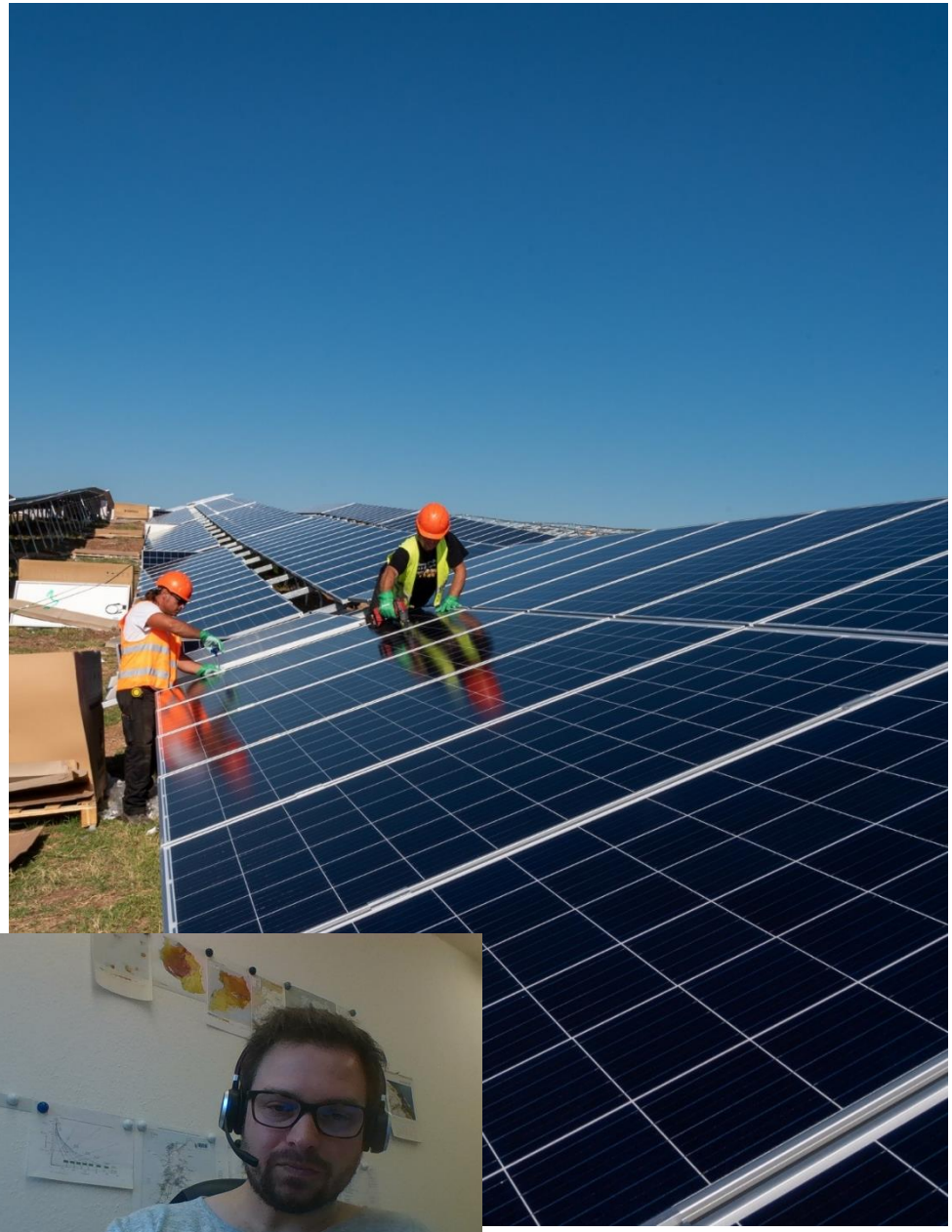
Renewable Energies and Battery Storage for E-Mobility

