Power Generation
PowerCare® Support Plan

Generator Maintenance | Service Agreements
Control Systems Upgrade | Switchgear | Parts | Consumables


Cummins
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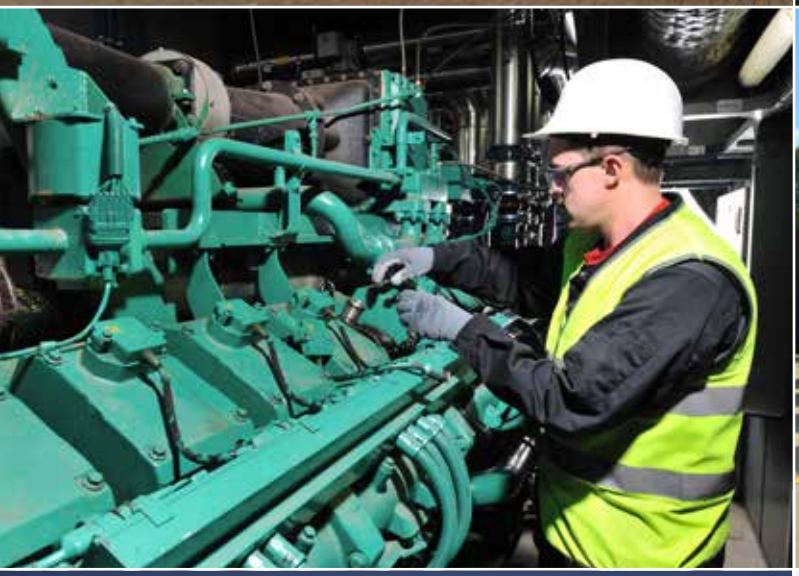


About Cummins

Cummins Inc., a global power leader, is a corporation of complementary business units that design, manufacture, distribute and service engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems.

Cummins is the world's largest independent manufacturer of diesel engines. With global manufacturing and support, Cummins serves thousands of customers around the world, and powers more types of equipment in more markets than any other engine company.

Headquartered in Columbus, Indiana (USA), Cummins employs approximately 54,600 people worldwide and serves customers in approximately 190 countries and territories through a network of more than 600 company owned and independent distributor locations and approximately 7,200 dealer locations. Cummins built over 1 million engines in 2014.

Cummins Distribution Europe

Cummins has strong distribution across Europe, providing new equipment sales and full aftermarket support across its product range of engines and gensets for a wide range of applications and market segments. This includes the provision of service, repairs and maintenance, and the supply of parts and engine consumables.

Product Range

Our product range includes diesel powered generating sets and Generator-Drive (G-Drive) engines from 17kVA to 3750kVA single or three phase, low or medium voltage and into a wide range of applications.

Aftermarket Support

Cummins provides comprehensive on-site support on all generators across Europe. This includes maintenance (scheduled and non-scheduled), general servicing (all makes and models of generator supported), 24 / 7 service and repair (contracted customers), parts and consumables, customer service contracts and new equipment sales.

Cummins PowerCare® Plan

Ensure power is always there when you need it with the Cummins PowerCare Plan. Our service experts continually monitor and maintain your equipment through a comprehensive maintenance schedule which keeps your generator in peak working condition. We are always available to provide the level of service support you need.

Choose from one of four PowerCare Plan options to give your equipment the highest possible service care and maintenance cover, giving you total peace of mind.

Cummins PowerCare Support Plan Overview

Cummins will perform an initial site survey, which will enable us to fully evaluate your generator and ensure that we offer you the correct service plan to suit your business needs. The survey will cover the following.

- Initial assessment of set condition
- Set type and serial number
- Set location on site
- Site specific HSE, PPE and permit requirements
- Accessability to and from the set and parking requirements
- Set usage (Standby, Continuous, Prime Power / Peak Lop), etc.
- Any other site specific factors we need to be aware of

These products from Cummins Distribution Europe are focused on providing maintenance managers with an effective, high quality condition monitoring and scheduled maintenance service.

We offer a fixed price menu of service giving our customer the opportunity of not only ensuring that their generator set is working to its potential, but also that faults are identified and corrected before they develop into component failures, which are costly and time consuming to repair. This is achieved by the inclusion in all our products of PowerCare critical function monitoring plus oil analysis.

