

Solutions for a clean and reliable energy supply

Weak grid today? Renewables tomorrow!

We realise Hybrid Energy and
Battery Storage Systems
in areas with no or weak
grid infrastructure.

Your Partner for Hybrid Energy Systems

ABO
WIND

Commercial and Industrial Enterprises

Uganda

Optimising the energy supply with HES

Core Issue

Some commercial and industrial enterprises (C&I) in Uganda are not connected to the grid and rely completely on a diesel-based self-supply. Others only have a connection to a weak grid and thus depend on diesel-based back-up systems. Therefore they suffer from high generation and maintenance costs. Furthermore, thermal power plant systems are extremely noisy and polluting.

Solution

HES based on solar and wind energy combined with storage units are key to increase profitability and decrease local emissions as well as carbon footprints. This cost-effective, low maintenance and clean energy supply can help strengthen production capacities as well. Based on ABO Wind's individual design solutions the supply can be modularly extended to a growing energy demand. In addition, this HES not only supplies the enterprise with clean energy, but also the surrounding villages.



Tea factory

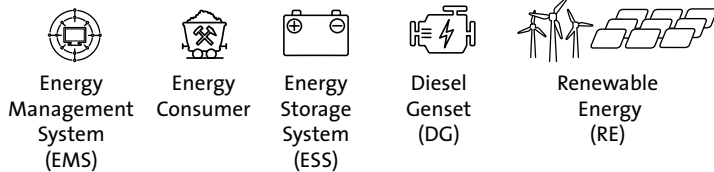


Diesel genset supplying a sawmill



Rose plantation

Legend



Hybrid Energy Solution	System layout	Fuel savings	Renewable power share
Basic fuel saving potential (Control of RE only)		7-10%	20-30%
Optimisation of power control (Control of RE + DG)		10-15%	20-50%
Optimised power control with system stabilisation function (Control of RE + DG + ESS)		25-40%	20-80%
Optimised power control system with system and load management (Control of RE + DG + ESS + controllable load)		60-80%	100%
100 % Renewable energy system with load management (Control of RE + DG + ESS [short & long term] + controllable load)		100%	100%

Diesel Substitution in Island Grids



ABO Wind is working to reduce the dependency on diesel generation.



It is also necessary to make the handling of diesel barrels safer.

Tanzania

Reducing costs and emissions of a diesel-fueled isolated grid by implementing renewable energy

Core Issue

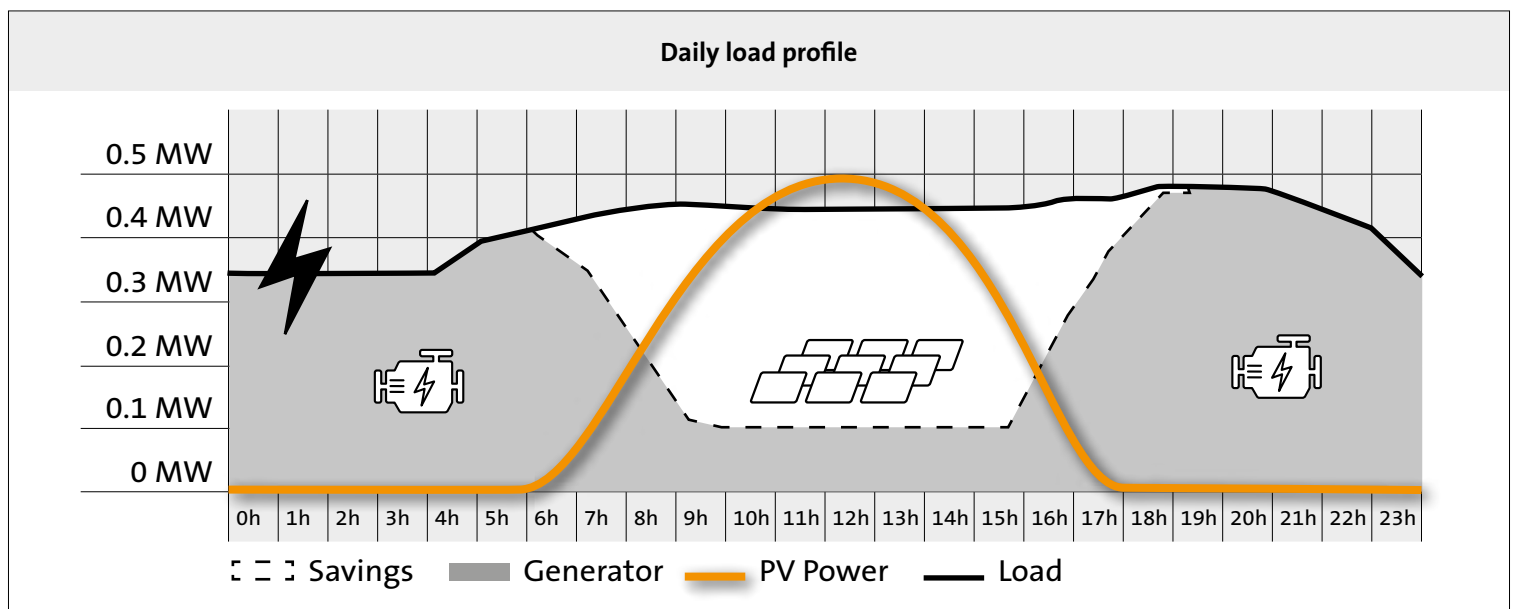
Currently, two old and inefficient diesel generator sets feed into an island grid in the Lindi district in eastern Tanzania. In addition, the fuel has to be shipped to the facility over a long distance. This leads to high generation costs of 0.28 to 0.35 USD per kWh.

