' support from your local Broadcrown dealer.



**With our global network of local offices and dealers, service and support from Broadcrown is always close at hand to help minimise downtime and keep your equipment in service.**

Our dedicated service engineering team offers a full package to help you manage your 'through life' costs, including:

- Single point of contact
- Full aftersales and technical support
- Remote Operation & Monitoring 24 hours per day 365 days a year
- Complete service packages with extended warranties tailored to suit your needs
- Package rehabilitation and rebuild service
- Fluid and oil sampling
- Onsite and offsite load testing, inspection & site surveys
- Fully qualified and experienced offshore certified engineers

Broadcrown's full operation and maintenance contracts can be configured for up to 20 years. These can be particularly helpful when operating on base load power for planning 'through life' costs.

Our Hixon production facility has a specific area dedicated to rebuild and maintenance of customer equipment. Once the work has been carried out, the package is transferred to our purpose-built test house which has three test bays capable of handling packages up to 4MW each with resistive and reactive load facility.

### Parts

All parts can be supplied from our fully-stocked warehouse or can be ordered and shipped within 24 hrs. Parts can be provided on an ad hoc basis or as part of a frame agreement which spans the life of the equipment.

Broadcrown is brand independent. That means we not only offer our service and parts supply for Broadcrown packaged equipment but are happy to extend our service to any other diesel driven equipment at site, offering a total site service contract for equipment at competitive rates.

We also offer tailored training modules, at site or at our UK Group Headquarters, covering all elements of the package. Our trainers have in depth knowledge of all aspects from the mechanical driver through to the full electrical system and switchgear including PLC and software configuration.



**Broadcrown** is independently owned and managed. When you contact us you are talking to friendly people who will work with you to meet your specific needs.

**Our generator set range includes:**

- Diesel and gas powered
- Trailer mounted, diesel powered
- Gas and co-generation
- Oil and gas
- Marine
- Medium speed
- Gas turbines
- Bespoke
- Rental

We also provide a wide range of static and rotary Uninterruptible Power Supply (UPS) systems.

**Production Facilities**

All Broadcrown products are designed and manufactured in our purpose-built factories at our corporate headquarters in Hixon, England and in Newtown, Wales.

Brochures are available for all our products and services on our website, [www.broadcrown.com](http://www.broadcrown.com)



# **broadcrown**<sup>®</sup> leading world power

#### GROUP HEADQUARTERS

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#### INTERNATIONAL NETWORK

Our growing international network of distributors backed by the Broadcrown Regional Support Centres of Miami, Singapore, Nigeria, South Africa, India and China, provides worldwide product availability and after sales support including training.

#### **Broadcrown (China) Ltd**

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**[www.broadcrown.com](http://www.broadcrown.com)**