Critical Functions Monitored by PowerCare

Much like a human body, today's engines have critical systems that need monitoring to maintain their health. These include the lubrication, coolant, fuel, air and management control systems. PowerCare measures the trends and vital signs of these systems, frequently monitoring for faults or other areas requiring additional attention.

The Cummins PowerCare report highlights any component changes we recommend and gives guidance on the optimum time to action possible faults and maximise uptime.

Cummins PowerCare Plan Benefits

- Total support - when you need it giving you total peace of mind
- Confidence that your generator will start when you need it
- Highest standards of maintenance and quality assurance
- Fixed price plan - no hidden extras
- Cummins renowned product
- Scheduled servicing provides validation of warranty coverage
- Cost-effective solution
- Cummins trained engineers providing specialist expertise
- Maximise uptime and save costs
- Total added value package

PowerCare Plan Summary

PowerCare Plan Options Menu

Description	PowerCare Standard	PowerCare Extra	PowerCare Premium	PowerCare Premium +
Frequency	**Annual**	**Biannual**	**Quarterly**	**Quarterly**
Routine inspection and report *(see details in Appendix 1 below)*	✓	✓	✓	✓
Critical functions monitored *(see details in Appendix 2 below)*	✓	✓	✓	✓
Diagnostic analysis and recommendation reports	✓	✓	✓	✓
Fixed price - no hidden costs	✓	✓	✓	✓
All work undertaken by highly trained and equipped technicians	✓	✓	✓	✓
Transport and travel expenses included on scheduled visits	✓	✓	✓	✓
Scheduled maintenance visits to meet your service requirements	✓	✓	✓	✓
Out of hours call out facility	◆	✓	✓	✓
Oil sampling for laboratory analysis with documented results	◆	Annual	Annual	Biannual
Oil and filter change to meet your needs	◆	◆	Annual	Annual
Fuel sampling for laboratory analysis with documented results	◆	◆	Annual	Annual
Load bank test including documented report	◆	◆	◆	Annual

◆ Optional

Appendix 1

Routine Inspection and Report

Engine section

- Air filter inspect and clean
- Oil, coolant and fuel level check and advise
- Intake and exhaust system check
- Fuel, coolant and oil pipe work check
- V-belt tension and condition check
- Battery electrolyte level and hydrometer check
- Static battery charge check
- Functional control panel test (offline)
- Radiator matrix check and advise
- Coolant testing DCA/SCA content and freeze point

Alternator section

- AVR check
- AVR performance check off load
- Condition of load cabling and windings check

Appendix 2

Critical Functions Monitored

Control section

- Alarm history check (dependant on control system)
- Circuit breaker inspect and check inc overload
- Switches and MCB check
- Indication lamps and sounder function check
- Relays and bases check
- Timing devices check
- Control wiring inspection check
- Engine protection test

Ancillaries check

- Block heater check
- Battery charger check
- Louvres and fans check

PowerCare Support Plan - Optional Extras

Additional Options Available

The following additional options are available with each PowerCare plan

Standby Application

- Load bank test including documented results
- Site load test attendance including documented results
- Battery discharge test
- Annual overhead adjustment and set
- Visits can be undertaken out of office hours

