



# HYBRID POWER FOR FESTIVALS, EVENTS AND BROADCAST



[www.fireflycleanenergy.co.uk](http://www.fireflycleanenergy.co.uk)

# POWERING EVENTS



## Firefly

Since 2007 Firefly has provided sustainable power to events, festivals and the broadcast sectors throughout Europe. Our specialist expertise combined with proven and reliably engineered renewable power systems has entertained audiences far and wide, from the fields of Glastonbury Festival to the streets of Paris for the city's marathon. Our corporate, experiential and broadcast clients include the BBC, British Gas, Imagination, Sky, Sledge and Coca Cola.

The UK is legally bound to an 80% carbon reduction target by 2050, hence affecting how festivals, events and TV and film productions will be powered in the future. With increasing requirements to power events with a more sustainable, environmentally friendly approach, Firefly create the appropriate renewable energy mix for any event.

### Firefly offer:

#### Solutions:

- ▶ Hybrid Power Generators
- ▶ Hybrid Power Tower Lights
- ▶ Biodiesel Generators
- ▶ Stand-Alone Solar Power
- ▶ You Power™ Playground
- ▶ Portable Hybrid Battery Packs

#### Services:

- ▶ Design and Installation
- ▶ On-Site Support
- ▶ Dry Hire Services
- ▶ Full Sound and Light Production
- ▶ Real Time Remote Monitoring
- ▶ Post Event Carbon Reporting
- ▶ Renewable Power Consultancy

## The Challenges of Powering an Outdoor Event

- ▶ *Power is one of the largest single production costs*
- ▶ *Power can represent up to 70% of an event's 'core' carbon footprint*
- ▶ *Fuel costs are rapidly rising*

The event and broadcast industries have a unique opportunity to contribute to carbon reduction, showcase new technologies and engage with audiences. By integrating renewable energy sources into a festival site infrastructure, these systems can reduce diesel fuel dependence, cut noise and air pollution as well as greenhouse gas emissions.

## Traditional Usage of Diesel Generators for Events

Inefficient generator use is common at events in the UK. Traditionally at most outdoor events, the same diesel generator that supplies high daytime loads is also left running to provide lower overnight loads. Generators run less efficiently at very low loads, as engines are unable to produce the same number of kWh of energy per litre of fuel when delivering power outputs of less than 25% of their capacity. This burns litres of fuel unnecessarily. Generators consume a baseline of fuel, even if they are not being used to full capacity. Running generators at very low loads can cause damage and reduce the life of the unit.

With an ever increasingly volatile energy market, continuous fuel cost rises and conscious efforts to lower damaging diesel emissions into the environment, Firefly renewable and efficient power systems provide the ideal solution.

| Power Type        | Carbon              |
|-------------------|---------------------|
| Diesel            | ▶ 2.63 Kg per litre |
| WVO Biodiesel     | ▶ Zero Rated        |
| Mains Electricity | ▶ 0.54Kg kWh        |
| Wind and Solar    | ▶ Zero Rated        |

Source: Department for the Environment, Food and Rural Affairs (Defra) 2012



# RENEWABLE POWER SOLUTIONS

## Hybrid Power Generator (HPG)

A Hybrid Power Generator (HPG) is an integrated solution using a range of renewable technologies, such as Solar, Wind, Battery and Biodiesel\*. With these technologies, the HPG provides stand-alone power for variable load requirements. The HPG also has the benefit however, of connecting to any traditional diesel generator to manage variable load requirements, which reduces diesel fuel consumption, whilst also acting as a back-up source of power in the eventuality of a diesel generator breakdown.

Similar to hybrid car technology, our HPG has an intelligent computer management system, which manages variable loads. The HPG automatically manages lower loads and in the event that a higher load is needed, it switches from sourcing power from its own internal battery storage, to providing power from the diesel generator. Likewise, the computer management system of the HPG can also detect when a lower load is needed and switches off the diesel generator. Hence for an event, organisers can be far less dependent on diesel fuel, significantly reducing diesel fuel costs, noise, fumes and maintenance. An HPG provides power with zero carbon emissions when running on internal batteries, which significantly reducing the carbon emission output of your event.

