



FALCON POWER GENERATION



## About Us



alcon Power Generation was established in 2015, with its head office based in Swinton, Manchester. Along with Manchester the company also operates from Norfolk, Dunstable and Newport. With four locations across the UK, Falcon are ideally placed as a national distributor.

Falcon runs a fleet of over 400 Stage IIIA and Stage V diesel generators plus 1,000, 2,000 and 3,000 litre fuel tanks, together with a large range of ancillary items such as distribution boards and cabling. In addition the company has its own crane mounted trucks for ideal delivery and placement.

Falcon Power Generation has invested in a modern and robust fleet of generators for hire, ranging from 20kVA to 500kVA providing both off the shelf and bespoke solutions, so units deliver the power needed for the job in hand. Our generators can be supplied as stand alone sets with automatic start or synchronised together to give a truly uninterrupted power supply. Road tow generator chassis are also available up to 100kVA. In addition, a fuel monitoring telemetry facility is also offered enabling clients' fuel requirements to be continuously monitored by the generators themselves. The reordering of fuel is then automatically completed without the need to manually check fuel levels.

# Some Key ApplicationsUtilities and services01Construction02Standby sets03Events and Festivals04General power05

## POWERING NOW, AND THE FUTURE

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#### About Us

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With the movement to becoming diesel free, Falcon has invested in Hybrid, PUNCH Flybrid and Northvolt VoltPack Battery Systems. The intention is to be able to offer our clients an environmentally friendly solution to reduce CO2 emissions on site.



# Stage IIIA

Stage IIIA generators are the standard of diesel generators used in the UK outside the ULEZ (Ultra Low Emission Zone) and Central Activity Zone (CAZ) for all Non-Road Mobile Machinery (NRMM). Any diesel generator used inside the ULEZ or CAZ must comply to a Stage V standard. All NRMM between 37kW to 560kW must conform with the EU Engine Emission Stage for the district or region within the UK or have an exemption issued by the Greater London Authority (GLA).

Non-Road Mobile Machinery (NRMM) is a broad category which includes mobile machines, and transportable industrial equipment for vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads.

Falcon operates two standards of generators across its fleet, Stage IIIA and Stage V. This means that no matter where a generator is required across the UK, Falcon can supply a compliant set. The benefit is twofold, not only will our customers be complying with current regulations, but they will also benefit from lower CO<sup>2</sup> emissions to achieve the European Directive 97/68/RC. The result of compliance is, of course, lower fuel bills.



## **Dimensions**

Generator Size (kVA)	Width (mm)	Length (mm)	Height (mm)	Weight (kgs)		
20	835	1948	1423	950		
40	950	2265	1567	1120		
60	1100	2500	1800	1692		
100	1200	3055	1800	2120		
150	1270	3800	2033	3000		
200	1270	3800	2033	3100		
250	1400	4400	2500	4369		
300	1400	4832	2500	4666		
500	1610	4832	2590	5990		
*For guidance purposes only	*For guidance purposes only					

# Stage IIIA Specifications

## White Diesel (DERV)

Generator Size (kVA)		Fuel mption		5% Jad		)% Jad		5% (l/hr)		0% (l/hr)
	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)
20	1.0	2.4	2.5	6.0	3.7	8.9	5.2	12.5	6.8	16.3
40	1.8	4.3	4.5	10.8	7.2	17.3	9.8	23.5	12.2	29.3
60	2.6	6.3	6.6	15.8	10.5	25.2	14.4	34.5	18.0	43.2
100	3.3	8.0	8.4	20.1	13.1	31.5	18.0	43.2	22.8	54.7
150	4.5	10.9	11.4	27.3	18.3	43.9	25.9	62.1	33.2	79.6
200	5.8	13.8	14.4	34.5	23.7	56.9	33.8	81.0	44.0	105.6
250	7.1	17.1	17.8	42.7	29.1	69.9	41.6	99.9	54.5	130.8
300	8.3	20.0	20.8	50.0	34.6	83.1	49.4	118.5	65.5	157.2
500	13.5	32.3	33.7	80.8	56.4	135.4	80.6	193.5	108.3	259.8
*For guidance purposes	*For guidance purposes only									

