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IDENTIFYING FUEL WASTAGE



About this Factsheet

This factsheet identifies the main reasons that fuel is wasted at festival and events so that you can see where and how behavior and practices need to change. The factsheet is based on research by Powerful Thinking, Julie's Bicycle and De Montford University.

Since the 1980s, when outdoor events were becoming more prevalent, a 'plug and play' model has persisted in the events industry: event organisers expect the power to be cheap and readily available and the power company will supply generators with an estimated significant margin of contingency in their capacity to ensure that they can provide a reliable supply of energy, which is often based on unknown or incorrect power requirements.

The recommended load for generators to be running at to maximize fuel efficiency and minimize potential damage to the engine of a generator is 60-80%.¹

The Power Behind Festivals Guide (2012) detailed research undertaken in the UK by De Montford University that showed that, of the generators monitored at eight events, every single system had periods of working below a 25% load, and some of them operated entirely below a 25% load. In more than half of cases the generator was more than double the capacity required. At one event, the main stage generator was eight times larger than the peak load.

Since the 1980s, when outdoor events were becoming more prevalent, the typical model that has persisted in the events industry is one in which the power company will supply generators with a significant margin of extra capacity in order to provide a reliable service, based on unknown or incorrect power requirements from event organisers. This is wasting time, fuel, money and emitting avoidable emissions into the atmosphere.

¹ Watt-Now presented this research and findings at Amsterdam Dance Event 2015. Studies from De Montford University and Julie's Bicycle are presented in The Power Behind Festivals Guide ed.1 (Powerful Thinking: 2012), <http://www.powerful-thinking.org.uk/resources/the-power-behind-festivals-guide/>

Where is fuel being wasted?

Research by Dutch Energy Consultants, Watt-Now, helps us to understand the reasons for fuel wastage, and backs up conclusions from several UK studies by De Montfort University and Julie's Bicycle.²

