



**Off-Grid**  
clean. silent. safe.

## Clean rental power for the construction of wind parks.

### The challenge

The European regulations for the construction and operation of wind turbines demand an uninterrupted power supply for obstruction lights and lubricant pumps. After completing the plant or wind farm, it can take up to six months to connect it to the power grid. During this time, the plant cannot produce electricity for the grid or auxiliary needs. However, energy is needed for the lubricant pumps and obstruction lights.

### Previous solution

Most operators continue to use diesel or gasoline generators to provide power during critical periods. Not only do such generators cause noise and emissions, they are also extremely expensive to run and require a great amount of maintenance. Typical generator sizes are about 15 kVA (12 kW) for diesel and 4 kVA (3.5 kW) for gasoline. At the required output, generators tend to run inefficiently under partial load while consuming correspondingly high amounts of fuel, and thus causing regular service calls for maintenance and refueling – up to twice a day. This increases construction costs.

### Power consumption

Sample calculation to determine the daily energy demand of the obstruction lighting of wind parks (day & night)


	Power [W]	Runtime [h/day]
Daytime (white light)	400	16
Night (red light)	250	8
Consumption per day (kWh)		8.4


replacing  
diesel generators.  
with SIQENS  
fuel cells.


# The SIQENS solution

The SIQENS Ecoport 800 is based on our patented fuel cell technology. As a fully automatic battery charger it can be easily integrated into off-grid energy systems. Supply gaps from photovoltaic and wind systems can thus be covered reliably and batteries can be considerably reduced in size.

The hydrogen required for energy generation is obtained from liquid methanol: an energy carrier that is globally available at low cost – regardless of the expansion of the hydrogen infrastructure. You and your customers benefit from a clean, silent, and safe system – while making a decisive contribution to reducing global carbon emissions. In short: a sustainable and economical solution that meets the challenges of the 21<sup>st</sup> century.

 **clean.**  
Minimizes carbon emissions and eliminates toxic fumes

 **silent.**  
Protects employees, residents and nature

 **safe.**  
Methanol is easily biodegradable

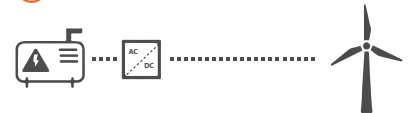
## SIQENS Ecoport 800 for obstruction lighting

### Daily power consumption of 8.4 kWh

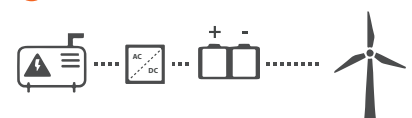
Energy source	5 kW diesel generator		SIQENS Ecoport 800
	①	②	③
System design	Stand-alone	Hybrid	Hybrid
Battery	–	4 kWh Li-Ion	4 kWh Li-Ion
<b>Operating data</b>			
Fuel	Diesel	Diesel	Methanol
Consumption [per day]	45.37 l	11.2 l	5.5 l
Autonomy*	< 2 days	> 7 days	> 13 days
<b>Emissions</b>			
CO <sub>2</sub> [per day]	118.53 kg	29.25 kg	5.89 kg
Particulates [per day]	0.05 kg	0.01 kg	0.00 kg
Nitrogen oxides [per day]	1.02 kg	0.25 kg	0.00 kg

\* Time of autonomy with a 75 l fuel reservoir

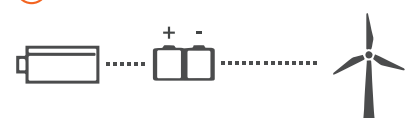
① Diesel generator stand-alone



② Diesel generator with Li-Ion battery



③ SIQENS Ecoport 800 with Li-Ion battery



**>50%** reduced fuel consumption doubles the time of autonomy **>79%** reduced carbon emissions while eliminating noise, particulates, and NO<sub>x</sub>



Particularly at partial load, diesel generators become extremely inefficient. For example, smaller generators often require two to three liters of diesel per hour, regardless of the actual load. In contrast, for a required output of 200 Watts, the SIQENS Ecoport 800 consumes less than 0.2 liters of methanol per hour. For you as an operator, this means fewer refueling intervals at reduced operating costs.

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safe.



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