## Hydrotreated Vegetable Oil (HVO Fuel)

Generator Size (kVA)		Fuel mption		5% Jad		)% Jad		i% (l/hr)		0% (l/hr)
	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)
20	1.0	0.2	2.5	0.5	3.7	0.7	5.2	1.0	6.8	1.3
40	1.8	0.4	4.5	0.9	7.2	1.4	9.8	1.9	12.2	2.4
60	2.6	0.5	6.6	1.3	10.5	2.0	14.4	2.8	18.0	3.5
100	3.3	0.7	8.4	1.6	13.1	2.6	18.0	3.5	22.8	4.4
150	4.5	0.9	11.4	2.2	18.3	3.6	25.9	5.0	33.2	6.5
200	5.8	1.1	14.4	2.8	23.7	4.6	33.8	6.6	44.0	8.6
250	7.1	1.4	17.8	3.5	29.1	5.7	41.6	8.1	54.5	10.6
300	8.3	1.6	20.8	4.1	34.6	6.8	49.4	9.6	65.5	12.8
500	13.5	2.6	33.7	6.6	56.4	11.0	80.6	15.7	108.3	21.1
*For guidance purpose	*For guidance purposes only									



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## Stage V

As of 01st January 2020 all NRMM machinery in the ULEZ or the CAZ must be to a Stage V emission standard. Over the coming years, this may expand further into London and other major cities across the UK. NRMM, particular from the construction sector, is a significant contributor to London's air pollution. The NRMM Low Emission Zone uses the Mayor and London Borough's planning powers to control emissions from NRMM used on construction sites.

Stage V equipment brings a significant reduction in the amount of CO<sup>2</sup> produced (circa 11%), in comparison to Stage IIIA generators. They also bring a greater reduction to the more harmful emissions, such as Nitrogen Oxide (NOx). The sets do come at a substantial cost. The weekly rental rate can be as much as 75% higher than a Stage IIIA set and in addition to this, Adblue is required at a rate of 8 litres per 100 litres of fuel. This brings an additional cost, plus the extra fuel tank to hold the AdBlue.

During the past few years, Falcon have invested in a significant number of Stage V compliant generator sets to service our customers needs regardless of their location within the UK.





# Stage V Specifications

## White Diesel (DERV)

Generator Size (kVA)		Fuel mption	25% Load			
	l/hr	CO <sup>2</sup> (kgs)	l/hr	CO <sup>2</sup> (kgs)		
20	0.5	1.2	1.1	2.6		
40	1.0	2.4	2.7	6.5		
100	2.3	5.5	5.7	13.7		
150	3.4	8.2	8.5	20.4		
200	4.4	10.6	11.0	26.4		
*For guidance purposes only						

#### \*For guidance purposes only

## Hydrotreated Vegetable Oil (HVO Fuel)

Generator Size (kVA)		Fuel mption		5% bad		)% ad		5% (l/hr)		0% (l/hr)
	l/hr	CO <sup>2</sup> (kgs)								
20	0.5	0.1	1.1	0.2	2.2	0.4	3.2	0.6	4.4	0.9
40	1.0	0.2	2.7	0.5	5.4	1.1	7.4	1.4	9.5	1.9
100	2.3	0.4	5.7	1.1	11.4	2.2	17.6	3.4	23.4	4.6
150	3.4	0.7	8.5	1.7	16.9	3.3	24.3	4.7	30.8	6.0
200	4.4	0.9	11.0	2.1	22.0	4.3	30.8	6.0	41.0	8.0
*For guidance purposes only										

## **Dimensions**

Generator Size (kVA)	Width (mm)	Length (mm)	Height (mm)	Weight (kgs)	
20	835	1948	1423	950	
40	1050	2265	1574	1400	
100	1200	3192	2050	2750	
150	1100	4220	2200	3650	
200	1100	4220	2200	3650	
*For guidance purposes only					





#### 50% 75% 100% Load (l/hr) Load Load (l/hr) CO<sup>2</sup> (kgs) CO<sup>2</sup> (kgs) CO<sup>2</sup> (kgs) l/hr l/hr l/hr 5.3 3.2 4.4 10.6 2.2 7.7 5.4 13.0 7.4 17.8 9.5 22.8 11.4 27.4 17.6 42.2 23.4 56.2 16.9 40.6 24.3 58.3 30.8 73.9 22.0 52.8 30.8 73.9 41.0 98.4