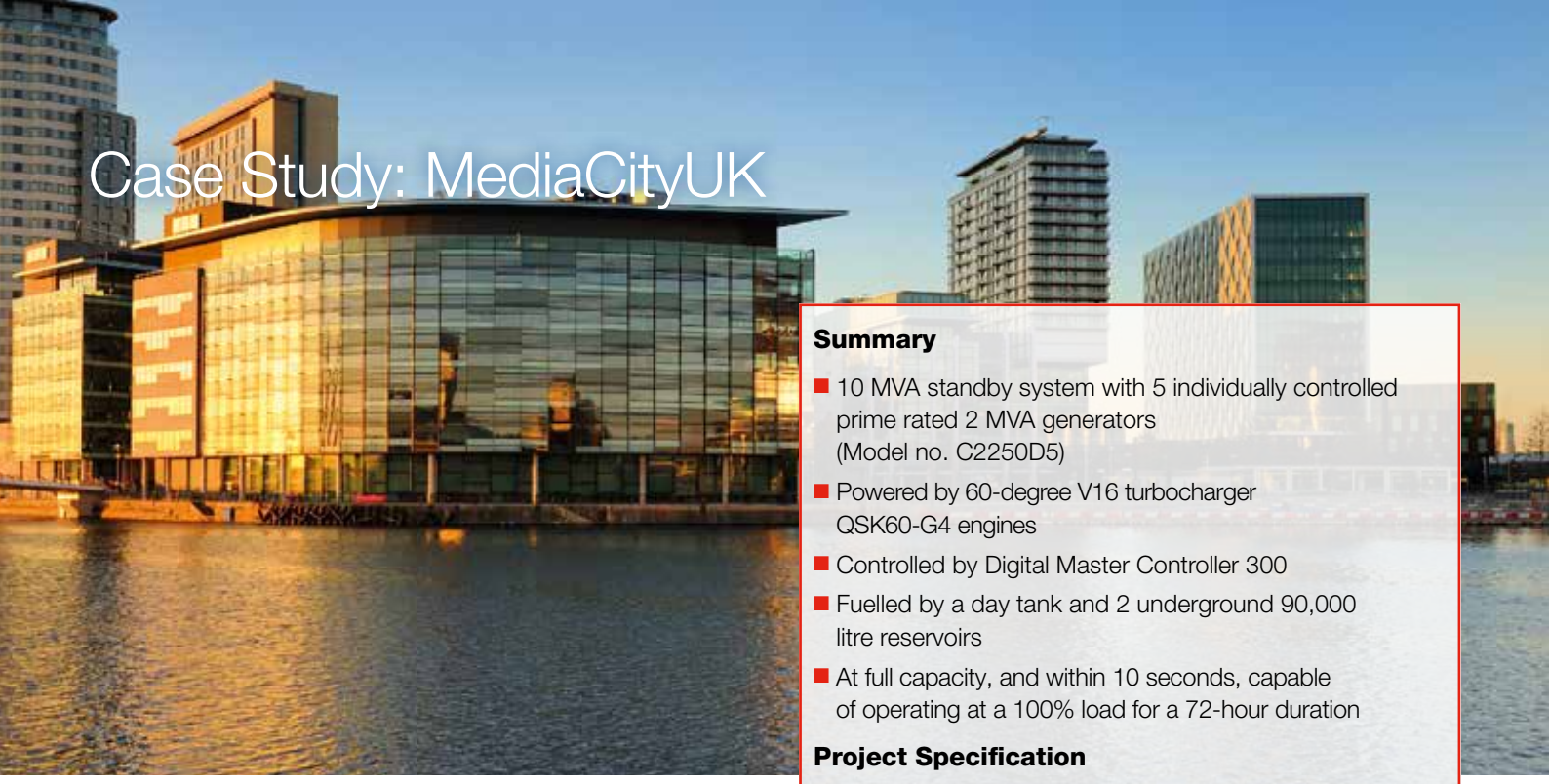
Prime / Continuous

- Battery discharge test
- Annual overhead adjustment and set
- Visits can be undertaken out of office hours
- Oil and filter service every 250 hours
- Fuel sampling for laboratory analysis
- Annual radiator steam clean

Optional Extras Benefits

- Genuine Cummins Filtration Filters and Valvoline Premium Blue Oil will be used
- Engineers attendance while site load testing is being carried out, load results from generator will be recorded
- Resistive load bank test will be carried out with load results will be recorded and documented
- If set runs regular we will include an annual overhead engine set
- Battery discharge test will fully test the starting capacity and condition of the set batteries
- Visits can be undertaken out of normal hours to suit your site requirements
- Cummins recommends 2 year or 250 hour service interval, this can be incorporated and worked round your site requirements
- If working in a harsh environment regular cleaning will aid in cooling and performance

Case Study: MediaCityUK



Summary

- 10 MVA standby system with 5 individually controlled prime rated 2 MVA generators (Model no. C2250D5)
- Powered by 60-degree V16 turbocharger QSK60-G4 engines
- Controlled by Digital Master Controller 300
- Fuelled by a day tank and 2 underground 90,000 litre reservoirs
- At full capacity, and within 10 seconds, capable of operating at a 100% load for a 72-hour duration

Project Specification

- 5 x C2250D5 diesel generators at 6.6kv
- 1 x Digital Master Control System with hot standby and two outstations
- 1 x NER with 5 connectors
- 2 x combined inlets with 5 individual discharging outlets attenuators to give 64dB(A)@1m
- 5 x day tanks and two bulk tanks with transfer system

The BBC has commissioned Cummins Power Generation for emergency standby power to support its critical business systems in the event of a utility outage at the MediaCityUK complex in Salford Quays, Lancashire.

