aggreko

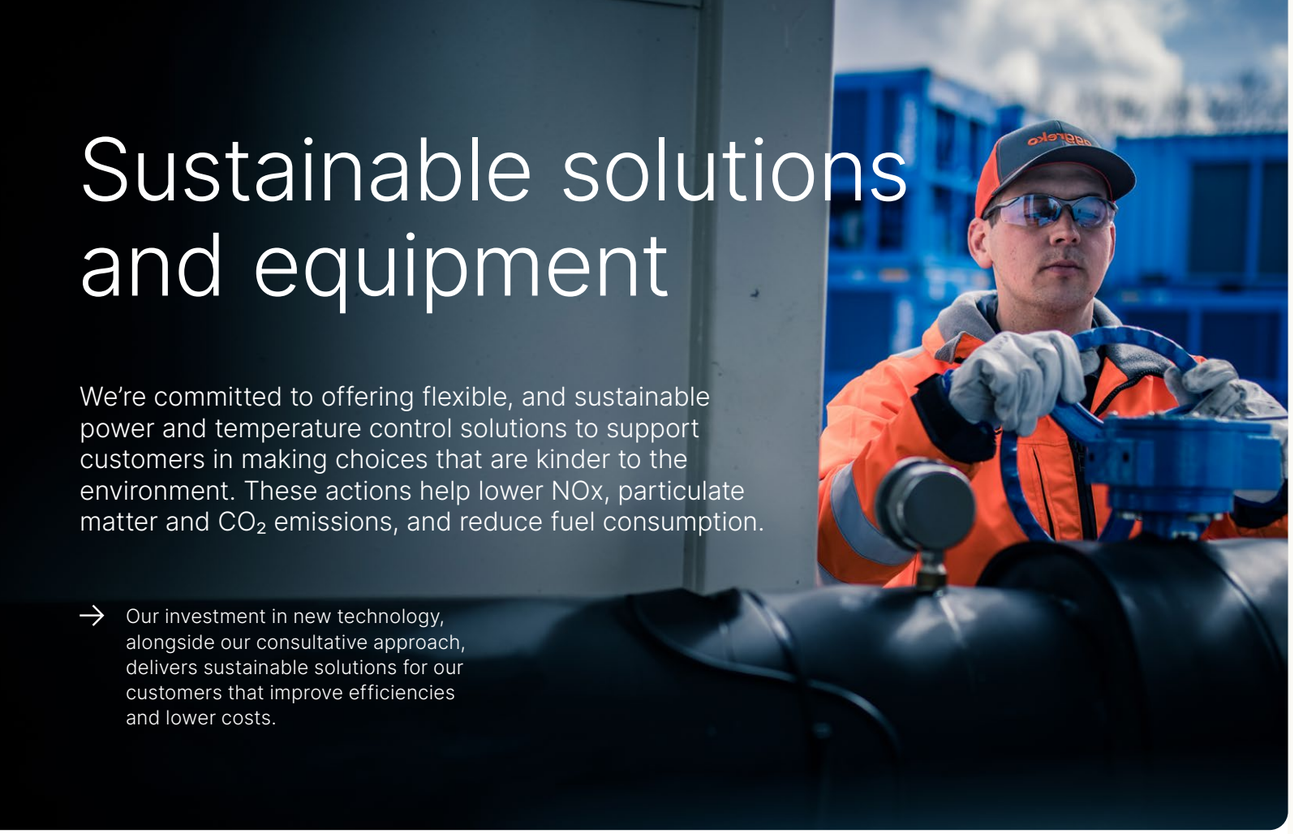
Keep your world ON™
aggreko.com

Stage V generators & Battery Energy Storage Systems (BESS)

→ Low emission temporary power solutions for your business



Sustainable solutions and equipment



We're committed to offering flexible, and sustainable power and temperature control solutions to support customers in making choices that are kinder to the environment. These actions help lower NOx, particulate matter and CO_2 emissions, and reduce fuel consumption.

→ Our investment in new technology, alongside our consultative approach, delivers sustainable solutions for our customers that improve efficiencies and lower costs.

Power in partnership

We have made a multi-million pound investment to our fleet with the addition of Stage V generators and battery hybrids. Working together, this new fleet enables businesses to operate with greater efficiencies, low noise levels, and lessens the impact on global and local emissions.

→ We introduce you to the technology and demonstrate the efficiencies they deliver, both individually and when combined.



Stage V generators

Designed to cut down on harmful pollutants, our Stage V generators are fully compliant with the European Commission's Medium Combustion Plant Directive (MCPD). They operate in the same way as the cleanest car engines limiting carbon monoxide, nitrogen oxides and particulate matter to provide efficient low carbon temporary power.