Unlike a diesel generator, our HPG is the most efficient system for managing and supplying variable load power requirements for an event, both day and night. A diesel generator runs regardless of the power drawn from it, whereas our Hybrid Power Generator provides power on demand without needing to run (burn fuel) in case power is required.

*\* Firefly use Waste Vegetable Oil (WVO), as virgin biodiesel has many damaging impacts. Biodiesel is non-toxic, non-hazardous and considered zero carbon as the carbon emitted when burnt, has been pre-absorbed by the growth of the plant.*

## Benefits of Hybrid Power Generators

### Stand-Alone Power

- ▶ Zero carbon emissions
- ▶ Zero noise – truly silent 0dB
- ▶ Zero fuel required
- ▶ Extremely efficient

### In conjunction with a diesel generator

- ▶ Reduces diesel fuel consumption by up to 50%
- ▶ Reduces diesel carbon emissions by up to 50%
- ▶ Reduces maintenance time and costs of diesel generator by up to 80%

## Stand-Alone Solar Power

Firefly generators consist of photovoltaic cells mounted on panels (Solar Fold-Arrays™) connected to a generator. Sunlight is converted into electricity and energy produced is stored within the batteries of the generator. The inverter within the generator is used to step up the voltage, for using the generator with standard mains voltage equipment. When equipment is used, energy is drawn from the battery storage and these batteries are then simultaneously recharged by the solar panels during daylight.

### Benefits

- ▶ Zero carbon emissions
- ▶ Zero fuel required
- ▶ Extremely efficient
- ▶ Visible demonstration of your commitment to low carbon energy
- ▶ Zero noise – truly silent 0dB
- ▶ Connects to all Firefly renewable power systems

## Biodiesel Generator

WVO biodiesel (waste vegetable oil) generators can be utilised in the same way as traditional diesel generators. The biodiesel we use is produced from recycled waste vegetable oil and sourced from the UK - it is not a virgin crop\*. Embracing biodiesel technology is relatively straightforward as you can directly swap existing power infrastructure without the need to redesign your site. There is no limit to the size of the generator sets and the emissions from the generators contain less harmful elements like Sulphur. Our biodiesel generators can be easily linked to our Hybrid Power Systems enabling significant fuel savings.

## You Power™ Playground

The You Power™ Playground equipment transforms kinetic energy through dynamos into electricity, providing a fun and engaging means of harnessing the power of zero carbon human movement. The power generated is a low voltage DC power, which is converted into AC power. The electricity that the playground equipment generates can be used to directly power low energy 12V devices, or it can be stored in the battery banks of any one of our range of generators. This stored energy can then be deployed to power larger mains voltage devices. From mobile phone, tablet, and laptop charging, to powering LCD screens and LED lights, through to small PA systems.

Their sheer size and visual presence make them an ideal means of creating public engagement with a brand or key strategic message. The You Power™ Playground has been used at a variety of experiential, educational and brand activation events, including the Olympics Rings on the River, BBC live broadcasts, BMW, Nissan Paris Marathon, Electric Picnic and launch events for WWF and Friends of the Earth.

### Benefits

- ▶ Unique and interactive experiential event
- ▶ Zero carbon emissions
- ▶ Engage target audiences and generate electricity
- ▶ Zero fuel requirements

## Portable Hybrid Battery Packs

The Pyxis™ Power Pack (110V and 230V) is ideal for trader stands and site offices with low-level power requirements. Applications include lighting, refrigeration, card payment machines, laptops, projectors, digital cameras, tablets and mobile phones. With modular extender packs and options to connect to a Solar Fold-Array™, capacity output can be increased according to requirements.

