Power at Oerol, but without generators…

Introduction
It cannot have escaped your attention that in recent years we have been faced with more and more regulations in the Netherlands regarding CO2, particulate matter and nitrogen emissions. This has consequences for Oerol, which is why you now have a long document about the power supply in front of you.

The starting point for Oerol 2024 is that we will not use traditional diesel generators at any location within the Natura 2000 area, this is also not permitted within our Nature Conservation Act permit (due to nitrogen emissions). We must also work with aggregates as little as possible for locations outside the Natura 2000 area.

Alternatives
We will use this for locations at a maximum of 100 meters from a fixed power connection with sufficient power. The charm of playing at Oerol, however, is that we like to play in places where there are no buildings nearby. Unfortunately, in many of these places a one-to-one replacement of a generator is not always possible. We will therefore often have to look at alternatives for the power supply in order to be able to create a nice performance.

First of all, we will take a critical look at the amount of power that is really needed to create a nice performance. Where possible, we will choose alternatives that do not require electricity on site. For example; Making coffee and tea does not have to be done on location and can be carried in a flask. In principle, we will also no longer supply electricity for lighting to groups that play outside in daylight.

For groups that only need power for a sound set, we prefer to opt for battery solutions. For each group we examine whether this can be a small sound system with a built-in battery, a portable battery that is charged in the evening in the group's house, or whether it is necessary to opt for a battery on a trailer chassis that is supplied with one of the groups. the Oerol locations are charged.

Examples of use of batteries
Unlike a generator, a battery does not generate electricity, so a performance must be able to make do with the power stored in a battery. A few examples on the next page:

Wattsuns
Wattsun's battery systems are very suitable for groups that require little power. In terms of battery size, you have to think in terms of the size of a number of bicycle batteries.

If power is only needed for a sound set with a few transmitters and speakers for 100 people, a Wattsun system will often suffice. Wattsuns are small (shopping crate size) and weigh about 20 kg. These can therefore be charged by the group itself in their home.

If not much power is needed, but a Wattsun cannot supply power for long enough, one or more extra Wattsun(s) (pack) can be stacked on a Wattsun (dock) to extend the operating time.

Trailers
There are several suppliers who supply trailers containing an inverter and a battery pack that is comparable to the battery pack in an electric car. The power and capacity vary per supplier, but these sets are generally suitable for larger sound sets or groups that want to use a projector, for example.

The trailers will generally have to be driven every evening in a sturdy car to an Oerol location with a (power) electricity connection. Naturally, we use points with green energy for this.

Hybrid systems
Hybrid systems have a solar panel and/or generator built into one housing in addition to the battery. The hybrid systems combine the good of generators (always power available) with the good of batteries (quiet and low emissions).

In many cases these systems appear to be Columbus's egg. Unfortunately, the number of suppliers who can supply these systems is limited and due to the presence of a generator, these systems may not be installed everywhere.

Battery as buffer
We use the last category of systems in places where a permanent power connection is available, but it is (just) too small for the performance. We connect these systems to the fixed power connection and can charge and discharge at the same time. Because they can discharge at a higher power than charge, they are suitable as a buffer. If your group needs a 32A connection and there is a farmer's shed with a 16A high-voltage connection for a milking machine, the battery as a buffer is a good option. These battery systems therefore work as “current multiplier”

Resume

System	**Capacity (kWh)**	**Power (kW)**	**particularities**
Wattsun dock	1,4	2	Can be stacked with an extra pack for higher capacity
Wattsun pack	1,6	n/a	You can place a maximum of 3 packs on one dock
Trailer	5 to 50	5 to 40	Charging at another Oerol location
Hybrid system	7 to 60	5 to 36	The battery is charged using a solar panel and/or backup generator. Not allowed everywhere and limited availability
Battery as buffer	45 to 300	30 to 300	In combination with a fixed connection

How do you know what is needed?
Where in the past we could in many cases install a generator that was “certainly large enough”, it is now important to know how much power is needed and for how long. This is also important because it has a major impact on costs.

In some cases it is sufficient to check the Wattage of the devices used. Multiply this by the length of the performance (plus some extra, you also want to be able to respond quietly) and you have the required kWh. This applies, for example, if you only have lights that are on at 100% for the entire performance.

If you use audio equipment, projectors and special effects, it is a bit more complicated. The Wattage stated on these devices is a peak, which is rarely or briefly used in practice. In these types of situations, it is wise to measure what the real use is before you come to Terschelling.