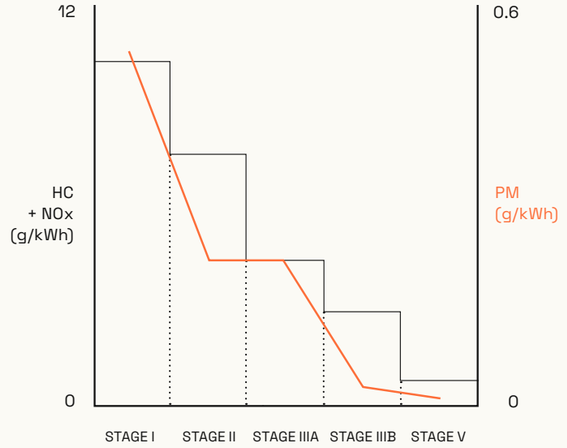
Battery Energy Storage Systems (BESS)

An integral part of a lower carbon future is energy storage. Harnessing power produced at one time that can be drawn upon when you need it most. Our fleet of hybrid batteries can be used across a variety of applications for a large range of sectors, enabling you to maximise your operational output whilst minimising downtime and emissions.

Stage V generators

Delivering complete energy solutions

Introduced by the EU, Stage V (Regulation 2016/1628) is an emissions standard for non-road mobile machinery (NRMM) with spark/compression ignition engines. It aims to reduce emitted harmful substances including particulate matter, and is an evolution of previous standards.



Setting the standard

Aggreko is proud to be the first UK hire company to design and manufacture our own Stage V generators. Developed to a high specification, we have the largest fleet available nationwide, with models ranging from 30 kVA – 1250 kVA. Robust and fuel efficient, these low noise generators can deliver on your temporary power needs without sacrificing performance. Not simply following the standard but setting it.

Installed and monitored by experts, our Stage V generators deliver low-emission energy generation through improved technology with the following features across the range:

- → Installation of a Diesel Particulate Filter to reduce fine diesel emissions
- → Selective catalytic reduction system to reduce NOx emissions
- → Added injection technology to further neutralise harmful particulates
- → Diesel Oxidation Catalysts to reduce CO_2 emissions through oxidisation
- → Low noise, with variable speed fans drastically reducing sound at lower loads and in lighter ambient conditions to allow for use in urban areas
- → Arc Flash detection and ingress protection to give better defence of the components against the environment
- → Internal Diesel Exhaust Fluid (DEF)/Adblue tank matched to internal fuel capacity to ensure that DEF only requires filling at the same frequency as fuel tank refills
- → Two external DEF/AdBlue tank options to extend on-site refill intervals, supply multiple generators and reduce the required site installation footprint

Introducing our Stage V fleet

Superior. Smart. Sustainable.





30 kVA

Fuel consumption	100% prime power – 9.52 l/hr 75% prime power – 7.08 l/hr 50% prime power – 4.95 l/hr
Exhaust emissions	NOx & HC – 3.542 g/kWh PM – 0.0006 g/kWh CO – 0.065 g/kWh
Noise	7m at 75% load, 53 dB(A) at 50 Hz
Running hours	46.5 based on 50% prime power
Size	L 3.05 m x W 1.17 m x H 1.89 m



60 kVA

Fuel consumption	100% prime power – 15.67 l/hr 75% prime power – 11.79 l/hr 50% prime power – 7.97 l/hr
Exhaust emissions	NOx – 0.145 g/kWh PM – 0.0022 g/kWh CO – 0.047 g/kWh HC – 0.0145 g/kWh
Noise	7m at 75% load, 55 dB(A) at 50 Hz
Running hours	56.5 based on 50% prime power
Size	L 3.05 m x W 1.17 m x H 2 m



100 kVA

Fuel consumption	100% Prime power - 20.89 l/hr 75% Prime power - 15.72 l/hr 50% Prime power - 10.62 l/hr
Exhaust emissions	NOx – 0.145 g/kWh PM – 0.0002 g/kWh CO – 0.038 g/kWh HC – 0.005 g/kWh
Noise	7 m at 75% load, 55 dB(A) at 50 Hz
Running hours	25.5 based on 50% prime power 550 based on low load with 380 l external DEF tank 2,971 based on low load with 2000 l external DEF tank
Size	L 3.05 m x W 1.17 m x H 2 m



200 kVA

Fuel consumption	100% Prime power - 38.4 l/hr 75% Prime power - 27.4 l/hr 50% Prime power - 17.6 l/hr
Exhaust emissions	NOx – 0.4 g/kWh PM – 0.02 g/kWh CO – 3.5 g/kWh HC – 0.2 g/kWh
Noise	7 m at 75% load, 61.7 dB(A) at 50 Hz
Running hours	41 based on 50% prime power 143 based on low load with 380 l external DEF tank 734 based on low load with 2000 l external DEF tank
Size	L 3.95 m x W 1.2 m x H 2.26 m



300 kVA

Fuel consumption	100% Prime power - 57 l/hr 75% Prime power - 43 l/hr 50% Prime power - 28.5 l/hr
Exhaust emissions	NOx – 0.345 g/kWh PM – 0.0019 g/kWh CO – 0.038 g/kWh HC – 0.005 g/kWh
Noise	7 m at 75% load, 63.4 dB(A) at 50 Hz
Running hours	25.5 based on 50% prime power based on low load with 380 l external DEF tank - 159 based on low load with 2000 l external DEF tank - 858
Size	L 4.5 m x W 1.2 m x H 2.46 m