### Benefits

- ▶ Completely portable by hand
- ▶ Ideal for confined spaces
- ▶ Zero noise – Truly silent - 0dB
- ▶ Reduces cable trip hazards
- ▶ Zero carbon emissions
- ▶ Adaptable with extendable power packs for extra capacity



# FESTIVALS



## Experts in Providing Fully Serviced Renewable Site Power Solutions for Festivals and Events

As one of the most experienced and trusted suppliers of reliable and affordable sustainable power, we have been powering festivals and live events since 2007.

We provide a complete range of flexible services

- ▶ Fully managed site power services for small to medium festivals
- ▶ Dry hire - work with existing contractors - generators from 0.35 - 150 kVA
- ▶ Biodiesel fuel management
- ▶ Mains cabling and distribution
- ▶ Site planning and effective deployment of most appropriate equipment
- ▶ Energy efficient site lighting
- ▶ Post event energy evaluation

*Power has significant implications for the practical, economic and environmental success of any event. If the UK's summer festivals cut their diesel consumption by 10%, over one million litres of diesel and more than 3,000 tonnes of CO2 would be saved in one year alone!*



## Case Study: British Summer Time Festival – AEG

Concerned with maximising efficiency, monitoring energy use, minimising emissions and preventing pollution, AEG are aiming to source 15% of their events energy from renewable sources by 2017. Firefly were approached to provide a renewable power solution for the Hyde Park 'British Summer Time Festival', on behalf of the promoter AEG. We provided a completely solar powered setup for the bandstand stage area.

Firefly played a key part in delivering a sustainable edge for London's most high profile event, with some really effective and innovative solutions. The Firefly Cygnus® 12 kVA HPG with a 4 kWp Solar Fold-Array™ provided power for 10 days of programming during the course of the event. Both the lighting and sound were powered from solar generated power and a full technical production service was provided.

We also supplied our Pictor™ Hybrid Tower Lights to light up key external areas including the meeting point and other important public access and ingress routes. The Pictor™ Hybrid Tower Light provides an effective renewable energy solution for low level power overnight, without dangerous cable trailing and requiring very little space. The tower light with automatic twilight switching provided night-time exterior floodlighting.

### Benefits: Cygnus® HPG

- ▶ Replaced a 20 kVA diesel generator, saving 780 litres of diesel
- ▶ Saved: 1.81 tonnes of CO2 Emissions
- ▶ Saved: approx. £819 in diesel fuel (£1.05 per litre)

### Benefits: Pictor™ Hybrid Tower Light

- ▶ Replaced six diesel powered tower lights saving 312 litres of diesel
- ▶ Saved: 0.72 tonnes of CO2 Emissions
- ▶ Saved: £327 in diesel fuel
- ▶ Provided a silent lighting source in sensitive areas and a very visual representation of the clients commitment to renewable energy

We have worked with:



# EXPERIENTIAL EVENTS



## Aligning Corporate Brands with Sustainable Energy Values through Experiential Events

We provide unique and interactive experiential events by engaging target audiences with corporate brands, through sustainable energy activities. With years of experience working with both experiential agencies and companies directly, from concept to delivery, our reputation is unrivalled.

Capture the attention of target audiences with an inspiring, innovative and unique engagement activity. The Firefly range of You Power™ Playground equipment has been used by many well-known brands such as Coca Cola, Timberland, BBC and Nissan to reach their customers. Each of these experiences has sparked interaction, engagement and conversation with their audiences, through the ability to generate power. Sustainable energy experiences are increasing in popularity, as more and more companies are aspiring to align their brands with sustainable energy values. An interactive experience can be stronger than traditional methods of audience engagement, providing the opportunity to influence behaviour and create brand advocates.

Whether you're looking to reach customers, clients, employees or business partners, interactive sustainable energy experiences can deliver maximum impact by generating excitement and interest.

## Case Study: Electric Ireland – Electric Picnic

Working with the festival's official energy partner Electric Ireland, Firefly launched the electric playground at the Electric Picnic festival. Electric Ireland wanted to demonstrate their commitment to renewable energy through an interactive and engaging experience with crowds at the festival.