Julian Gerstner, 24.11.2020

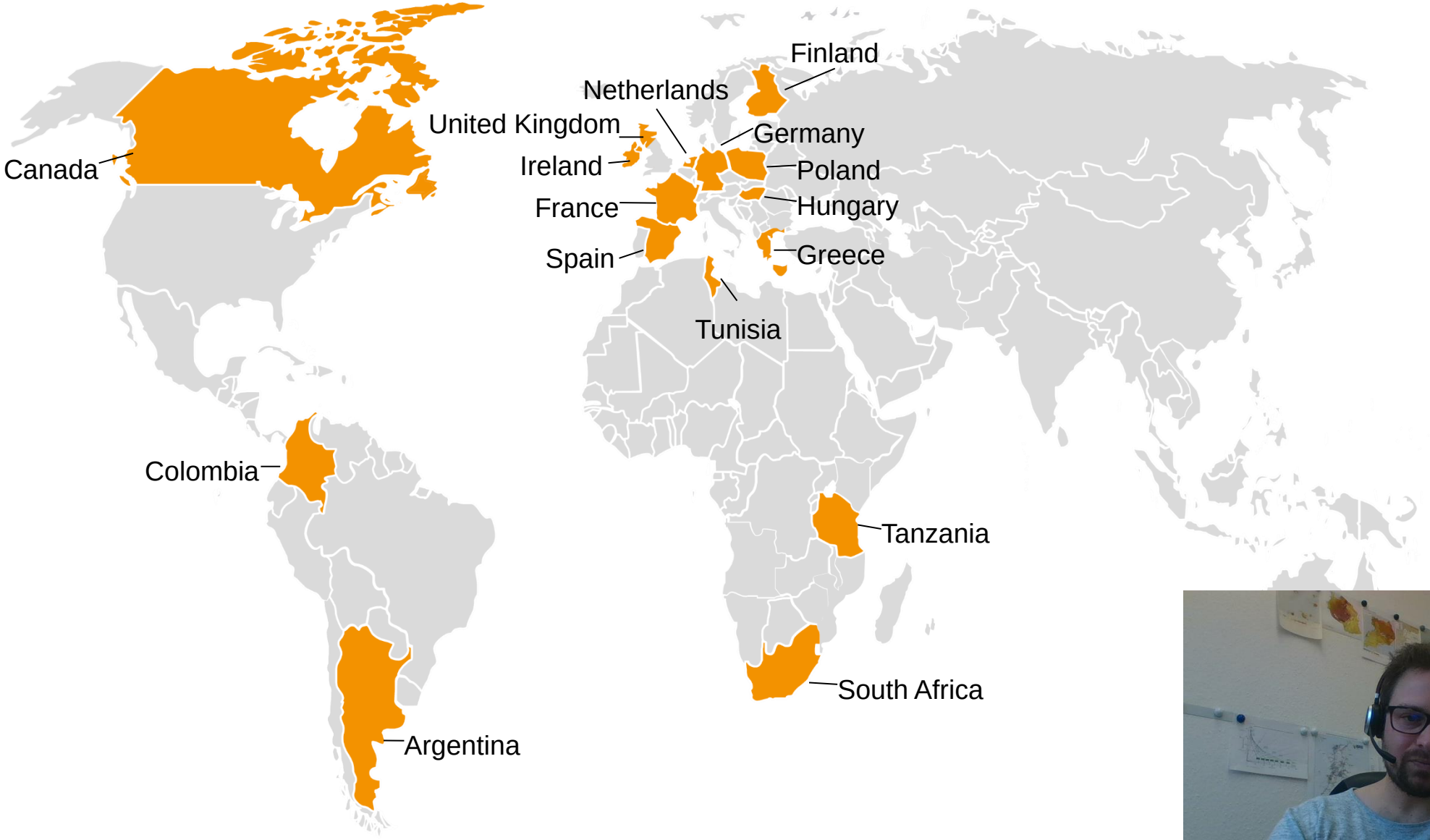
ABO WIND



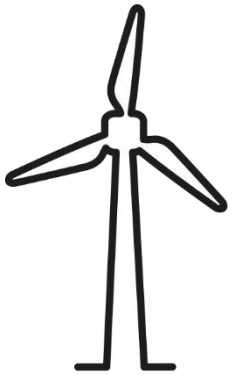
Pioneer of Renewables

- Founded in **1996** in Germany, around **700 employees** worldwide
- **Core business**: Project development, financing and turnkey construction of wind, photovoltaic and battery storage plants
- **Other services**: Operational Management, Repowering, Other Energy Storage & Hybrid Energy Systems, Bioenergy, Mobility Systems and Research
- Active in **16 countries** worldwide
- 3.5 GW developed and sold, of which **1.5 GW** also installed