The fully-integrated 10 MVA standby system, which comprises five individually controlled C2250 D5 generator sets, is being installed to support the Corporation's major five-division relocation from its headquarters in White City to the purpose built media hub in Greater Manchester, as part of a £500 million investment plan. It comprises, amongst others, the switch of over 2,500 staff, coupled with the relocation of Radio 5 Live, BBC Sport, and the renowned BBC Philharmonic Orchestra.

The Cummins power generation equipment has been sourced to safeguard against any interruptions to some of the most watched and listened to programmes across the globe. Cummins' exceptional reputation for reliability and providing high quality standby systems was central to the decision making process.

Situated in two adjacent plant rooms on the ground level, the 2250 kVA C2250 D5 generator sets at Salford Quays are powered by an individual Cummins' 60-degree V16 turbocharged QSK60-G4 engine. All are fuelled by a day tank and two underground 90,000 litre reservoirs which have been fitted with a double knock safety system for added safety and to prevent and minimise spillages.

Each of the units features a controller capable of being able to operate independently from one another. However, when linked to the PowerCommand Digital Master Control (DMC), this will enable the rapid paralleling of the mains supply and generator sets, load management, and the recording of date on critical items. The attenuated inlet and discharge-cooling package also helps to reduce the exterior noise from the plant rooms at a one metre distance from 100 to around 65dBA.

In the event of a power outage, the first generator will be primed to supply backup energy to essential business systems automatically within a period of 15 seconds from receipt of a start signal, preventing any disruption to the BBC's on-air or offline activities. The whole 6.6 kV ring, therefore, will in turn be energised, whilst the remaining four sets are synchronising with the former. Once at full capacity, and within 20 to 30 seconds, the structure will be capable of operating at a 100 per cent load for a 72 hour duration. Furthermore, the digital master control incorporates a "hot PLC standby system", designed to eliminate a complete failure in the event of a problem with the primary PLC.

The PowerCommand DMC and switchgear that have been installed, require the generator sets to be tested on load in parallel with the mains supply on a fortnightly basis. This is to ensure continued reliability and the sustained backup of business systems within the BBC's northern broadcasting centre.

Digital Master Controllers

PowerCommand® Digital Master Controllers are designed and manufactured around standardised control blocks - delivering increased reliability, flexibility and performance.

Our Digital Master Controllers (DMC) provide seamless interface between the generator, PowerCommand® Controller (PCC), the site switchgear and distribution systems.

Furthermore, the DMC is a fully automatic controller suitable for unattended applications. DMCs are configurable for use in many power systems architectures, including isolated bus paralleling and infinite bus (utility) applications.

DMCs include utility paralleling functions for peak-shaving and base loading and have a broad range of operational diagnostic functions. These greatly enhance systems reliability as well as easy to use operator panel and LED annunciators.

DMC8000

The DMC8000 is a system level controller designed to interface directly with Cummins Power Generation PowerCommand® paralleling generator sets. The DMC8000, in conjunction with PowerCommand® genset controls, is a fully automatic, distributed logic controller suitable for unattended applications, which allows for a simpler and more reliable installation.

The control system is capable of controlling many power system architectures, including Isolated Bus, Common Bus, Transfer Pair, Multiple Transfer Pair, Redundant PLCs, Redundant I/O and Remote Screens.

The system is capable of various types of power transfer modes like open transition, 100ms closed transition, and ramping closed transition.

- Utility paralleling functions for peak-shaving and base load operations
- A range of operational diagnostic functions to greatly enhance system reliability
- Easy-to-use, full-function resistive touch screen with multiple levels of operator access to ensure secure control

Technical Upgrades:

Cummins helps companies upgrade their generator systems to meet current regulations. Cummins upgrades Digital Master Controllers (DMC) for a number of customers, enabling them to export power back to the grid.

- DMC200 / DMC300 to DMC8000
- Performing software and hardware updates

Please contact us for a comprehensive quote to meet your individual needs.

Automatic Transfer Switches

PowerCommand automatic transfer switches optimise performance and simplify operation and service.

Direct connection with the generator set controller offers more reliable and smoother communication with the entire system.

GTEC series transfer switches, covering the range 40 - 2000 amps - provide normal and generator set source monitoring, generator set starting, and load transfer functions for emergency, standby and optional standby applications.