## PUNCH Flybrid

# PUNCH Flybrid

In essence, a PUNCH Flybrid system allows us to reduce the size of the generator (and therefore fuel) whilst powering a tower crane. Dynamic duty cycles, similar to what you see on a tower crane, waste a great deal of energy because they require a lot of power for short periods of time. As a result, this type of application has traditionally required oversized power trains purely to cope with the peak demand. However, what if a power source, such as a generator or mains supply, could draw on an external power source, to deliver that peak dynamic load, injecting only when the large power demand is required e.g. when a crane lifts a heavy load at maximum speed. A short surge of power from an outside source when needed would allow the size of the generator powering the tower crane to be matched to the average load, and therefore reduced - when slewing or lifting lighter loads - thus saving fuel and reducing emissions. This is exactly what the PUNCH Flybrid does.

#### How does it work?

The PUNCH Flybrid system uses flywheel energy storage system, essentially a highly engineered flywheel which can spin at high speeds, connected to a combined electric motor/generator which powers the flywheel during periods of lower demand and then converts to a generator driven by the flywheel when the crane needs more power. This running gear is then enclosed in a protected ventilated, skid mounted generator like case measuring 1.2m x 1.6m x 1.5m and weighing approximately 500kgs. This is then plugged into a power source (a diesel generator for example), and then to the tower crane.

Inside the Flybrid the energy is stored as kinetic energy in the spinning flywheel, and this is transferred by the motor/generator to the crane when it needs a short burst of power. When the tower crane is about to lift a load and spike the power requirement, the Flybrid system reacts to the frequency and voltage changes between the power source and application and uses the energy stored in the flywheel to generate the extra power to cover the crane's surge requirement, eliminating the additional demand on the generator. This allows the generator to run at almost constant load, rather than forever changing to cope with the differing power requirements of a tower crane. The result is we can run a smaller generator on site for the duration of the project saving the following;

- A reduction in the cost of the generator (smaller generator required)
- A substantial reduction in fuel costs to run the smaller generator
- A significant saving to CO2 emissions



For smaller tower cranes, and hydraulic luffing jib tower cranes, it is possible to install on mains supply with the additional power coming from the Flybrid system. This works in a similar way to reducing the generator size. If a site has an amount of 3-phase power supply, which could be allocated to a tower crane, but it is not enough to power the tower crane, we could add a Flybrid system to the scheme. The Flybrid would then support the heavy power requirements such as the start up and peak loads. This means we could remove all generators from site and effectively boost the mains supply which is available.









## Northvolt Voltpack

The Northvolt Voltpack mobile system is a energy storage system that comprises of batteries ranging from 281kWh to 1,405kWh alongside an inverter bank. The Voltpack provides dieselfree power to a wide range of

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applications, including construction (tower cranes), events and EV Charging to name a few.

## Applications

#### CONSTRUCTION SITE

- Tower crane
- Building and infrastructure construction ٠
- Industrial vehicle and machinery charging

#### **EVENTS**

- Music Festivals
- Electric motor sport
- Movie production
- Outdoor event

#### **EV CHARGING**

- Mobile fast charging •
- Off-grid charging ٠
- Industrial vehicle and machinery charging
- Temporary charging at events

#### DISTRIBUTION

- Limited grid connection
- Ancillary grid services ٠
- Grid maintenance
- Emergency power

#### How it works

As Falcon are committed to reducing / removing diesel from site the Northvolt Voltpack is the obvious next step. With use alongside the inverter, the Voltpack can power any tower crane in our fleet, and whilst being charged with a 32amp supply, we rarely see the state of charge drop below 80%. This results in 100% ZERO EMISSIONS for powering large construction equipment such as a tower crane and a complete removal of diesel from site.

## Advantages of the Voltpack System

#### **SCALABLE**

• From 281kWh to 1,405kWh.