600 kVA

Fuel consumption	100% Prime power - 113.1 l/hr 75% Prime power - 84.9 l/hr 50% Prime power - 57.8 l/hr
Exhaust emissions	NOX – 0.17 g/kWh PM – 0.012 g/kWh CO – 0.043 g/kWh HC – 0.007 g/kWh
Noise	7 m at 75% load, 73.1 dB(A) at 50 Hz
Running hours	27.1 based on 50% prime power 80 based on low load with 380 l external DEF tank 429 based on low load with 2000 l external DEF tank
Size	L 5.16 m x W 1.9 m x H 2.9 m



1250 kVA

Fuel consumption	100% Prime power - 267 l/hr 75% Prime power - 199 l/hr 50% Prime power - 137 l/h
Exhaust emissions	NOX – 0.17 g/kWh PM – 0.012 g/kWh CO – 0.043 g/kWh HC – 0.007 g/kWh
Noise	7m at 75% load, 79 dB(A) at 50Hz
Running hours	15.4 based on 50% prime power 160 based on low load with 380 l external DEF tan 858 based on low load with 2000 l external DEF tank
Size	L 3.05 m x W 1.17 m x H 1.89 m

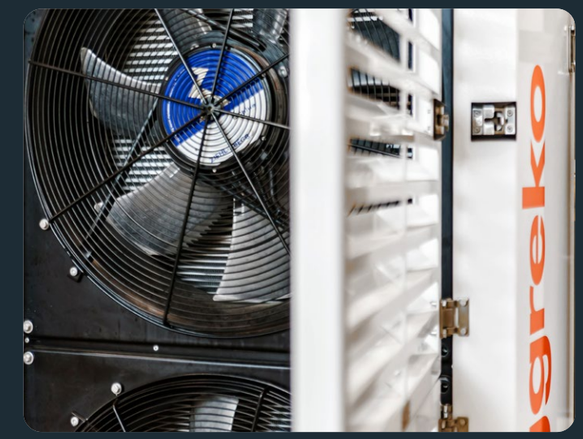


Combination DEF tank (380 l DEF, 3000 l diesel) and single purpose DEF tank (2000 l DEF)

Dramatically improves the run time of Stage V generators
External Diesel Exhaust Fluid (DEF) Tank to support all Stage V assets which consume DEF/AdBlue in Europe (>100 kVA)
Compatible with 100, 200, 300, 600 and 1200 kVA Stage V generators with standardised connections across the range for quick setup
Combi tank (3000 l) supports simultaneous filling of 2 gensets
Dedicated larger tank with onboard pumps to limit contamination, and heating to ensure year round performance. DEF/AdBlue quality is actively monitored by the generator to protect the aftertreatment system from damage
Single purpose tank (2000 l) supports simultaneous filling of 4 genset