GTEC transfer switches are continuously rated, so they can be applied in applications up to their nameplate rating. The transfer switch power contacts are silver alloy composition with high-pressure design that can withstand thousands of switching cycles without burning, pitting or welding. They require no routine contact maintenance and provide 100% continuous current ratings.

The transfer switch control is reliable and easy to understand, utilising LED lamps for status indications, and push-button controls for operator functions. The control is field-programmable without the use of service tools.

Microprocessor control

Fully-featured microprocessor control is standard with all settings and adjustments designed for easy operator use via the front display panel.

Operating modes

Open transition with programmed transition (adjustable 0-10 seconds); open transition with sync-check monitor and programmed-transition backup; exercise mode; and test mode.

Manual operation handle (standard)

Allows manual operation of the switch after proper disconnection of power sources.

Easy service/access

Door-mounted controls, ample access space and compatible terminal markings allow for easy access.

Positive interlocking

Mechanical interlocking prevents source to source connection through the power contacts.

Solenoid

A powerful and economical solenoid power GTEC transfer switches.

Advanced transfer switch mechanism

True transfer switch mechanism with break-before-make action.

Continuously rated

Can be used in applications up to their nameplate rating.

Main contacts

Long-life, high-pressure silver alloy contacts withstand thousands of switching cycles without burning, pitting or welding and provide 100% continuous current ratings.

PCC3100 to PC3.3 Upgrade Kit

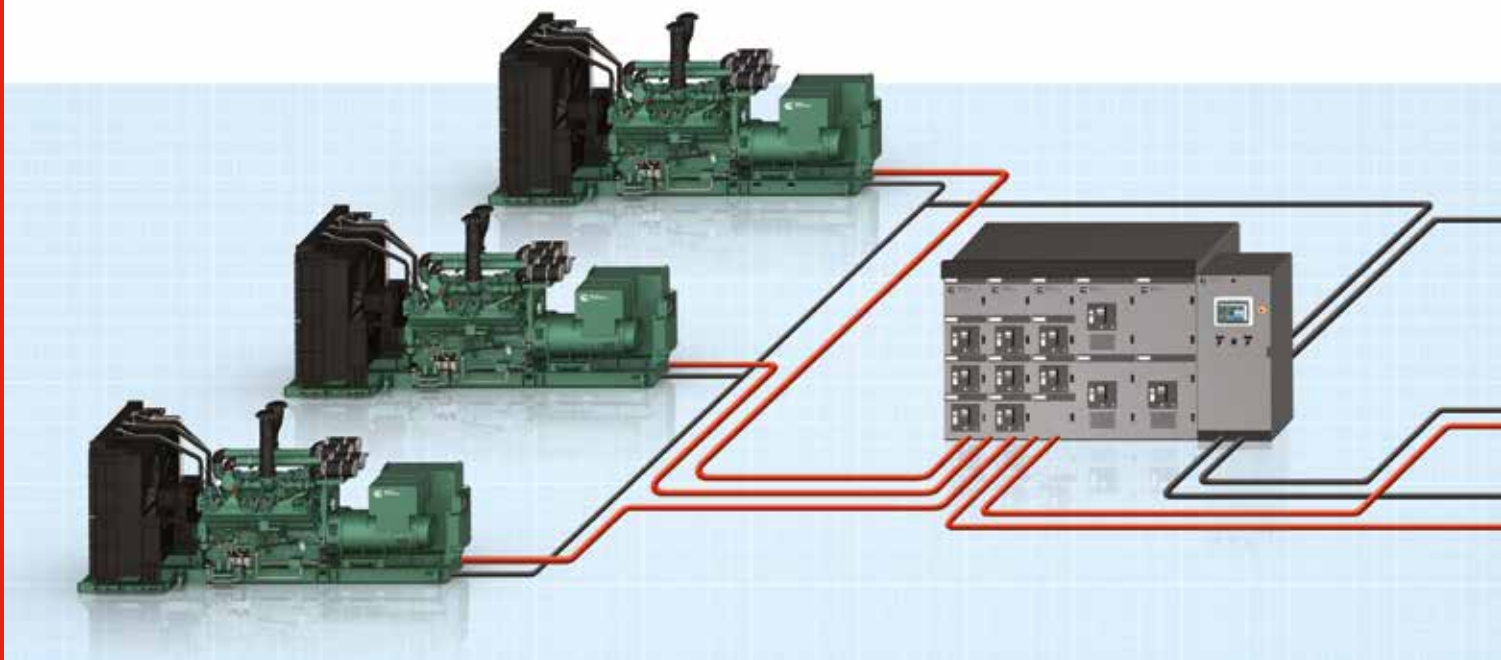
Description

The PowerCommand® control system is a microprocessor based generator monitoring, metering and control system designed to meet the demands of today's engine driven generator sets. The integration of all control functions into a single control system provides enhanced reliability and performance compared to conventional generator control systems. The PowerCommand control systems have been designed and tested to withstand the harsh environment typical of generator set installations.