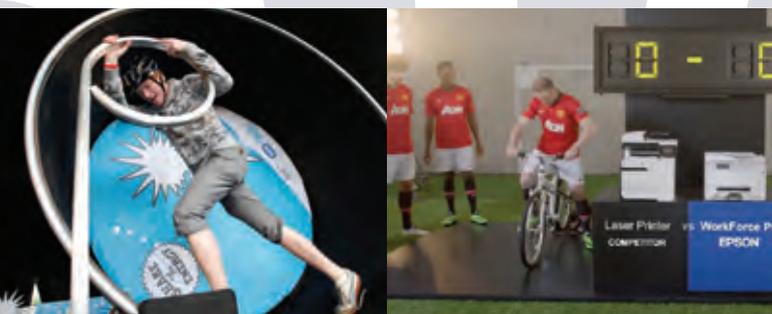
Firefly were asked to provide a full technical production service and created an energy-efficient You Power™ Playground for grown-ups, where festival goers could play and use the energy they generated to charge their phones. The playground featured the HamGen™, PedGen™, WhirlyGen™ and TeedleGen™.

From the adult sized merry-go-round to the giant hamster wheel and see-saw, every part of the playground generated energy that people could share and use. Fifteen bikes were positioned in the Park to give even more opportunity for people to use their energy for the greater good.

The area was a popular feature at the event with power challenges taking place throughout the day, alongside celebrity comedians who compered a competition between two teams to find out who could generate the most energy.

Ken McKervey, Commercial Manager ESB Electric Ireland commented:

*"As the Official Energy Partner to the festival, ESB Electric Ireland is delighted to show festival goers how much fun sustainability can be. We are well aware how important having a facility to recharge phones is to festival goers, so it's great that we can provide this in an entertaining way!"*



We have worked with:



# PUBLIC EVENTS



## Communicating the Importance of Renewable Energy to Educate and Create an Impact with Audiences

We understand the importance of educating communities about the benefits of renewable power. We also have a great deal of experience in creating engaging events for people of all ages, backgrounds and abilities.

Firefly works with Local Authorities, Charities, NGOs and community groups to create memorable events, from fun days to events that are a part of a national campaign. Ensuring that there is an understanding of renewable energy and its benefits within the community is a crucial part of encouraging everybody, to collectively embrace change and to choose renewable sources of energy.

In partnership with you, we can support your vision and provide guidance as to the best methods of communicating core messages to your audience, in a way that is easy to understand. We create visual impact whilst demonstrating your commitment to reducing the carbon footprints of your community.

### Services

- ▶ Creation of interactive activities involving energy
- ▶ Educating your audience through public speaking
- ▶ Providing power for your event
- ▶ Real Time Monitoring as an educational tool
- ▶ Renewable power consultancy

The London Olympics brought the nation together. With the event attracting so much interest and attention, it provided an ideal opportunity for organisations to publically engage with audiences about renewable energy.



## Case Study: 2014 Sochi Park Winter Olympics Launch - London

Bringing a winter wonderland to London, Russia launched their promotional 2014 Sochi Winter Olympics event on the Albert Memorial Lawns in Kensington Gardens. In the lead up to the event, the contractors required a reliable renewable source of power for their site welfare infrastructure at the temporary venue.

Firefly provided a solar power system which ran continuously and efficiently 24/7 for two months. Two of Firefly's Cygnus® Hybrid Power Generators were supplied with four 540Wp Solar Fold-Arrays™. The system delivered sufficient electricity to power security systems lighting, internal fluorescent lighting, phone charging, laptop charging and catering facilities.

### Benefits: Cygnus® HPG

- ▶ Replaced a 20 kVA diesel generator, saving 2,688 litres of diesel
- ▶ Saved: 6.27 tonnes of CO2 Emissions
- ▶ Saved: approx. £3250 in diesel fuel

## Case Study: 2012 Olympics – Rings of the River

Firefly welcomed the challenge from the Greater London Authority to stage a renewable energy contest alongside the River Thames in London, involving people of all ages and abilities. Renewable energy was cleverly linked to the sporting theme through the use of the You Power™ Playground equipment, encouraging audiences to participate in sporting and physical activities as part of the celebrations in London's cultural capital.