#### **SUSTAINABLE**

- ZERO EMISSIONS
- Reducing carbon footprint •

#### QUIET

#### FLEXIBLE

- Designed for multiple applications
- Plug and play

#### **CONNECTED**

• Full visibility and traceability through Northvolt's provided cloud service

#### COST COMPETITIVE

#### RUGGED

Built for harsh conditions

To the second se	
	FALCON
YOUR CHALLENGE	OUR SOLUTION
NO GRID CONNECTION	Supply event with electricity from Mobile System in island mode. R batteries at nearest grid connect

Northvolt Voltpack

LIMITED GRID CONNECTION

OPTIMISE DIELSEL GENERATOR USAGE

TEMPORARY EV CHARGING

Use Voltpack Mobile System as an energy source to charge electric vehicles. Easy set-up of Voltpack Mobile System with externa charger.

fleet of diesel generators.

Falcon Power Generation







#### **BENEFITS**

Boost grid connection with Voltpack Mobile System for peak power needs. Recharge during low demand periods.

Synchronize Voltpack Mobile System with

- Zero emissions on site Lower noise levels
- Lower energy costs
- ✓ Zero emissions on site
- Lower noise levels
- Reduced fuel consumption  $\checkmark$ Reduce diesel generators on site ✓ VMS-only usage at low loads (e.g. at night)
- Cost competitive charging on site
- ✓ Potential to fully electrify event
- ✓ Zero emissions on site

## Distribution boards

To complement our range of generators we also offer a vast range of electricial distribution boards and cables which are available in both single and three-phase. With such a wide variety of distribution boards available, we ensure that the power on your site is safely and correctly distributed.



# Hybrid Unit

W ith the carbon footprint, emissions and sustainability in everyone's mind, Falcon goes above and beyond to offer solutions compliant with new regulations.

Our Hybrid units deliver on both cost savings and additional cuts in CO<sup>2</sup> emissions, just like a hybrid car but on a larger scale. The principle is that the generator charges the hybrid part of the system whilst it is in normal operation. This enables the project to switch on to stored battery power for lighting and advertising once the site closes. This eliminates noise at night and reduces engine running time and, hence, fuel consumption.

Once the Hybrid is discharged the generator will automatically recharge it.

Our Hybrid generators are available to rent or purchase.

Battery - Lithium Iron Phosphate					
Cycles	6,000 (+25°; 0.4C)				
Charge Voltage at Cyclic Operation	56.5V				
Float Voltage/Non Cyclic Operation	55.2V				
Recharge to 100%	4-6 hours				

AC Output					
AC Voltage Rage	230VAX +/-2%				
Storage Battery Power	5kWh				
Inverter Related Power	5,000W				
Maximum Feed Through Current (A)	1 x 100				

AC Input						
Input Voltage Range (V DC)	9.5-17V, 19-33V, 38-66V					
Maximum Fee Through Current (A)	1 x 100					

General Data					
Pod Dimension	L=1,000mm, W=1,000mm, H=1,200mm				
Weight	750kg				













## Tanks

#### alcon runs a fleet of over 250 bunded fuel tanks including, -1,000ltr, 2,000ltr and 3,000ltr. Each tank is stackable and secure and are equipped with lifting points making the transportation and storage as efficient as possible. Each tank is fitted with a telemetric system, which triggers on theft and low level of fuel, which is managed by Falcon. For more information to our telemetric systems please contact us.







Capacity	Dimensions	Weight (Empty)	Weight (Full)
1,000 ltr	L=1,151mm, W=1,151mm, H=1,325mm	513kg	1,451kg
2,000 ltr	L=2,294mm, W=1,152mm, H=1,324mm	830kg	2,952kg
3,000 ltr	L=2,296mm, W=1,546mm, H=1,323mm	1,021kg	3,976kg

## Telemetric systems

### Fuel management and 24 hours GPS monitoring

ur fleet of bunded fuel tanks range from 450l to 3000l and, on request, can be fitted with telemetry equipment to maintain, control and monitor fuel consumption 24 hours a day 7 days a week. It can also monitor the current CO<sup>2</sup> emissions, fuel savings, battery duration and engine run time saved.

With this system in place fuel replenishment can be remotely monitored and delivery arranged to avoid fuel shortage.

Applications include, but are not limited to:

- Tower crane aviation lights
- Small cabin set-ups •
- Security lighting and CCTV systems
- Communications and wireless access points •
- IT and medical equipment •
- Environmental monitoring equipment •
- PA systems

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Our fuel management service is more than just providing you with a fuel tank on site. Our telemetric system is available, free of charge when you choose to select this facility. Falcon Power Generation will automatically re-order the fuel when it drops below a certain level, removing the risk of any unnecessary down time.