You can measure how much power you use in the case of a 230V connection using a simple intermediate meter that you can buy from Conrad for a few tens of euros, for example. If you find this objectionable, you can also borrow such a meter from Event Engineers. For larger connections, a (limited number of) meters can also be borrowed from Event Engineers.

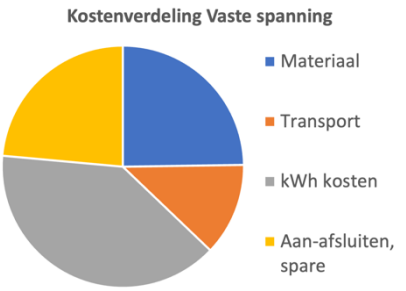
Groups that are unsure whether a Wattsun is sufficient for the set they want to use at Oerol can also contact Event Engineers to try out a Wattsun for two days.

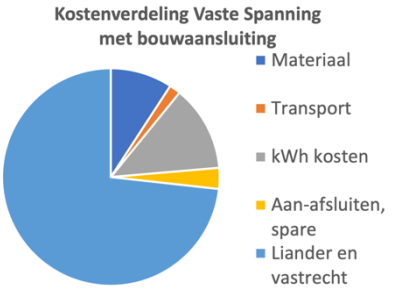
Cost
Oerol rents different types of batteries from various suppliers and we try to use them as efficiently as possible. Depending on the agreements made, these costs are paid by Oerol or passed on to the group.

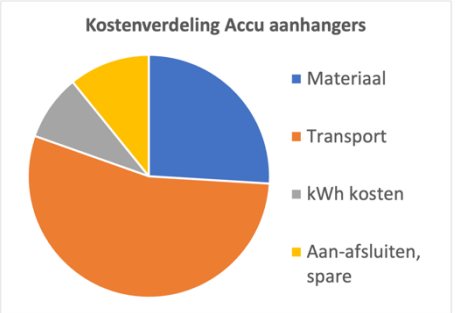
The charging of the power supplies by Oerol consists of the costs of equipment rental, transport to and on the island, installation (for permanent connections incl. the costs of Liander), cables plus distribution box to the theater location and sufficient spare material. After all, things sometimes break during the festival. You can see how these costs relate to each other in the graphs below.

It is very important that we know in advance how much power a group needs. If we bring a set to the island we will have to pay for it, even if it is too big or too small...

In the appendix we have made a price estimate for a number of common sets. This price includes cables and one distribution box at the theater location. If more cabling is required, we can also provide this, but this will of course incur an additional charge.







Appendix, estimated prices of power sets Oerol 2024:

Estimated prices of power sets 2nd delivery Oerol 2024 (+/- 1 week before festival)

mains voltage (preferred, where possible)	
230V power point	€ 150,00
16A power current	€ 330,00
Increase US to 3x 63A	€ 3.010,00
Construction connection 3x 25A	€ 2.560,00
Construction connection 3x 35A	€ 3.280,00
Construction connection 3x 50A	€ 3.740,00
Construction connection 3x 63A	€ 4.240,00
Construction connection 3x 80A	€ 4.760,00
Battery sets (limited availability)	
Battery as buffer + Fixed Voltage (32A)	€ 2.660,00
Wattsun Dock (2 kW, 1,4 kWh)	€ 510,00
Wattsun Dock + Pack (2 kW, 3kWh)	€ 860,00
Small trailer battery (4 kW, 24 kWh)	€ 2.590,00
Hybrid system (15 kVA) or trailer battery (32A) incl. charging	€ 4.050,00
Hybrid system (45 kVA) or trailer battery (63A) incl. charging	€ 6.020,00

Estimated prices of power sets 1st delivery Oerol 2024 (+/- 2 weeks before festival)

mains voltage (preferred, where possible)	
230V power point	€ 200,00
16A power current	€ 460,00
Increase US to 3x 63A	€ 3.390,00
Construction connection 3x 25A	€ 2.720,00
Construction connection 3x 35A	€ 3.480,00
Construction connection 3x 50A	€ 4.060,00
Construction connection 3x 63A	€ 4.620,00
Construction connection 3x 80A	€ 5.280,00
Battery sets (limited availability)	
Battery as buffer + Fixed Voltage (32A)	€ 3.590,00
Wattsun Dock (2 kW, 1,4 kWh)	€ 730,00
Wattsun Dock + Pack (2 kW, 3 kWh)	€ 1.250,00
Small trailer battery (4 kW, 24 kWh)	€ 3.130,00
Hybrid system (15 kVA) or trailer battery (32A) incl. charging	€ 4.840,00
Hybrid system (45 kVA) or trailer battery (63A) incl. charging	€ 8.050,00