Case study

Falls Festival - Outdoor Event

Greener Live Performances

through energy efficiency

Background

Falls Festival is a three-day music festival held from 30 Dec to 1 Jan, and is produced at three locations – Marion Bay TAS, Lorne VIC and Byron Bay NSW.

The festival includes onsite camping and is powered using temporary power generation.

The primary driver for efficiency is the overall reduction of fossil fuels and associated financial savings.

This case study focuses on the Marion Bay event.

The Falls Farm is located near the Marion Bay coastline, which is approximately one-hour drive from Hobart in Tasmania.

Falls Festival is known around the world for its eclectic mix of arts and music. Along with the two main stages featuring the highest calibre international, national and local musicians, it's a place where festivalgoers can join a morning yoga class, learn the samba or walk the circus trapeze, then promptly follow it up with puppetry, burlesque and comedy.

The Marion Bay site is clustered into various precincts – the Main Arena, the Village and Markets strip and the Field Stage. Camping zones are separate from the entertainment.

Approximately 13 000 people attend the event, with almost 100% of them camping on-site, in unpowered car-camping tent sites.

The semi-remote nature of the event restricts availability and type of some energy efficiency solutions.

Power Demand

Falls Festival TAS required generation power for two main stages, 29 caterers, 7 bars, 33 market stalls, site lighting and amenities. There were a total of 26 generators on site, totalling 2216 kVA of power output, along with six lighting towers. Generators ranged in size from 15 kVA used to run entry gates and amenities, and up to 500 kVA for main stage power supply.

Onsite generation is responsible for using a total of 10 796 litres of fuel. This is primarily for one pre-production day and the three days of the festival, however some generators ran longer to provide power for more significant pre and post festival production purposes.

Coates Hire provide power to Falls Festival TAS

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Opportunities

The primary energy efficiency opportunity was to plan the most accurate generator sizing for each area, to allow them to be loaded at the optimal level, given surrounding power demand.

An additional opportunity was to reduce running hours and total fuel used, by planning distribution of power to allow generators to be completely powered down.

The use of low energy and LED lighting was also adopted as a strategy, leading to reduced power demand by stages.

Estimating Savings

Fuel consumption in the generators used at Falls Festival ranged from less than one litre per hour for the smallest generators to up to 13 litres per hour in the 500 kVA main stage generator.

Average fuel consumption across the Festival was 3.5 litres per hour. An assumption can be made that for every hour a generator was not running, that around 3.5 litres of fuel use was avoided.

It must be noted that it is difficult to accurately forecast potential savings as there are so many variables. For example there is a correlation between power demand and fuel consumption

of a generator, with more fuel used per hour if more power demand is drawn. However all generators will be using some fuel per hour if running, regardless of whether power is being drawn.

Efficiency Methodology

An indicator metric has been determined based on the data available.

Useful information collected:

- generator size (kVA)
- fuel consumption
- running hours

An efficiency measure for Falls Festival Tasmania is litres of fuel per hour per kVA.

That takes the total fuel used by a generator and brings it back to a metric which is comparable to other generators, regardless of its size or running hours.

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Measures Implemented

Company Knowledge

There is significant knowledge of energy supply and demand embedded within the Falls Festival team. This comes from many years producing the event at the Marion Bay location with a similar site plan and event activities.

The Site Manager and event team work in harmony to ensure the event's program and creative execution is possible within the physical site and power supply considerations.

This internal knowledge, along with that of generator provider Coates Hire, allows effective year on year improvement to energy efficient power provision. Pre-event planning is simplified as it is drawing on years of event knowledge. Ongoing monitoring feeds into planning.

The measurement undertaken for this case study will add fuel consumption and efficiency data to the Falls Festival knowledge bank, assisting in further refining energy supply and efficiency for future Festivals.

Powering Down

The majority of generators ran for 24 hours across the four days of the festival, with varying degrees of efficiency achieved. The entertainment stage generators and one powering an outlying campsite could be powered down completely for part of the day.

Entertainment stages are often the largest power demand at outdoor festivals, and the largest generators assigned to them. Powering down when possible is a first step to overall event energy efficiency.

Power Distribution

Falls Festival TAS had a total of 33 distribution boards. This provides comprehensive distribution of power around festival precincts, from single larger generators, rather than using numerous smaller generators.

Small Generators

However, outlying precincts requiring power, such as amenities in campsites and entry gates, were serviced using very small generators (15 or 20 kVA).

Outcomes

Reduced Running Hours

A total of 90 running hours were avoided by powering down the entertainment stage generators.

The Main Stage had two generators to power its light and sound. The primary generator (500kVA) ran for 20 hours a day, and the auxiliary generator (350kVA) ran for an average of 13.5 hours a day. The third generator (300kVA) was a standby generator and was not used at all.

On the second entertainment stage, the 200kVA generator averaged 16 hours/day.

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Efficient Loading

The average fuel consumption per hour per kVA for the festival's 26 generators was 0.066 litres.