The PowerCommand 3.3 control is compatible with shunt or PMG excitation style alternator. It is suitable for use with reconnectable or non-reconnectable generators, and it can be configured for any frequency, voltage and power connection from 120-600 VAC line-to-line or 601-45,000 VAC with external suitable transformer.

Features

- 320x240 pixel LED backlit LCD display with bar graph
- Digital engine-speed governing, voltage regulation, synchronising and load sharing
- AmpSentry™ alternator overcurrent protection
- Analog and digital AC bus metering
- Digital power transfer control for open, closed or soft (ramping) load transfer
- Digital frequency synchronisation and voltage matching
- Isochronous load share
- Droop kW and kVAR control
- Real-time clock for fault and event time stamping
- User-programmable exerciser clock
- Modbus RTU communication interface
- Ability to configure the control through the HMI
- Ability to expand I/Os using optional modules
- 12V and 24V DC battery operation
- Suitable for gensets that are designed, manufactured, tested and certified to relevant UL, CSA, NFPA, IEC and CE standards



PC3.3 to PC3.3 Masterless Load Demand (MLD) Upgrade Kit

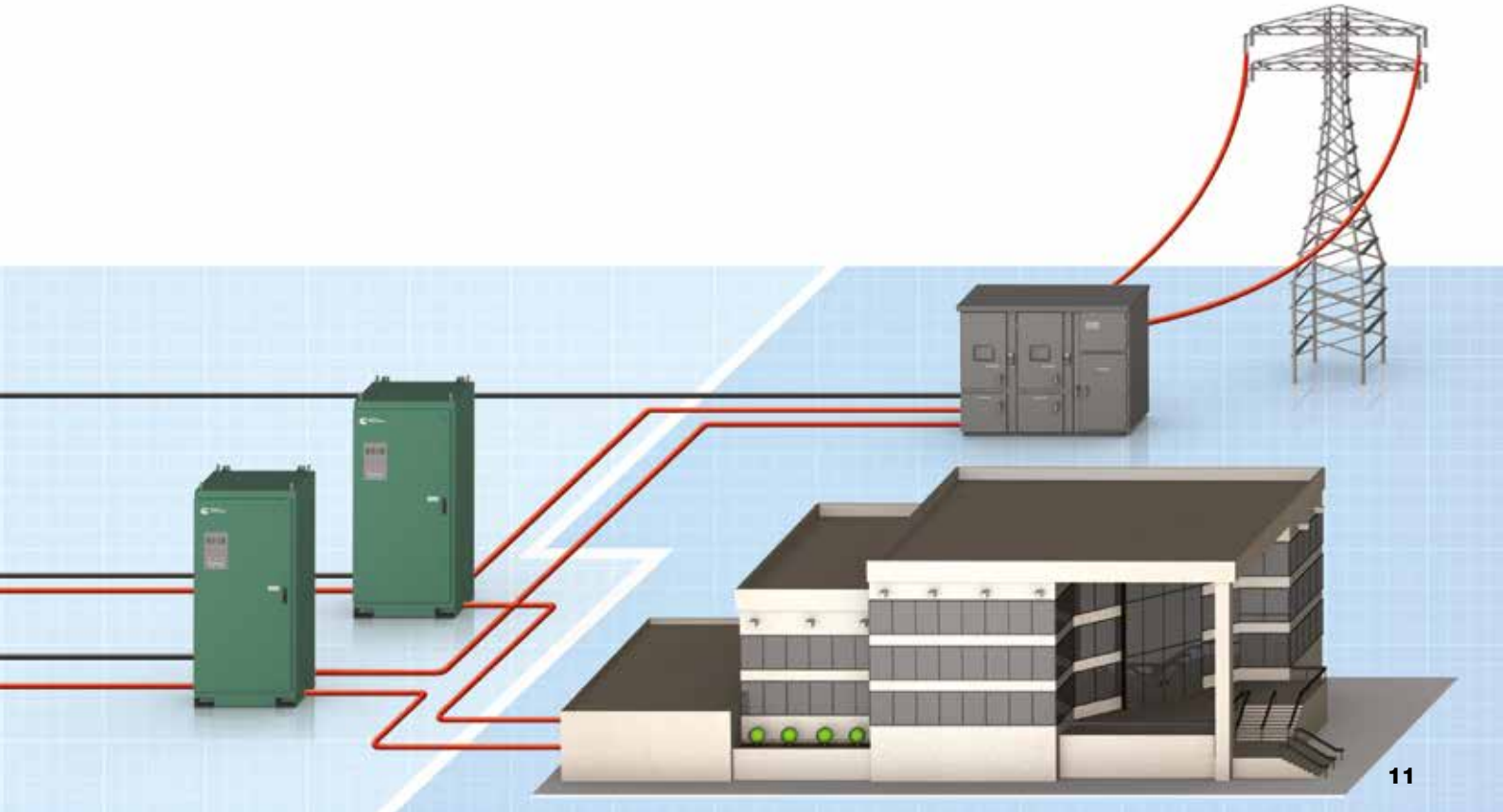
Description

PowerCommand® 3.3 with Masterless Load Demand (MLD) technology enables generator sets to start/stop automatically based on load demand.

Masterless Load Demand-capable generators are equipped with an additional s-CAN network connection that allows sharing of information amongst paralleled generator sets. MLD has been designed for hassle free installation, commissioning and operation.

Features

- Reduced Fleet Operation Costs: Improves fuel efficiency of multi-gen systems
- Reduced Onsite Support: Run hour equalisation feature lowers costs
- Multi-gen System Reliability: No single point of failure; self-recovering capability
- System Monitoring: View information about the entire system from any one display
- Easy Setup/Commissioning: Change MLD system settings from any one display and broadcast to all generator sets
- Hassle Free Installation: No additional equipment needed
- Supports Large Fleet Operation: Up to 16 generator sets
- Predictive Load Input: Bring additional system capacity online before starting big loads
- Single Point Remote Start: Reduces wiring required for short term installations
- Fast Response Time: Via s-CAN communication network



PowerCommand® 500 Series Remote Monitoring System

Description