Solution

Between July 2016 and June 2017 the facility generated an electrical output of 2.47 GWh. Adding renewable energy to the electricity supply will reduce long-term costs for raw materials and logistics as well as the

overall amount of carbon emissions; furthermore, it will decrease the dependency on fossil fuels. In a first step, ABO Wind is working on the integration of a 500 kWp photovoltaic system that will feed into the Liwale grid.

The system generates about 600,000 kWh of clean energy per year, thus substituting 184,000 liters of diesel. Depending on the price of diesel, the investment in the system will be recouped within five years. In addition, a storage-unit will help to cover peaks of energy consumption in the evenings. At the moment, these peaks usually result in a shut-down of parts of the existing grid, leaving consumers without electricity.



Grid Stability

Tanzania

Stabilising and extending long distribution lines with the help of renewables

Core Issue

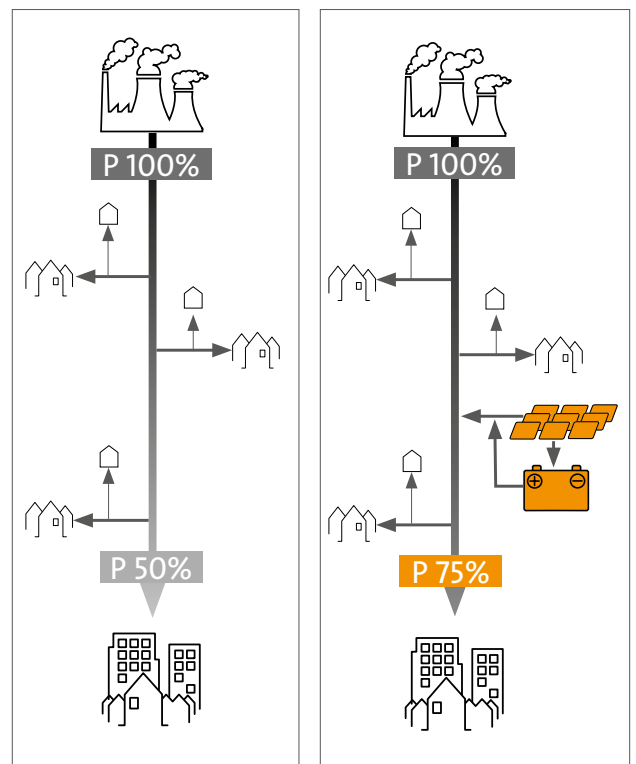
Many regions in the world rely on extremely large electricity distribution networks operating at the limit of voltage stability. As a result, the power fed into the grid can suffer huge losses on the way to the consumers. In conventional electrical distribution systems, centralised station generators supply power to dispersed customers. This often leads to a reduced electrical output, much lower than the theoretical optimum. Frequent blackouts and an unstable electrical supply are the consequences.

Solution

In a project in Tanzania, ABO Wind demonstrated that large distribution networks, operating at the limit of voltage stability and experiencing substantial distribution constraints, can be stabilised using photovoltaic plants in combination with energy storage systems. With the help of renewables and batteries, it is possible to minimise cable-losses as it is schematically illustrated in the image on the right. Placed at a strategic point in the grid, higher voltage deviations can be avoided. This is an eco-friendly and cost-effective option, which helps to prevent critical supply situations. The combination of renewables and storage units can also help to enlarge the existing grid for additional consumers.