We provided a selection of people powered generators from the You Power™ Playground including: Pedgen™ pedal power bikes, hand bikes, the TeedleGen™ see-saw generator and the WhirlyGen™ roundabout generator, all of which graced the banks of the River Thames. The fun and interactive people powered generators enabled passers-by to generate power, which was graphically represented on an LED screen. Firefly software was used to display the teams' power output and race position in real time. It also displayed a cumulative total of power generated over the day.

Participants cycled, ran and bumped their way up to an energy target, which once reached, triggered a water show on a very special barge on the Thames. The activity brought together a mix of people of all languages and cultures from residents to tourists, communicating how sport and renewable energy are important elements of our future.

We have worked with:



# BROADCAST



## Silent Running, Reliable and Sustainable Power Generators for Broadcast

Working with clients from the TV, Film and Radio industries, we understand the importance of flexibility and working to tight deadlines. Our ZERO noise, ZERO vibration and ZERO carbon emission power systems are ideal for location shoots and outside broadcasts. Whether your production is located in an environmentally sensitive rural area or an urban location, our Hybrid Power Generators will provide a greener source of energy for powering your location and unit bases facilities, including honey wagons, camera trucks, dining trailers and OB units. Our road tow power plant can easily be integrated into your existing fleet and we offer full training on how to deploy our hybrid systems.

Firefly offer a portfolio of complimentary services including full power audits, sustainable consultancy, technical production, energy efficient site lighting and post production carbon reporting.

### Hybrid Power Generators

#### Features

- ▶ Zero carbon emissions
- ▶ Zero noise – truly silent – 0dB
- ▶ Lightweight
- ▶ Zero vibration
- ▶ Compact, efficient and simple operation
- ▶ Robust and road towable

#### Benefits

- ▶ Suitable for on location filming such as residential, nature and sport
- ▶ Quick deployment of a reliable power solution
- ▶ Flexibility to adapt to changing environments
- ▶ Cost-effective

## Case Study: BBC Radio 5 Live Energy Day

Firefly were asked to install a temporary microgrid on the Plaza at BBC Media City, Salford as a platform for the BBC 5 Live national energy day debate. The concept of energy day was to create an innovative and unique way of representing a national news story. Radio 5 live brought the debate to audiences and offered them the chance to put their questions to those that matter in the world of energy, whilst the studio was powered purely on renewable energy.

Firefly used a Hybrid Power system to keep this outside broadcast on air for a full 12 hours. The broadcast schedule included a live Q&A session with Ed Davey, Secretary of State for Energy and Climate Change, together with contributions from some of Britain's largest energy providers. The temporary studio was powered using a combination of solar panels, wind turbines and people powered generators, including bike generators, a human sized hamster wheel and a seesaw. In addition to this, waste vegetable oil sourced from the BBC's canteen, was processed into biodiesel, completing the renewable energy mix.

The highlight of the day was a team of 20 cyclists using only pedal power to keep the Richard Bacon show on air for two hours. Joined by Olympic Gold Medalist Chris Boardman, the radio show was entirely powered by kinetic energy produced from Firefly's You Power™ Playground range of PedGen™ bicycles.

Commissioned by award winning media production company TBI Media, the day was heralded as a great success.

*"Firefly's flexibility and attention to detail during the pre-production stages made what could have been a hugely risky project, a resounding success. The fact that we were able to power this OB entirely on renewables speaks volumes for the progress Firefly has made towards making green power a viable option for the broadcast industry"*

Phil Critchlow, Director TBI Media.



We have worked with:



# Hybrid Power for Festivals, Events and Broadcast



Flexible,  
intelligent,  
powerful.

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