Stage V generator features and benefits

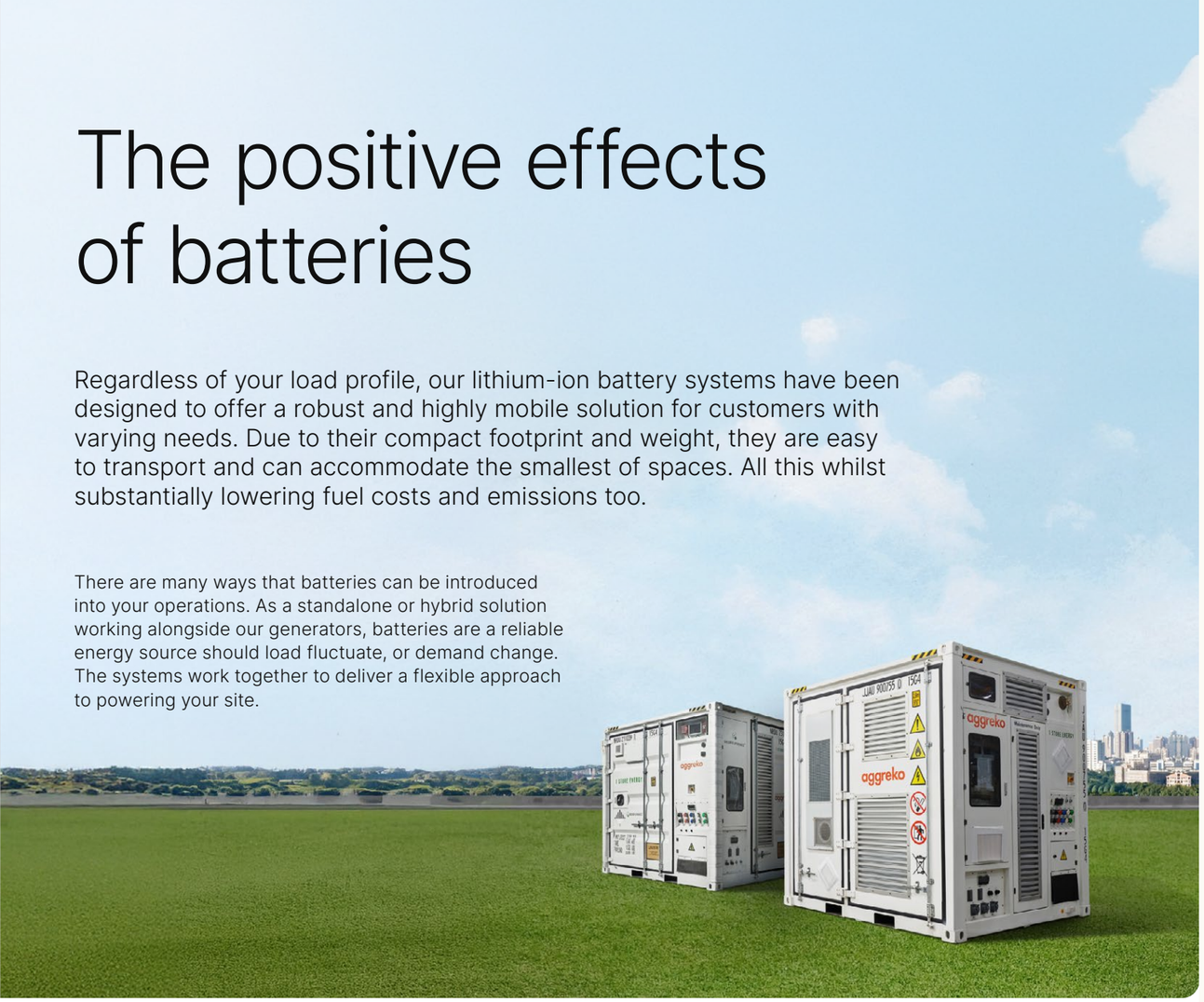
	FEATURES	BENEFITS
Superior Bespoke high specification standards	Flexible 50 and 60 Hz units	Ability to use in multiple regions
	Designed and assembled to Aggreko's bespoke high specification standards → Arc Flash detection and ingress protection moisture louvres → Forklift pockets in base frame and lifting beam on top	Giving better protection of the internal components of the canopy from the environment
	Bolted, galvanised, alloy steel canopy with lockable doors	Secured units for peace of mind
	New aftertreatment system to adhere to latest emissions legislation	Greater efficiency than the previous generation of diesel engines
	Suitable for alternative fuels, such as HVO and B10	Further minimising emissions
Smart Data driven for actionable insights	Acoustically designed equipment	Quieter sound
	Range of warnings and shutdowns on control system	Protects generator set from electrical and mechanical damage, helps identify and rectify faults before they occur
	Smarter servicing with condition based monitoring of key systems	Reduced service intervals
	Standardised internal/external fuel and DEF connections	Faster and more secure site set up with range extending external fuel and DEF fill intervals
	Low fuel level warning sensor in fuel tank	Allowing you to schedule fuel deliveries more effectively
	Remote management	Allows you to easily optimise, control and manage your on-hire fleet
Sustainable Reduced emissions as standard	Installation of a diesel particulate filter	Reduces fine diesel emissions
	Selective catalytic reduction system	Reduces NOx emissions
	Added injection technology	Further neutralises harmful particulates
	Diesel Oxidation Catalysts	Reduces CO_2 emissions through oxidisation



The positive effects of batteries

Regardless of your load profile, our lithium-ion battery systems have been designed to offer a robust and highly mobile solution for customers with varying needs. Due to their compact footprint and weight, they are easy to transport and can accommodate the smallest of spaces. All this whilst substantially lowering fuel costs and emissions too.

There are many ways that batteries can be introduced into your operations. As a standalone or hybrid solution working alongside our generators, batteries are a reliable energy source should load fluctuate, or demand change. The systems work together to deliver a flexible approach to powering your site.



Uneven load profiles

Should your peak load fluctuate on-site due to machines with intermittent usage or motor starts, batteries can work in two ways to optimise your operations:

→ A smaller battery can take care of the lower loads whilst the generator can handle the peaks

→ A larger battery can handle the peak load and the generator can recharge the battery

IDEAL FOR:

→ Tower cranes

→ Construction

→ Construction hoists

→ Submissible pumps

Through the night

At night when loads may be low and power needs to be silent, hybrid batteries are the perfect solution.

IDEAL FOR:

→ Construction site at night

→ Manufacturing

Long periods of low load

If a generator isn't running at optimal capacity, utilising a battery can reduce the generator run time by up to 80% - saving emissions and fuel costs.

IDEAL FOR:

→ Refinery turnaround

→ Live events

→ Live equipment

→ Servers

Critical power or redundancy

A battery can be the necessary back up power for your site, should your generator need to be powered down for servicing or other reasons.

IDEAL FOR:

→ Office trailers

→ Site lighting

→ Manufacturing

Remote locations

If availability of fuels and technicians is problematic due to a remote area, a battery can be the ideal equipment to fulfil your needs.

IDEAL FOR:

→ Drill rigs

→ Wind farms

→ Telecoms

→ Events

Environmentally sensitive areas

When low noise and zero emissions are required, batteries are the perfect solution.

IDEAL FOR:

→ Live events

→ Greener construction

→ Residential areas

→ Inner-city construction

Supporting solar and wind technology

Batteries integrate seamlessly with your renewable technology to smooth out fluctuations caused by intermittent power supply from wind or solar.