The three generators servicing the entertainment stages were some of the most efficient generators at the festival. They averaged 0.031 litres of fuel per hour per kVA.

This is an excellent result for the festival, given the potential at music festivals with many performance and multiple AV requirements, for inaccurate or misinformed pre-event power assessments.

The efficiency results for the Main Arena Stage and Field Stage show that the generators that provided power to multiple users, such as a combination of market stalls, bars, site cabins, medical, etc, proved the most efficient.

Some of the least efficient generators were the very small generators (20 and 40 kVA) servicing very low demand such as festoon lighting.

There is little that can be done to increase the efficiency of these generators as the site layout and requirements requires them to be in place. However campers are often very happy without the noise of nearby generators. Options to avoid outlying generators are:

- permanent power distribution to outlying areas
- using power-free amenities
- using solar powered amenities and lighting
- using battery banks for overnight festoon lighting, especially if using LED festoon bulbs

These options are of course dependent on availability of technology, finances and site logistics for each event.

Energy Efficiency IP

Other events can replicate the excellent efficiency results of Falls Festival TAS without the years of company knowledge - through documenting power usage, generator sizes and distribution, fuel consumption and efficiency – to allow future energy efficiency planning.

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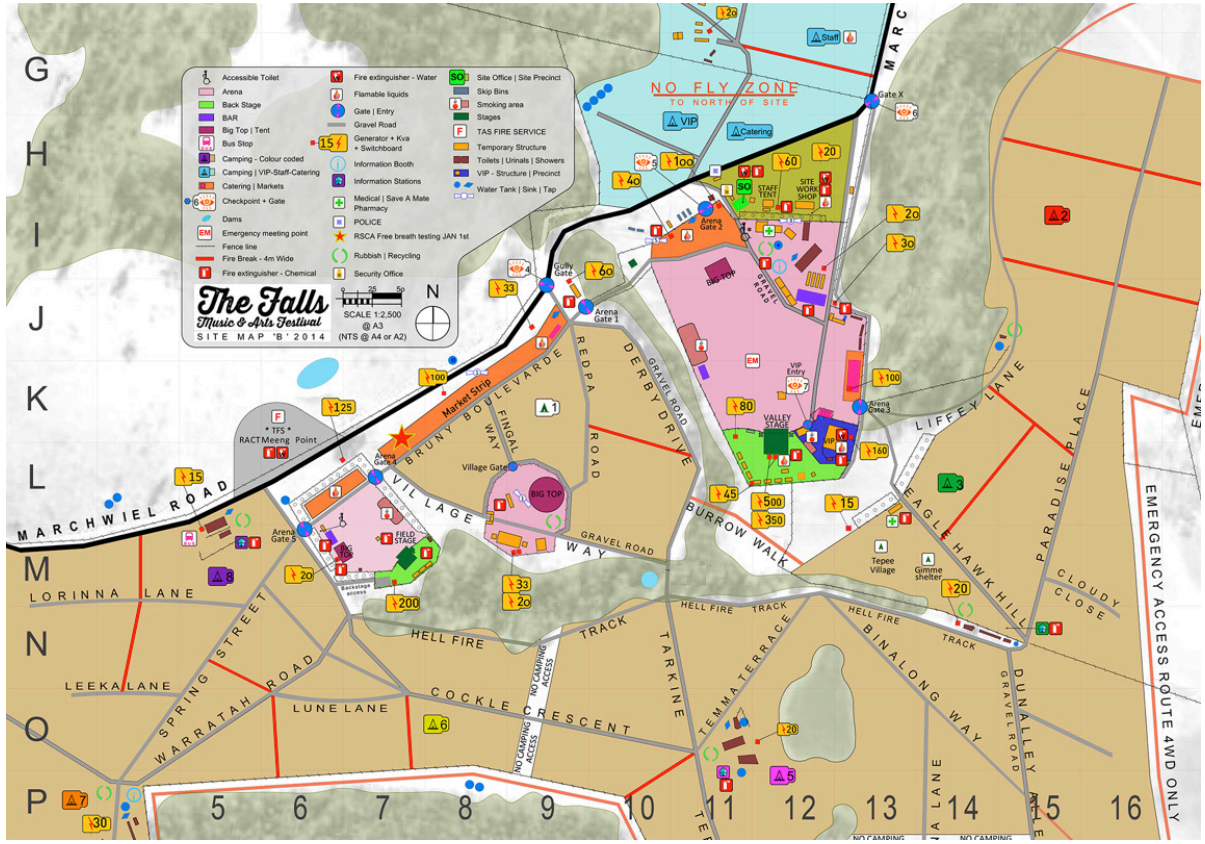
Site Map showing generator locations and sizes



This case study was prepared with the assistance and permission of the Falls Festival TAS team, who provided fuel consumption data, site maps, photos and other detailed information. Generator sizes, running hours, and genset photo was provided by Coates Hire. Special thanks to Abby Allen and Pat Beveridge from Falls Festival, and Stephen Lincoln and Sonya Hendricks from Coates Hire.

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