

## HYBRIDIZATION OF MINI GRIDS

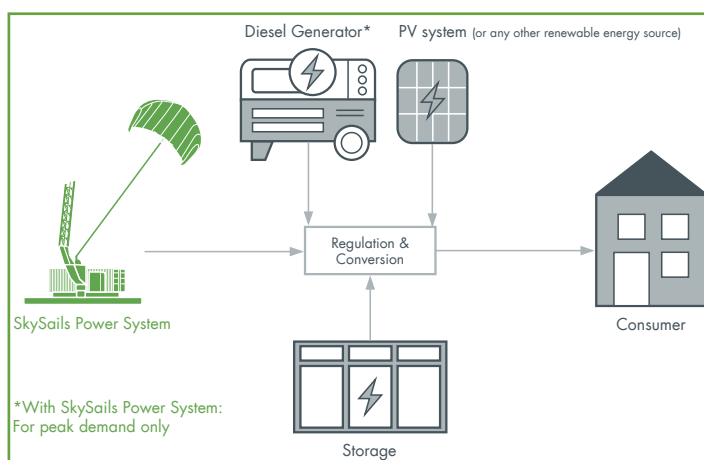
### ENERGY SUPPLY FOR REMOTE AREAS

Everywhere in the world, the energy demand for communication, lighting, heating and cooling is increasing. But many places are far away from public infrastructure and not connected to the utility grid. In these cases, energy generation and distribution is often done locally in mini grids, mainly powered by diesel generators.

The required decentralized infrastructure with diesel generators, energy storage and control technology is expensive to purchase and to operate, resulting in high levelized cost of electricity (LCOE). Conventional renewable energy solutions like PV or wind are often not suitable (e.g. for space or logistic requirements).

Besides, many remote areas suffer from natural disasters, like typhoons, that regularly threaten the energy supply.

Airborne wind energy systems (AWES) that harness powerful high-altitude wind can be an economic, reliable and eco-friendly solution for mini-grid hybridization











Configuration mini grid with AWES



SkySails PN-14 system in the Republic of Mauritius

### THE POWER OF HIGH-ALTITUDE WIND FOR MINI GRID HYBRIDIZATION

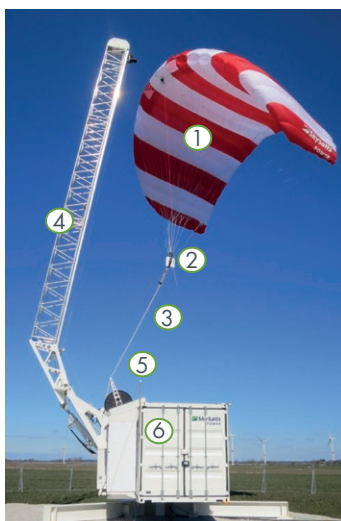
SkySails Power Airborne Wind Energy Systems offer a new solution for the optimisation of mini grids with numerous advantages:

|   |   |   |   |
|---|---|---|---|
|  | Coverage of day- and nighttime demand with emission-free energy source                        |  | Reduction of overall system LCOE  |
|  | Significant reduction of fuel consumption due to reduced back-up function of diesel generator |  | Increased local supply security and local value creation                              |
|  | Lower maintenance costs and longer lifetime of diesel generator                               |  | AWE technology helps to fulfill the Sustainable Development Goals N°7 & 13 of the UN* |
|  | Reduction of transport complexity of diesel fuel  |  | Typhoon-resistant technology  |

\* SDG: <https://sdgs.un.org/goals>

## UNLEASHING THE TRUE POTENTIAL OF WIND POWER

High-altitude wind is an enormous pool of energy that has so far remained untapped. SkySails Airborne Wind Energy Systems allow to harness the powerful wind in several hundred meters for the first time and therefore contribute to the success of the global energy transition.



SkySails PN-14 system in Northern Germany

### COMPONENTS

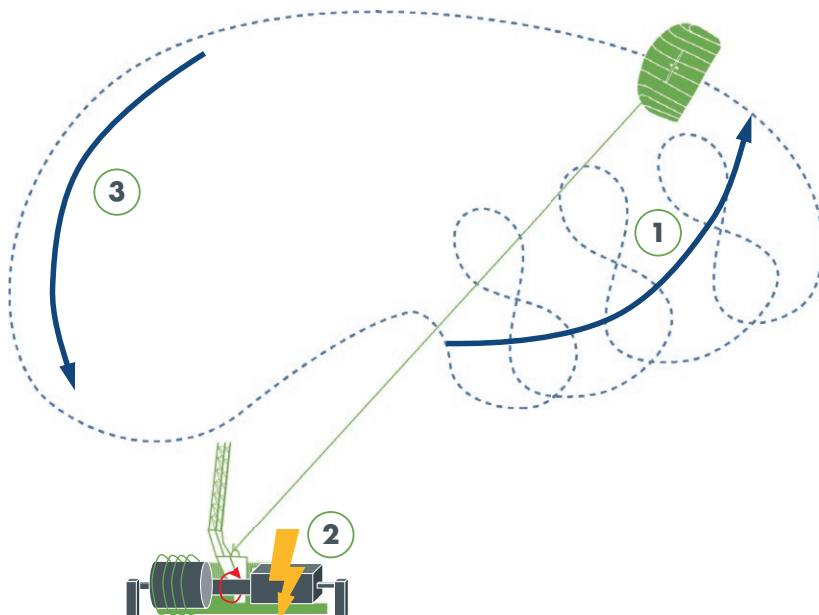
- ① Kite (90-180 m<sup>2</sup>)
- ② Control pod
- ③ Tether (800 m)
- ④ Launch and landing mast
- ⑤ Tether guiding
- ⑥ Ground station with winch and generator



Nightflight of SkySails PN-14 system

### POWER CYCLE HOW IT WORKS

- ① The automatically controlled power kite unwinds a tether of 800 m length from a winch.
- ② The tractive force drives a generator inside the winch that produces electricity
- ③ Once the tether has reached its maximum extension, the autopilot steers the kite into a position with minimal drag and lift. While consuming only a fraction of the energy generated during the power phase, the generator now acts as a motor and reels-in the tether.



The system continuously repeats this process, flying the kite at an altitude of 100 to 400 meters. Energy generated by the Airborne Wind Energy System can be fed into the grid, stored in batteries, or directly consumed.

Sounds interesting?  
Contact us!



#### **SkySails Power GmbH**

Wendenstrasse 375 | 20537 Hamburg  
+49 40 702 99 0 | [power@skysails.com](mailto:power@skysails.com)  
<https://skysails-power.com>