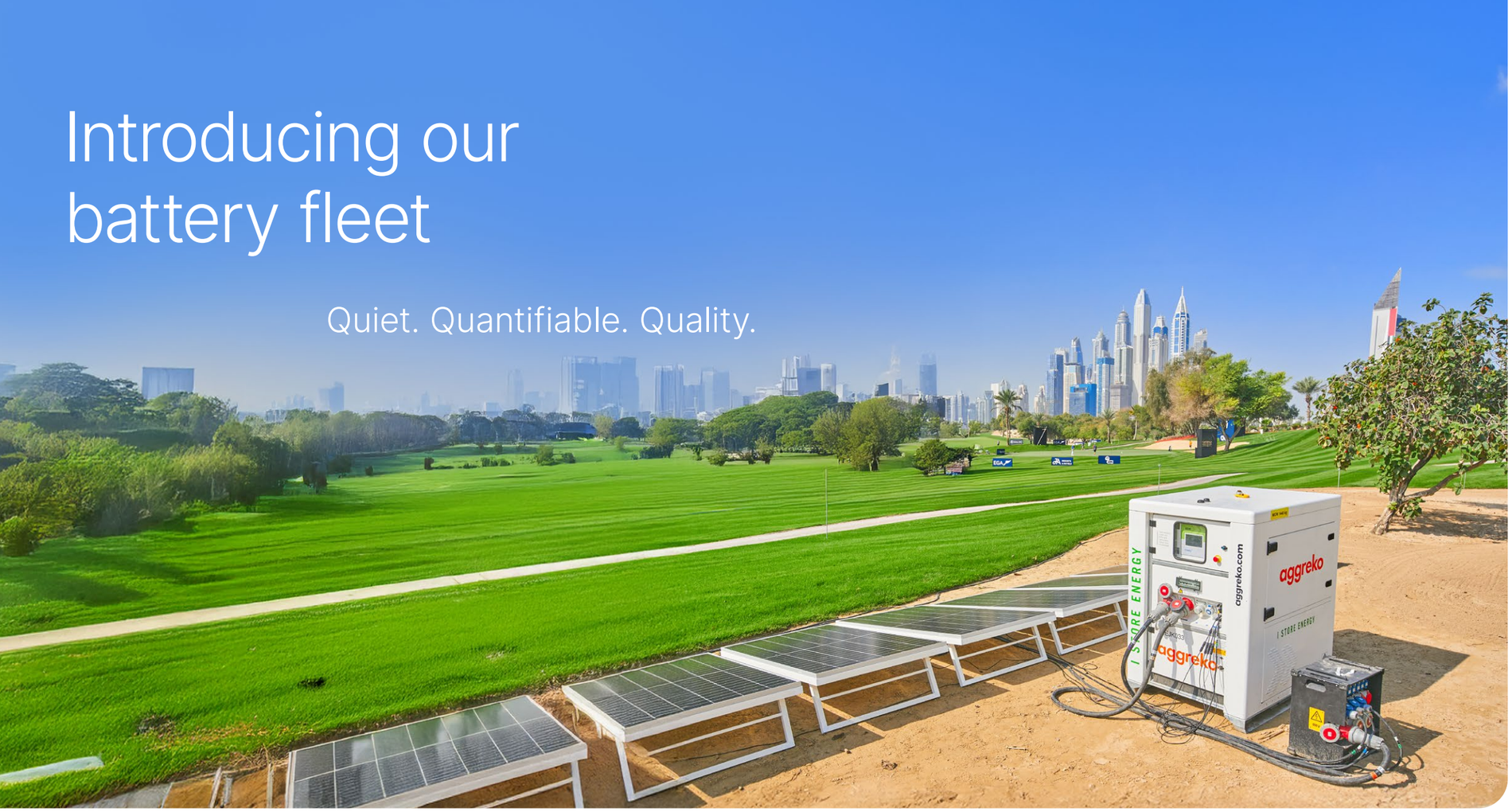
IDEAL FOR:

→ Wind farms

→ Solar

Introducing our battery fleet

Quiet. Quantifiable. Quality.





45 kVA / 60 kWh

DC energy capacity (nominal)	56.8 kWh
AC energy capacity (usable)	46 kWh
Size	L 1.45 m x W 1.23 m x H 1.73 m
Weight	1440 kg



90 kVA / 120 kWh

DC energy capacity (nominal)	127.9 kWh
AC energy capacity (usable)	95.5 kWh
Size	L 1.39 m x W 2.25 m x H 2.09 m
Weight	2880 kg



150 kVA / 75 kWh & 150 kVA / 150 kWh

DC energy capacity (nominal)	75 kWh - 150.5 kWh
AC energy capacity (usable)	49.3 kWh - 98.5 kWh
Size	L 2.21 m x W 1.8 m x H 1.85 m
Weight	3000 kg - 3500 kg



300 kVA / 422 kWh

DC energy capacity (nominal)	422 kWh
AC energy capacity (usable)	341.8 kWh
Size	L 2.4 m x W 2.9 m x H 2.59 m
Weight	8132 kg



