Amphibious Energy is a Dutch company specialised in providing transportable, renewable energy to offshore and onshore off-grid localities. It has developed a transportable, autonomous energy container - the Hybrid EnergyPod, that is powered by a specialised wind turbine and solar PV panels.
TECHNICAL DETAILS
The Hybrid EnergyPod is set up with a unique wind turbine and multiple solar PV panels. During the winter season, the unique wind turbine is the main power source. In the summer, the solar panels take over. A natural symbiosis of wind and sun are held within the Hybrid EnergyPod.

The Hybrid EnergyPod generates energy which is stored into a series of battery packs via inverters. Electricity is then distributed from the battery packs to any system.

The specialised, patented wind turbine and its unique brake system can operate under harsh environmental conditions and still deliver peak energy. It will start generating energy at wind speeds of 3 m/s (cut-in speed), and it functions optimally in turbulent as well as laminar winds.

The Hybrid EnergyPod comes with a 4G or satcom connection, which gives the operator the opportunity to remotely control the units from their own desktop.

PRODUCT OPTIONS
In addition to the Hybrid EnergyPod with a single wind turbine and 6-10 solar PV panels, Amphibious Energy can also design and deliver larger and more advanced models if the required power or energy storage is higher. This includes the Twin Head Hybrid EnergyPod, which can fit 2-4 wind turbines, 12-20 solar PV panels, and multiple battery packs. The Twin Head Hybrid EnergyPod will produce 2-4 times more energy than the standard Hybrid EnergyPod.

All EnergyPods can be connected to diesel generators when additional power is required.

DIMENSIONS

<table>
<thead>
<tr>
<th>HYBRID ENERGYPOD</th>
<th>TWIN HEAD HYBRID ENERGYPOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footprint: 17.5 m²</td>
<td>Footprint: 33 m²</td>
</tr>
<tr>
<td>Height: 8 - 10 m</td>
<td>Height: 8 - 10 m</td>
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<tr>
<td>Length: 5 m</td>
<td>Length: 6 m</td>
</tr>
<tr>
<td>Width: 3.5 m</td>
<td>Width: 5.5 m</td>
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<tr>
<td>Weight: 4650 kg</td>
<td>Weight: 9500 kg</td>
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</tbody>
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APPLICATIONS:
OFF-GRID ONSHORE LOCATIONS
- Disaster relief
- Health care centres
- Shale gas and oil sand E&P facilities
- Mining industry
- Research stations
- Agricultural industry
- Construction industry
- Telecommunication industry
- National Park services and remote accommodations
- Military bases
- Light houses

APPLICATIONS:
APPLICATIONS:

BENEFITS
RELIABLE
- Enclosed wind turbine housing for safety
- The EMS can be monitored and controlled remotely by the operator
- In case of system failure, the batteries will continue to deliver power for 12 days

REDUCES OPERATING COSTS
- Cuts fuel costs
- Cuts maintenance costs
- Reduces the power dump load

DURABLE
- Easy to transport
- Can be used on multiple sites during its life time
- 6-12 months service intervals
- 10+ year life time

COMPACT & TRANSPORTABLE
- All parts of the EnergyPod can be safely stored inside the container during transport
- Assembly takes approx. 30 min
- Can immediately produce and deliver energy after installation

SILENT WIND TURBINE
- Wind turbine noise reduction (<40dB), due to unique blade design
- Ideal for use where noise pollution is an issue

ENVIRONMENTALLY FRIENDLY
- 100% clean, renewable energy
- Complies with regulations to protect the environment
- Reduces carbon footprint
- Wind turbine noise reduction (<40dB), due to unique blade design
The beauty as well as challenge of any renewable power unit is for it to be dependent on natural elements for optimal energy delivery. To address this complexity, Amphibious Energy has designed the Hybrid EnergyPod to come with a dual 24 V 900Ah (86kW), PowerSafe SBS EON battery pack, which holds charge for 12 windless days (for a continuous load user).

For the larger Twin Head Hybrid EnergyPods, four 24 V 900Ah (172kW) battery packs will be included.

Each Hybrid EnergyPod can be configured for two types of load deliveries; continuous load and/or peak load, either in AC or DC.

The patented wind turbine, which can be fitted with a 3kW or 5kW permanent magnetic generator (PMG), has a double layered housing. It sits in a free rotational frame, which turns itself towards the prevailing wind. The light weight rotor blades require far less rotation to generate energy than propeller blades. Not only does this result in diminished noise (>40dB), it also causes less rotational friction which extends the turbine's life time.

The unique hydraulic brake system can hold a force of 620Nm, stopping the turbine when wind speeds exceed 40m/s (>90mph). This prevents the generator from overheating or exceeding the batteries load capacity. Once the wind speed drops, the brake is automatically released and the wind turbine will continue to work as normal.

The Hybrid EnergyPod comes with a dual 24 V 900Ah (86kW), PowerSafe SBS EON battery pack, which holds charge for 12 windless days (for a continuous load user).

For the larger Twin Head Hybrid EnergyPods, four 24 V 900Ah (172kW) battery packs will be included.

Maintenance intervals for the Hybrid EnergyPod is every 6-12 months due to cleaning of the solar PV panels. Alternatively, this service can be paired with the operator’s service intervals. Major part replacements are normally scheduled every 5 years.

Using sensors, this unique system continuously measures and adapts the performance of the Hybrid EnergyPod for optimal power creation and delivery. It also allows the operator to monitor and control the Hybrid EnergyPod remotely via satellite or radio signal. As soon as the EMS detects anomalies, the wind turbine will come to a standstill and the problem is reported to the operator.

The Hybrid EnergyPod is designed with multiple solar PV panels, each PV panel delivering 300Wp. If the load is high and more power is required, then additional PV panels can be added to the Hybrid EnergyPod.
HYBRID ENERGYPOD
HEP 17-1M-6Spv-86-I02-CB
- Market: Offshore/Onshore
- 100% Renewable Energy
- Single wind turbine (3kW PMG)
- Solar PV panels (6-10 X 300Wp panels)
- Yield (calibrated in the Southern North Sea area between 4 - 20m/s windspeed average):
  » 220 - 3500 W (continuous load minimum)
  » 2.5 - 30 MWh (annual power delivery)
  » 4 - 60 kW (peak load, for 1 hour per 24 hour recharge cycle)
- Battery pack:
  » 2 x 24 2V 900Ah, PowerSafe SBS EON
  » Autonomous 12 days (no wind or system failures)
- Satellite controlled Energy Management System
- Output: any configuration
- Footprint: 17.5m²
- 6-12 month maintenance interval
- 2 year guarantee
- Life span: 10+ years
- Turnkey and full service option available

TWIN HEAD HYBRID ENERGYPOD
THHEP 17-2M-12Spv-172-I02-CB
- Market: Offshore/Onshore
- 100% Renewable Energy
- Two wind turbines (2X 3kW PMG)
- Solar PV panels (12-18 X 300Wp panels)
- Yield (calibrated in the Southern North Sea area between 4 - 20m/s windspeed average):
  » 126 - 6300 W (continuous load minimum)
  » 2 - 55 MWh (annual power delivery)
  » 2.2 - 78 kW (peak load, for 1 hour per 24 hour recharge cycle)
- Battery pack:
  » 4 x 24 2V 900Ah, PowerSafe SBS EON
  » Autonomous 12 days (no wind or system failures)
- Satellite controlled Energy Management System
- Output: any configuration
- Footprint: 33m²
- 6-12 month maintenance interval
- 2 year guarantee
- Life span: 10+ years
- Turnkey and full service option available