**Telemetric Systems** 





## Transport

## Falcon Freight

Falcon Power Generation are part of the Falcon Group, which includes Falcon Freight Ltd. The freight division of the group runs from each of our four depots in Norfolk, Manchester, Dunstable and Newport and currently operates 30 plus HGV's many with large Fassi, Palfinger and Hiab cranes which have the capability to lift to 21,500kgs (21.5t) and 1,700kgs (1.7t) at 23.55m radius. All of this means, Falcon have the in-house facilities, to make the delivery and unloading of our generators a simple and efficient process.

N ot only do we pride ourselves of our fleet of vehicles, but also our crew of ADR certified drivers who are fully trained and given a comprehensive induction and driver assessment from our in-house training department. All our drivers are given continued development training throughout the year, maintaining a high level of competency and allowing us to keep health and safety paramount to our company.

The company is also proud to be registered as FORS Gold and CLOCS giving further evidence and security about the competence of our drivers and trucks.

For all rentals ordered before 10am, next day delivery will be guaranteed.

Visit www.falconfreight.co.uk for more information.





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# Health and Safety Accreditation

Citation ISO Certificati

Certificate No 133102021

Citation ISO Certification

ISO

Certificate No:218282021

45001: 2018

Falcon takes the health, safety, welfare and the environment very seriously and nothing is more important to us as a company than the wellbeing of our employees and customers.

One of the many steps that Falcon takes to ensure a safe place of work is undertaking the accreditation of eight difference SSIP's (Safe Systems in Procurement). In addition, we are members the Considerate Constructors Scheme and hold an IASME Cyber Essentials accreditation. Being a member of a SSIP demonstrates to our customers that we have attained the appropriate core criteria which has been endorsed by the Health and Safety Executive (HSE). Falcon are active members of the Supply Chain Sustainability School which shows our commitment to a more sustainable built environment.

#### ISO9001

In addition to the SSIP's Falcon also holds the ISO9001:2015 quality accreditation, which we have

held since 2007 and updated to the latest standard in the final guarter of 2018. This Management System is critical to our company ethos and demonstrates to our customers the important emphasis placed on quality assurance. Accreditation to a recognised quality standard is essential for dealing and complying with legislation. Holding this accreditation ensures we identify, measure and improve our core processes. Continual improvement is vital to assuring we comply to the standard, ISO9001 is the world's most recognised quality management standard.

#### ISO14001

Falcon holds an environmental management system (EMS) standard ISO14001:2015. This accreditation

was gained in 2014 and updated in line with our ISO 9001. Holding this accreditation assists the organisation to focus, identify and manage environmental conditions, such as the reduction of our carbon footprint, making the most out of renewable energy and cutting waste. It ensures that Falcon stays compliant with current environmental legislation while publicly demonstrating commitment to protecting the environment with our continual improvement.

In 2019 Falcon upgraded its OHSAS 18001:2007 accreditation to achieve ISO45001:2018. Like the



Citation ISO Certifical

ISO

Certificate No:333872019

50001:

other accreditations it provides a framework to identify, control and decrease the risk associated with health and safety within the workplace. Our aim is to reduce the likelihood of accidents and incidents and demonstrates a sound occupational health and safety performance. The accreditation lets our customers know that at Falcon we are serious about safety within the organisation, thus making our organisation a safer place in which to work.

To clearly demonstrate to our customers that Falcon is committed in reducing its environmental impact and establish industry best practices

in energy efficiency, Falcon achieved ISO50001:2018. By improving our performance and reducing consumption we also help protect the environment and enhance our brand's green credentials.





Falcon Power Generation





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#### Newport Depot

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20KVA TO 500KVA COMPLIANT GENERATORS BUNDED FUEL TANKS FROM 1,000LTR TO 3,000LTR HYBRID UNITS PUNCH FLYBRID UNITS VOLTPACK BATTERY SYSTEMS DISTRIBUTION BOARDS AND CABLING TELEMATIC SYSTEMS NATIONWIDE COVERAGE



## **POWERING NOW, AND THE FUTURE**