300 kVA / 540 kWh

DC energy capacity (nominal)	540 kWh
AC energy capacity (usable)	437.4 kWh
Size	L 3.05 m x W 2.44 m x H 2.59 m
Gross weight	10900 kg



1000 kVA / 1200 kWh

DC energy capacity (nominal)	1228 kWh
AC energy capacity (useable)	994.7 kWh
Size	L 6.06 m x W 2.3 m x H 2.9 m
Gross weight	25000 kg

Battery features and benefits

	FEATURES	BENEFITS
Quiet Minimal noise	Delivers minimal noise	Ideal for projects where sound needs to be kept to a minimum
Quantifiable Proven savings on time, cost, emissions and fuel	Plug and play with the entire Aggreko eco-system	Fast installation and commissioning
	Allows for savings on fuel	Reduces both emissions and fuel costs
	Environmentally friendly	Helps in meeting emissions regulations
Quality Exclusive intuitive features	Designed and assembled to Aggreko's standard → Flexible manoeuvrability options with forklift pockets, lift and drag skid and lifting ring → Wide ambient temperature range	High quality bespoke specification
	Intelligent onboard energy control module that communicates with the generator	Remote management allows optimisation
	Increases reliability	Manages variable loads and eliminates light load periods



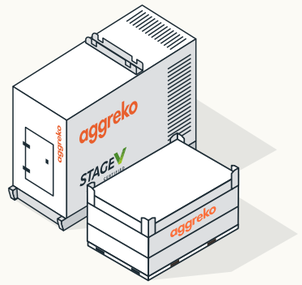
Systems in synergy

Our Stage V generators work in harmony with our battery storage units. Smart technology in our kit detects when required power is low, switching off the generator to allow the battery to take the load. This efficiency delivers fewer emissions, low noise, and reduced fuel costs.

→ We explore the fuel and emissions savings that can be achieved in two typical scenarios.

SCENARIO 01

Site set up plus crane 1 using 2 kW average in the evening for site and aviation lights

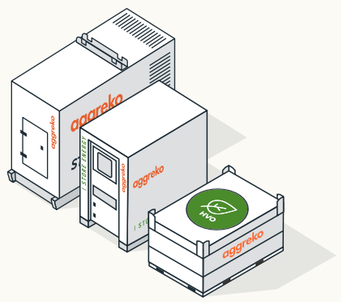


Option 01: Generator only

- → Use 200 kVA diesel generator
- → Daytime – average fuel consumption of 26 litres per hour 50% load for 60 hours (daytime)
- → Night-time – 6 litres per hour for 108 hours

WEEKLY STATS

Fuel usage	2088 litres
Emissions	5560 kg



Option 02: Generator and battery

- → Use 200 kVA Stage V generator with HVO fuel, and 45 kVA battery
- → Daytime – average fuel consumption of 26 litres per hour 50% load for 63 hours (3 hours charging)
- → Night-time – 0 litres per hour for 105 hours

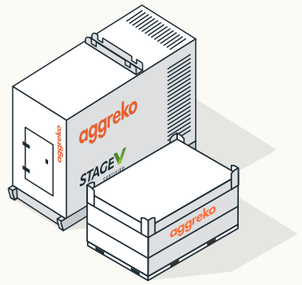
WEEKLY STATS

Fuel usage	approx. 522 litres
Emissions	1399 kg



SCENARIO 02

Full cabin set up, using generator during day and 4 kW on average in the evening

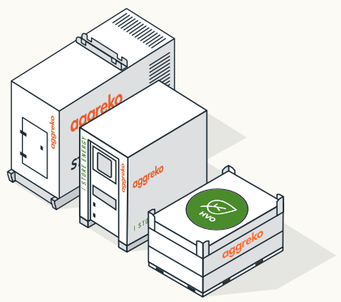


Option 01: Generator only

- → Use 60 kVA diesel generator
- → Daytime – average fuel consumption of 8 litres per hour 50% load for 60 hours (daytime)
- → Night-time – 4 litres per hour for 108 hours

WEEKLY STATS

Fuel usage	937 litres
Emissions	2512 kg



Option 02: Generator and battery

- → Use 200 kVA Stage V generator with HVO fuel, and 45 kVA battery
- → Daytime – average fuel consumption of 26 litres per hour 50% load for 63 hours (3 hours charging)
- → Night-time – 0 litres per hour for 105 hours

WEEKLY STATS

Fuel usage	approx. 391 litres
Emissions	1048 kg

Fuelling our technology

In addition to the right technology, one of the simplest and most effective choices you can make in reducing your local emissions and CO_2 is to switch to Hydrotreated Vegetable Oil (HVO). A superior type of biodiesel, HVO is made from biological material, making it one of the cleanest, greenest fuels on the market.

HVO can be used in all our generators as a drop-in fuel and can be distributed, handled and stored in the same way as traditional fuel, making it a convenient alternative to diesel. It does not contain any esters or contamination, like regular diesel and FAME, which means it can be stored for extended periods of time, with no adverse effects on performance.

The major advantages of using HVO fuel are significantly reduced harmful emissions. This is through improved burning efficiency and lower CO_2 emissions, which are better for the environment.

