

GEM-Stage Factsheet 2021



The GEM-Stage (*Green Energy Mill*) is a hybrid, foldout, eye-catching stage that runs on solar energy, wind energy and hydrogen. The tower is 21 meters tall, and has a 10-meter diameter. The stage itself is 6 x 8 meters.

The stage generates its energy through solar panels, LSC panels in the tower, a wind turbine located at the top, and a hydrogen generator which is placed next to the stages. The energy is stored in the battery - located at the base of the stage. The GEM project was started in 2018. In 2019, the GEM-Tower was designed and first placed at Pukkelpop Festival (BE). After adding a stage and a hydrogen generator, in 2021 the GEM-Tower became GEM-Stage. In summer 2021, the GEM-Stage will tour several European countries.

GEM-Stage specs

- Height: 21 m;
- Base diameter: 10 m;
- Stage: 6 x 8 meters;
- Wind turbine: Darrieus-Savonius Vertical Axis, 3 kW;
- Battery: 25 VRLA cells, net useable capacity 45 kWh;
- PV panels: 36 Semi Flexible, PERC cells, 4 kW;
- Hydrogen generator: 20 kW;
- Maximum power output 30 kVA / 24 kW.

GEM-Stage fun facts

- The stage can provide the amount power that is needed for a full live show of a DJ, Singer-songwriter or band;
- The stage was designed together with the festival organisations within the GEM project;
- There are over 300 hinges in the stage;
- 584 bolts and nuts are required;
- The 700 kg vertical wind turbine is placed at a height of 18 meters;
- 20m² of coloured solar panels (LSC panels) is incorporated in the tower;
- The stage does not have to be anchored;
- 3.2 m³ of concrete has been used as a counterweight as well as the weight of the battery;
- An estimated 100 people contributed to the realisation of the first GEM-tower (2018-2020);
- The 45 kWh GEM battery can charge an iPhone up to 3.500 times – that's 9,5 years worth of charging the phone on a daily base.



GEM-Stage is part of PowerVIBES, an Interreg NWE project.

Partners: TU Eindhoven, Pukkelpop, Off Grid Energy, Zap Concepts, Double 2 Mediaproducties, Eurosonic Noorderslag, Democrazy, Flexotels, RPS Conservation Services