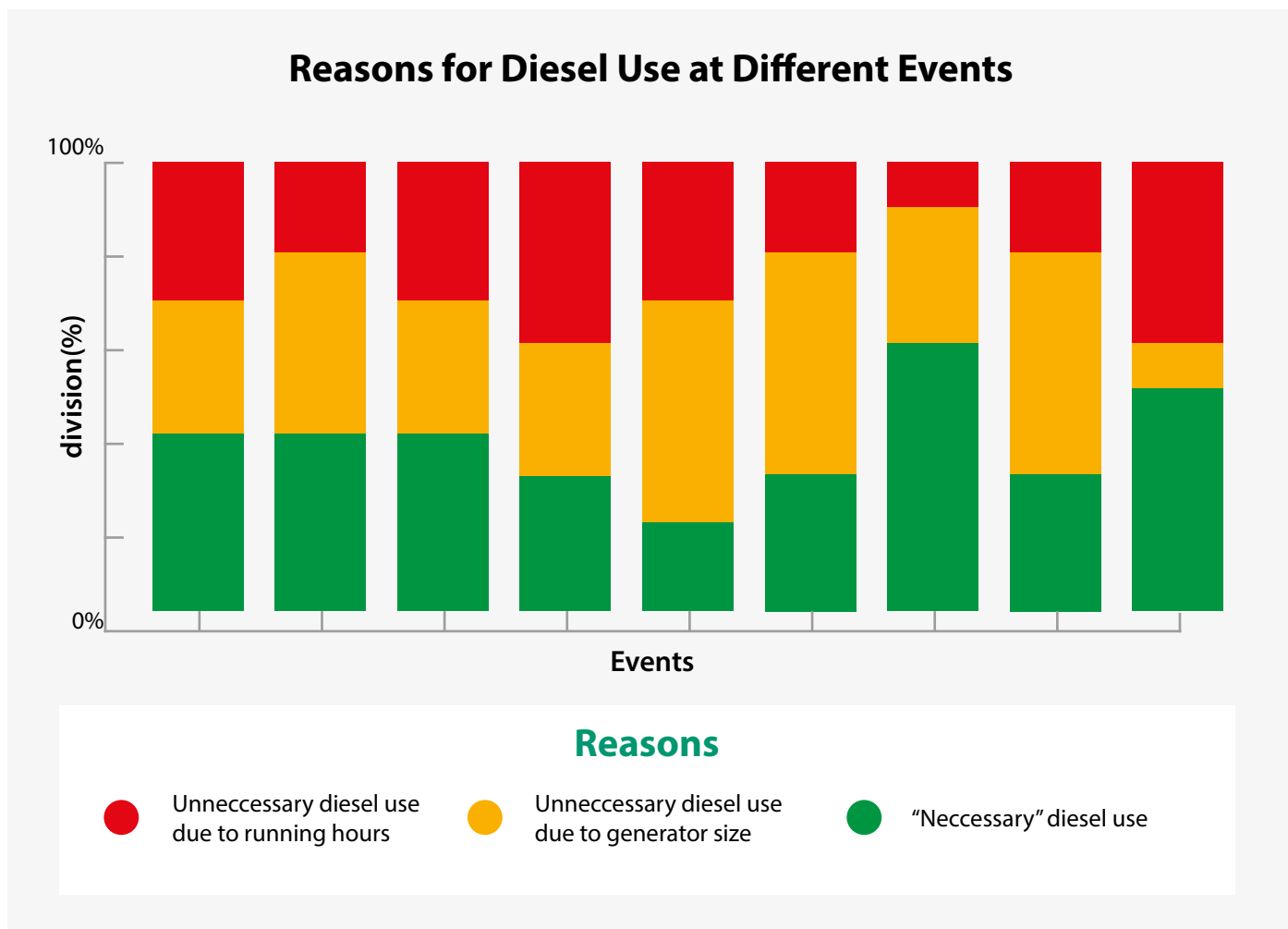


Figure 3. Reasons for Diesel Use at Different Events, Watt-Now, 2015

² Watt-Now presented this research and findings at the ADE Green in 2015. Studies from De Montford University and Julie's Bicycle are presented in *The Power Behind Festivals Guide ed.1* (Powerful Thinking: 2012).

The main factors that lead to inefficiency:

- Inaccurate or absent power specifications in advance.
- Lack of detailed scheduling i.e. generators being run unnecessarily.
- Inefficient and old equipment that uses a lot of power.
- Behaviour e.g. leaving lights or equipment on when not needed.
- Single source power demands e.g. sponsors and headline acts.

Generally the root cause of inefficiency is a lack of accurate information about the power requirements of the event in advance, which is needed in order to plan an efficient power system.

Table 2: Reasons for Diesel Wastage

CAUSE	EXPLANATION/DETAIL
<p>Uncertain information about actual requirements.</p>	<p>A production manager and/or power company will often add a margin to power demand estimates to ensure they can accommodate the unforeseen, and make sure the show can run smoothly. The result can be significantly oversized generators, rather than generators sized to allow for a moderate percentage of headroom. Power suppliers can't be expected to reduce the size of generators without more accurate information from festivals and/or end users about what is actually required.</p>
<p>Single source power demands from artists.</p>	<p>Artists often request a dedicated power source for their specific needs because it is believed to be less risky. This is inherently less efficient as it requires more generators, usually running at lower loads. Whilst scenarios are undoubtedly case-by-case, feedback suggests that in many cases generators could supply several end users safely with trips and careful system design. Who is generally likely to know more about whether a power system is robust – the power supplier or the artist management company? The role of the artist representative is to provide accurate information to enable a robust system to be designed by the power contractor.</p>
<p>Over-specification of requirements.</p>	<p>For example, a stage lighting provider may make a request for power that leaves plenty of capacity over and above their needs and the power company may also add a margin. This is typical, and is one of the most common caused of oversized generators and fuel waste.</p>
<p>Cross-hiring equipment.</p>	<p>Many power suppliers don't own their equipment and consequently use generators that are larger (rather than smaller) due to stock availability from their generator suppliers. Whilst there may be no intention to do this, it happens, and the result is potentially higher fuel bills for the festival depending on how the generator is loaded.</p>
<p>Specific needs of certain equipment.</p>	<p>Some equipment, such as electric starter motors for showers and pumps, require a huge amount of power to get started and then run on very little, causing lower generator efficiencies for most of the running time.</p>
<p>Different demands at different times.</p>	<p>A difference in power demand at different times and periods during events is inevitable, for example build and break, day and night, and during main stage headliners etc. A system that is not designed with that variation in mind will waste fuel. A common approach is to design systems powered from multiple generators, so that some can be switched off during periods of low demand rather than supplying each area with a single generator which is always on. Hybrid units are also effective in many situations where periods of low demand occur because they allow their associated generators to be switched off.</p>
<p>Lack of cooperation between parties.</p>	<p>It is typical that parties responsible for various elements of the organisation of an event don't communicate about power effectively. If festival managers consider power, ensuring accurate specifications from all end users, and site managers work with the power contractors input, savings can usually be made though better system design.</p>

HOW DOES YOUR EVENT COMPARE TO THE UK FUEL CONSUMPTION AVERAGE?

Created by Powerful Thinking with support from the UK's Association of Independent Festivals, the Festival Fuel Tool is a simple tool that provides a user with an energy rating based on industry benchmarks, carbon emissions attributable to fuel use, percentage of WVO biodiesel compared to industry averages and a print-out of results to share with staff. It

is intended as a guide – all events are unique and there may be good reasons for differences. For more detailed information and insight, event organisers can use the [Julie's Bicycle Creative IG Tools](#).



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