Benefits of HVO

- → Eliminates up to 90% of net CO_2 greenhouse gas
- → Significantly reduces nitrogen oxide (NOx), particulate matter (PM) and carbon monoxide (CO) emissions
- → Biodegradable, non-toxic, and odour-free
- → High cetane number means HVO is more easily ignited for smoother running, greater power and cleaner performance
- → Safe to use in a wide range of applications



Real life savings

The scenarios below illustrate the real-life emissions and fuel savings you can make by combining Stage V technology, BESS and a superior fuel.

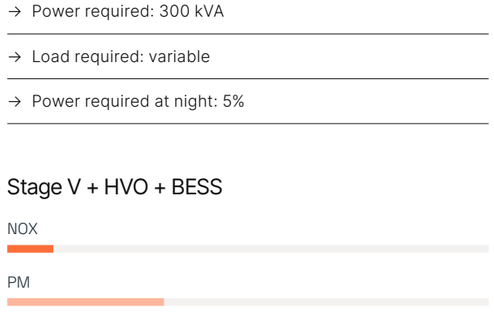
→ By using Stage V in a load on demand (LOD) configuration alongside a Battery and HVO, you can achieve the following savings in NOx, Particulate Matter, CO_2 and Fuel.

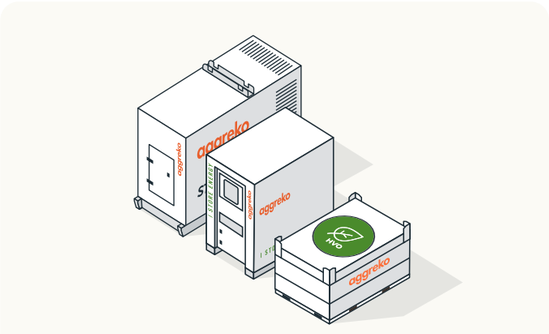
SCENARIO 01

General site power

- → Power required: 300 kVA
- → Load required: variable
- → Power required at night: 5%

Stage V + HVO + BESS



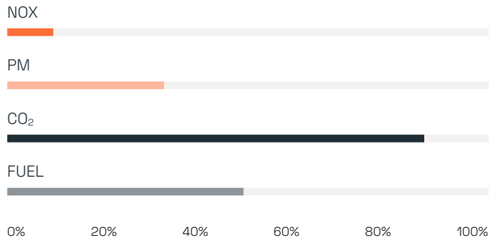


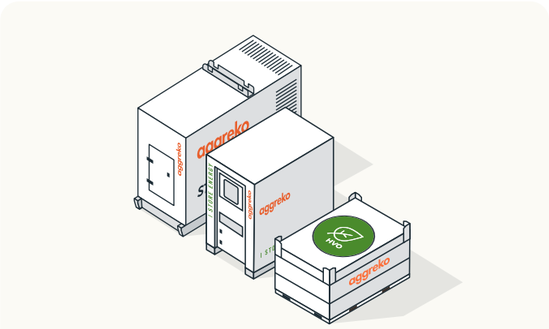
SCENARIO 02

Tower crane

- → Power required: 500 kVA
- → Load required: variable
- → Power required at night: 5%

Stage V + HVO + BESS





The Aggreko approach

Our team deliver a full service to our customers, from cables to kit, fuel to software. We work in partnership to help guide businesses through the energy transition delivering power solutions that lower harmful emissions and reduce fuel costs in the process.

In conjunction with the right technology, we are committed to innovation and continue to test our equipment to maximise efficiencies. This insight along with experience and knowledge of our industry allows us to deliver the right solutions with optimum operating capabilities.

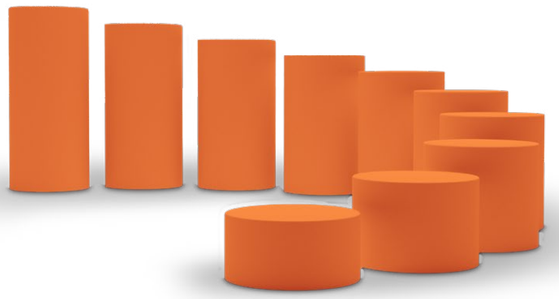
Load on demand

Load on demand is a smart solution that can be used to accommodate fluctuating demand, delivering scalable power when you need it most. The fully automated system can switch the engines on and off to produce only as much power as is needed for better efficiency, reduced fuel and lower emissions.



Rightsizing

Generators that are oversized or poorly matched for their chosen application will lead to inefficiencies. With rightsizing we can match the power generation capacity with your specific power demands, maximising efficiency, minimising fuel usage and reducing emissions.



Alternative fuels

We are exploring the viable options for greener fuel alternatives to diesel and the impact these can have to lessen global and local emissions. We have vast experience in supplying HVO fuel as a direct replacement to diesel. Minimising emissions for customers across a various sectors. We are also continuing to test methanol and hydrogen and have carried out multiple pilot projects with the latter including fuel cell technology which will run alongside our battery energy storage system.

