

JUWELIS Energy Container



The JUWELIS Energy Container is the optimal solution to provide continuous electrical energy for a temporary power supply in rapid disposability.

The positioning as a permanent power plant in locations without access to grid-tied electricity is a very economical solution in comparison to conventional isolated concepts whose basic power generation is only based on fossil fuels.

The variety of the different energy sources (wind, sun, and diesel) and the adapted storage ensures high availability in combination with low maintenance and operating costs.

With the JUWELIS Energy Container a proven and certified system with turnkey experience and worldwide service partners will be delivered.

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Independent energy with the JUWELIS Energy Container, designed and manufactured in Germany, EN 61400-2 certified, sustainable, variety of applications and easy handling.



The JUWELIS Energy Container is a hybrid power plant that ensures the highest available of reliable energy without connection to an electrical grid.

The power generation is based on two sustainable energy sources: WIND and SUN combined with a battery storage unit.

The ancillary diesel engine generator works only as a stand-by power supply increasing availability.

The power rating of the main components can be tailored to your energy needs.



The power plant guarantees a continuous output of electrical energy up to 120.000 kWh in a year. Wind and sun controlled by a central software achieve the best cost effectiveness.

The JUWELIS Energy Container allows the operation of temporary or permanent facilities in a wide range of requirements in unique locations.

The ready-to-use set-up of the system takes only 4 to 6 hours.



The JUWELIS Energy Container provides (depending on the specific requirements) continuous power in a range of:

- 5 kW electrical with a yearly production of 40.000 kWh/battery capacity of 50 kWh
- 10kW electrical with a yearly production of 80.000 kWh/battery capacity of 100 kWh
- 15 kW electrical with a yearly production of 120.000 kWh/battery capacity of 150 kWh

The capacity of the photovoltaic-generator and the battery storage can be extended. A key advantage is the usage of the diesel-engine generator only as emergency back-up-system. The auxiliary diesel-engine generator can be driven with gas, diesel or bio diesel.

All components fit well-standard sea-container



packed into a 20 ft. for shipment.

General technical data and equipment



Off or on grid operation or a combination of the two is possible. The external dimensions of the sea container allow the operator to shift the power plant in one day to another location to start-up again.

Total weight of the complete system: 8 metric tons. External dimensions in the operation mode: 9x11 m.

All components are designed for remote control monitoring. Approved materials to withstand rough climate conditions i.e. sandstorm or sea climate.

Integrated wind turbine

Horizontal-axis wind turbines (HAWT) with 3 blades.

Rated Power of the wind turbine 5, 10, 15 and 20 kW. The maximum power is 25 – 40 % over the Rated Power.

Very low start-up wind speed: 3,5 knot (4,0 mph); off wind speed: 60,0 knot (68,0 mph).

Optimized 3-rotor blades guarantee a high yield and low-noise emission.

Different-sized tower available up to 20 m as free-standing or braced segment construction → See the photo for a braced tower!

Material of the tower: steel, hot galvanized or painted by powder coating



Torque - synchronous alternator with direct power conversion capacity
Gearless design guarantees minimal maintenance costs.

Three-way brake:

1. electromagnetic or mechanical (selection depending on individual requirements)
2. Rotating the turbine out of the direction by the integrated azimuth–yaw control
3. Short-circuit breaking capacity of the generator with automatic restart

Rotor blades injection moulded in GRP (glass-fibre reinforced plastic) and manufactured under tight tolerances.

Microprocessor-controlled rotation speed controller and dual overload protection.

Shutdown under icing conditions and emergency power supply by mains power failure.

Photovoltaic generator

The component consists of between 10 - 40 crystalline solar panels with an efficiency of more than 15 %. Angle of inclination of the module surfaces can be custom-made for length and width to maximize the yield. The peak power warranty of the solar panels amounts to 25 years.

Battery component

We utilize top quality OPzV or Lead-Acid industrial batteries with low self-discharge. Different sizes available to match your power generation. The battery lifetime is up to 15 years.