The PowerCommand 500 series provides a convenient means of remotely monitoring generator sets, transfer switches, sensors and output controls. Users can access the remote monitoring device from any PC or Mac computer using a Microsoft Silverlight enabled web browser; no additional software is required. Multiple users can monitor the power system equipment simultaneously.

PowerCommand 500 series users can monitor generator set data, such as annunciator, alternator and engine data, as well as transfer switch data, such as source, load and switch connection status. Expandable I/O modules can provide additional monitoring and controlling capabilities.

Features

- Communication: PowerCommand 500/550 communicates to Cummins Power Generation controls (generator sets, transfer switches and expandable I/O modules) via Modbus. Legacy controls will require a LonWorks to Modbus converter (Modlon II Gateway).
- Monitoring and Control: PowerCommand 550 monitors up to twelve devices and PowerCommand 500 monitors up to two devices in any combination. User can remotely start and stop and remotely reset and acknowledge warning type faults on generator sets and transfer switches. User can also remotely activate and deactivate output controls.
- Notification: When an event becomes active, the user can receive notifications via SMTP (email), SMS (text) and SNMP traps.
- User Interface: PowerCommand 500/550 employs a straightforward, icon-based graphical interface for monitoring data and controlling devices.
- Security: PowerCommand 500/550 has enhanced security with 128-bit Secure Sockets Layer (SSL) encryption. The system is also username and password protected. Users are assigned one of three access levels - administrator, operator, read only - providing various operation and functionality at each access level.

Parts

Genuine Cummins Parts

Produced using the highest quality components and manufacturing techniques, Cummins engines offer high performance, low cost of ownership with low emissions. To maintain high levels of productivity and minimise downtime, the quality of replacement parts should never be compromised.

Cummins provide aftermarket parts and service support through a nationwide network of field-based service engineers, specialist service centre workshops and accredited dealers.

If you are a Cummins engine owner or operator, you have found the best place to get your genuine New and ReCon parts.

With over 4,500 locations around the globe Cummins has the largest network in the industry. When you buy genuine Cummins parts you buy peace of mind and the knowledge that the product you are getting is supported by our aftermarket team.