Aggreko Connect

Aggreko Connect is our online customer asset management platform providing access to all account information in one central place. It delivers insights into your business enabling you to maximise your operational efficiency. With speed and simplicity, you can view equipment on-hire, check your orders, and even review kit performance.

Aggreko Remote Management (ARM)

With ARM we can monitor the health of our equipment from a central operation centre and remotely control it to ensure maximum efficiency, reducing emissions and saving fuel costs.

You'll benefit from:

- → Round-the-clock remote management services – 24/7 365 days a year
- → Rapid response to emergencies
- → Proactive equipment maintenance and fuel service

You can view the live data of any of your on-hire kit through ARM on Aggreko Connect at any site. It will also highlight should equipment stop or if a fault occurs so any issues can be remedied. These insights at your fingertips prevent downtime and deliver peace of mind.

Talk to Aggreko today to see how we can support your business and deliver the following benefits:

Lower emissions
Helping you reach your carbon reduction targets

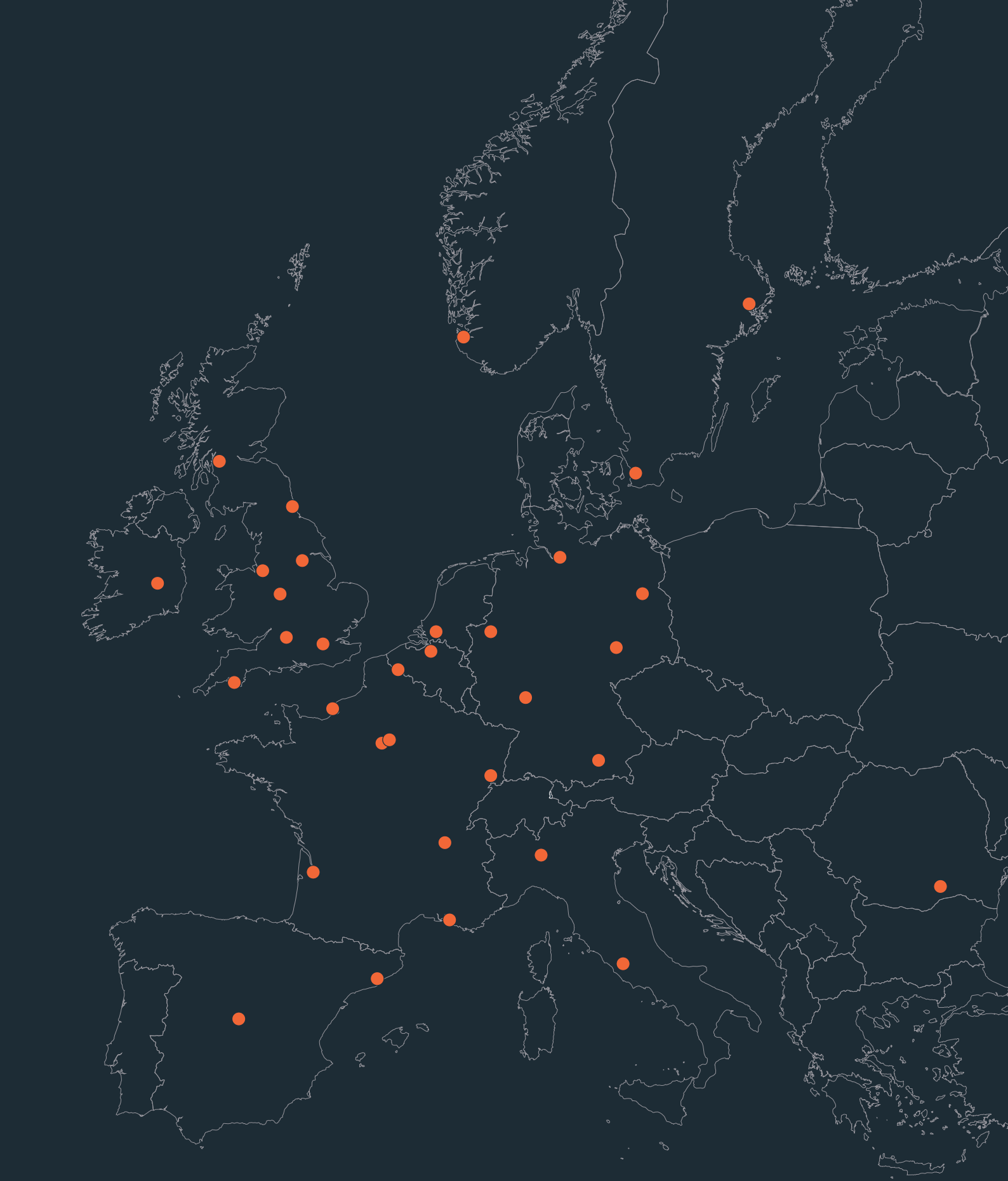
Reduced fuel usage and costs
Saving money on your bottom line

Low noise
Ideal for projects when sound needs to be kept to a minimum

Fast installation and commissioning
Plug and play with the entire Aggreko ecosystem, saving you time and hassle

Turn data into uptime
Monitor and manage the performance and uptime of your assets with Aggreko Remote Management (ARM)





aggreko

Keep your world ON™
aggreko.com