Electrical inverter

A set of Maximum Power Point Trackers (MPPTs) is used to operate all components at optimal efficiency of more than 95% in order to obtain as much power as possible from the generator. The inverter is directly connected to the control unit.

Operation mode and (remote) monitoring

The control panel displays all relevant information. Wind speed, energy production and all essential technical data. The off-site operator has full information available during operation.

The off-side operator will be informed about all operation modes.



Another great operational feature is the ability to switch between automatic and manual control of the wind turbine, safety devices (e.g. brake) and distribution/storage of generated power.

The controller manages the balance of production and energy consumption. As soon as the battery charge level is too low the controller triggers the production components to recharge the storage.

Safe to operate

Each component of the ENERGY CONTAINER can be operated independently in case of a failure of another component.

The embedded controller communicates via GPRS or a system of your choice with the system operator to ensure fast correction and adjustment of the energy system.

Further systems under monitoring:

- Air conditioning
- Fuel tank level



Long-term maintenance warranty for the diesel-engine generator is up to 800 hours.

Ideal for Developing Countries and Construction Sites

The **5 kW JUWELIS Energy Container** is able to provide the average energy demand of more than **800 inhabitants** in African countries like Gambia, Malawi, Mali, Niger, Sudan, Tanzania, Uganda, Somalia.

Several of the energy containers can be combined to build a reliable temporary power supply for example a village or refugee camp.

The power plant “farm” can be moved to another location in case of further developing in this area i.e. in case of connecting to the national grid.

Another application is to supply temporary accommodations on construction sites (camp grounds, trailer park). Energy (without air-conditioning) can be provided for **50 to 100 workers** inclusive cooling devices (refrigerator boxes) with a **10 kW JUWELIS Energy Container**.

You can ensure a short reaction time to organise the power supply.

Ideal for Disaster Areas

The **JUWELIS Energy Container** is able to provide the energy for a field hospital.

One 5 kW version container will give sufficient electrical power to perform surgery in a mobile (army) surgical hospital.

Several of the energy containers can be combined to build a reliable temporary power supply for a bigger hospital site.

Also here, you can act very quickly to rush demand.



Ideal for Water Supply and Desalination

Continuous power of 4.0 kW for one pump station with a pumping capacity of 50.000 litre water per day from a depth of 65 m.

5 kW JUWELIS Energy Container with 5 KW rated continuous power

→ Operating of 1 water pump

10 kW JUWELIS Energy Container with 10 KW rated continuous power

→ Operating of 2 water pumps *or as an additional application*

→ The deployment of a water treatment or desalination unit



The water desalination unit is disposable in a proven combination with the JUWELIS Energy Container. The complete equipment of the unit fits into or on top of the power supply unit.

Ideal for Mobile Communication



Electricity grid-independent power supply for the Mobile Communication, other wireless applications of service provider and army services. Continuous power of 5 kW for one power supply station to supply standard mobile broadcasting stations.

The JUWELIS Energy Container ensures also the remote management of the broadcasting sub stations.

10 kW JUWELIS Energy Container with 10 KW rated continuous power:

Operating of 2 independent mobile broadcasting stations or one unit in combination with an additional air-conditioning to run the broadcasting equipment under desert climate conditions.

5 kW JUWELIS Energy Container with 5 KW rated continuous power:

can provide 1 independent mobile broadcasting station

Ideal for E-mobility

The JUWELIS Energy Container can be used as loading station for the e-mobility infrastructure.

One 5 kW JUWELIS Energy Container is sufficient to provide enough energy to feed up to 4 electric vehicles or a number of electrical bikes.

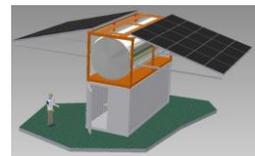


Special applications

The JUWELIS Energy Container can be extended by customized equipment to fulfill a specific function or application.

Examples for the inside of the container:

- Switch-, measurement and controller equipment for energy consumption and telecommunication
- Observation or accommodation utilities for army applications



Examples for the outside of the container:

- Water treatment units
- Additional power generator units



Additional Information you will find under
<http://www.youtube.com/watch?v=Qb0C4mcGv64>

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