We want to provide you with the best parts for your Cummins engine, whether you own a new engine or an older one.

Our goal is to minimise your downtime and maximise your profits, with parts and service that deliver real value. If you've got a Cummins engine, we want you as a satisfied Cummins customer – for life!

ReCon® Parts

When equipment life cycle calls for an overhaul, smart operators are trading their old engine core or components for Cummins ReCon exchange engines and components.

ReCon is the name used within Cummins to designate our line of genuine remanufactured parts and engines. Cummins ReCon products are not just repaired or rebuilt. They are remanufactured in TS - and ISO - certified factories around the world. Every product is completely stripped, cleaned and brought back to Cummins specifications.

Cummins ReCon parts provide fast turnaround and will get your equipment up and running and earning money again in hours. They are high quality and incorporate the latest product upgrades supported by the best warranty in the business. An environmentally responsible alternative, they give value for your old Cummins engine or part.

Parts

For all parts enquiries, please contact our Cummins Parts Call Centre.

01933 33 41 97

partssupport@cummins.com

Consumables

For over 90 years Cummins products have built a reputation for their reliability, durability and dependability.

Cummins Filtration / Fleetguard™

Cummins Filtration is the leading worldwide designer and manufacturer of filtration products for heavy-duty diesel powered equipment. It owns the well recognised brand of Fleetguard™, manufacturing class-leading filtration products compatible with Cummins and a wide range of other engine makes.

The broad product lines cover a variety of applications and markets.

Cummins provides a full range of filtration products to meet our customer's needs.

- Extended uptime
- Increased operator comfort
- Lower operating costs
- Reduced environmental impact
- Broad product range

Coolant

Estimates project that over 40% of total engine repair costs are related to problems that originate in the cooling system. Repairs are costly and create unnecessary downtime that affects equipment operations and customer deadlines.

Fleetguard cooling system products provide unmatched protection with an easy maintenance program so that you can keep your engines running longer and stronger.

Fleetguard coolants are manufactured to the highest standards and meet the performance specifications of all major OEMs. You can depend on Fleetguard cooling system products to provide unmatched protection to your engine.

Features and benefits include:

- Environmentally friendly
- Non hazardous product
- Full system protection
- Reduced maintenance costs
- Reduced vehicle downtime
- Pre-mixed and easy to use
- Allows easy top-up
- Test-kits available
- Booster packs available for re-energising your cooling system

Lubricants and Oils

Cummins sells a wide range of oils and lubricants developed and blended by Valvoline, one of the leading manufacturers of lubricants in the world.

Through the joint venture with Valvoline, Cummins supplies amongst other products, Premium Blue Oil, suitable for many engine makes and applications, and are available in a variety of container sizes.

Valvoline Premium Blue E engine oil is designed to provide superior lubricant performance in today's low emissions diesel engines. It is an approved Cummins CES20078 and 20076 engine oil and carries an exclusive endorsement by Cummins Inc.

Lubricant and Oil

Available from 5 litres to bulk tanker deliveries

Service Support

Cummins provide comprehensive support on all generators across Europe.

Support

Cummins Power Generation Team provide specialist advice, technical support and assistance for:

- Generator service enquiries
- Maintenance (planned and unplanned)
- 24/7 service and repair - (subject to agreement)
- Parts and consumables
- Customer service agreements
- New equipment sales
- Panel and system upgrades

Service

Our aim is to provide customers with world-class service support that is fast and responsive, flexible and convenient, and minimises equipment downtime and costs. We offer a range of services including:

- Maintenance Scheduling - specifically designed to meet the service needs of your business
- Rapid Response - 24 hour emergency call out as required
- General Servicing - all major makes and models of generator supported

Local Service

With a national fleet of mobile service engineers, our highly trained and skilled power generation service professionals have the capability, expertise and experience to support you, wherever you may be.

Service Agreements

Each service agreement is tailor made to your specific requirements. Once the optimised schedule of activities has been established, our engineers will visit you via a pre-arranged appointment to undertake the required servicing.

A service agreement, including regular testing, preventative maintenance, routine servicing and optional oil sampling, will ensure that your generator continues to provide you with the vital power you need.

For a quotation for a maintenance agreement or to arrange a service visit, contact our Power Generation Team who will be happy to assist.

Parts

For specialist advice and assistance on all products, and to place your order for next day delivery on genuine Cummins parts and engine consumables, contact our Parts Team.

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