Typical distribution line in Tanzania



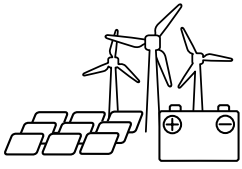
Benefits for our customers

Energy Supplier	Grid Operator	Energy Consumer
<ul style="list-style-type: none"> ■ Lower transmission costs ■ Increased revenues from additional PV power input ■ Improved reliability ■ Improved reputation 	<ul style="list-style-type: none"> ■ Enhanced grid performance ■ Improved voltage stability ■ Reduced expenses for grid expansion ■ Increased transmission capacity 	<ul style="list-style-type: none"> ■ Reliable access to electricity ■ Lower electricity prices ■ Cleaner air and less pollution from diesel gensets ■ Progressing electrification in new areas ■ Less blackouts

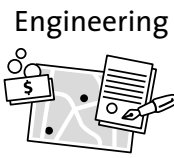
Your Partner for Hybrid Energy and Battery Storage Systems

ABO Wind develops, engineers and constructs energy systems combining wind turbines, photovoltaic plants and storage units to reduce the dependency on fossil fuels and to provide reliable electricity supply in areas with no or weak grid infrastructure. These solutions are eco-friendly and often cheaper than diesel-based generation.

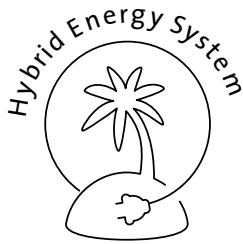
Our services



Renewable Project Development



Engineering



Financing Competence

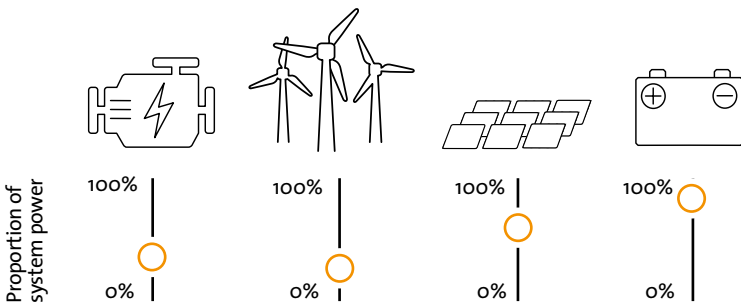


Partnerships

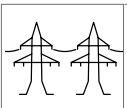
We work independently from manufacturers to provide the best solution for our clients. Each project is set up based on in-depth technical and economic analysis.

Thanks to our experience of more than 20 years in the field of renewables, we have the know-how to solve the complexity of planning, building and operating Hybrid Energy Systems (HES). In addition, we provide a broad set of solutions regarding financing and operational business planning.

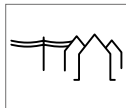
System configuration optimisation



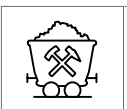
Cost-efficient, clean and reliable energy supply for our customers



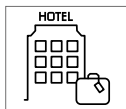
Infrastructure



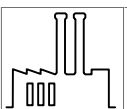
Remote communities



Mining



Tourism & Hotels



Remote Industries



Islands and isolated power grids

ABO Wind offers modeling and simulation of flexibly designed HES. Our proven model calculates different options for any circumstance. Therefore, the portion of each HES component can be sized independently and in accordance with the system requirements.

The detailed yield simulation of the PV plants and/or the wind turbines are combined with the analysis of the behaviour and specifications of generators and/or storage systems as well as demand forecasts. This allows the evaluation of the most economic system design considering the technical feasibility and environmental impact assessments.

Furthermore, there are several parameters within the financing model that can be adjusted to reach an optimal solution for each project. We offer this systematic step within our financial system configuration.

About ABO Wind

Founded in 1996, the German-based company ABO Wind develops and realises renewable energy projects worldwide. So far, ABO Wind has installed wind farms, solar parks and biogas plants with a total capacity of about 1,500 megawatts. More than 500 employees are realising projects in 16 countries with an annual investment volume of about 300 million euros.

The core principle of ABO Wind's international activities is to open local offices and hire local staff from the very beginning. ABO Wind develops commercial projects and local expertise at the same time. As local colleagues build up local contacts and knowledge, they are able to acquire land and projects. International technical, financial and legal experts from the headquarters in Wiesbaden, Germany support the work of the local team. Together they successfully create and deliver renewable energy projects.



Let's discuss your ideas and projects.

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