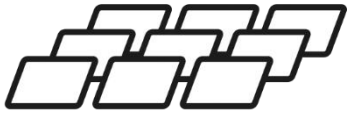
Project Development in 16 Countries



Developer of Renewable Energy Projects



Wind Energy

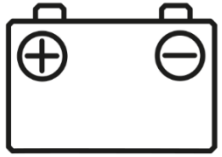


Solar Energy

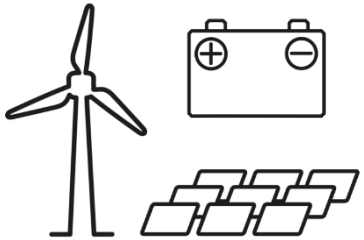
Bioenergy

Team

Hybrid Energy and Battery Storage Systems



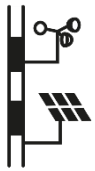
Energy Storage

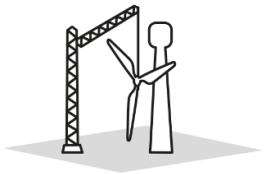


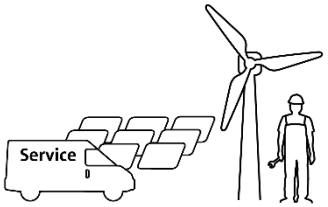
Hybrid Energy

ABO WIND

Core Competences







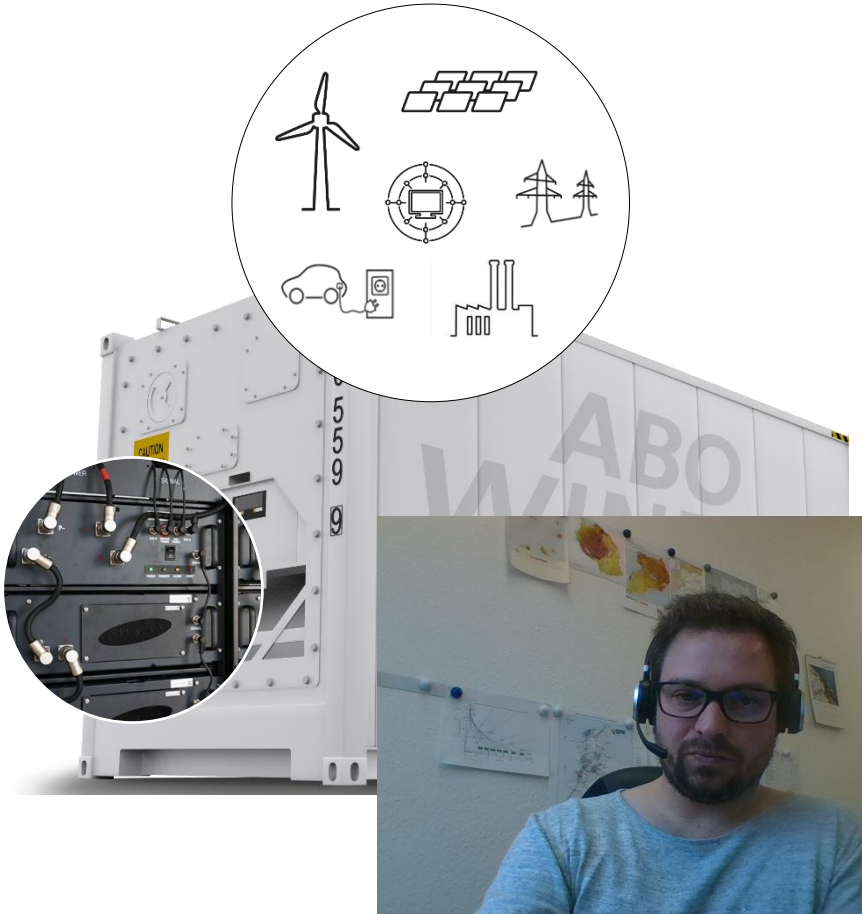
Development	Engineering	Procurement	Financing	Construction	O&M
Project Identification & Land Acquisition	Wind and Solar Measurement & Park Layouts	Tendering & Contract Negotiations	Due Diligence	Execution of Construction Sites	Technical Operations Management
Environmental Impact Studies & Permitting	Basic Engineering	Supplier Audits & Quality Control	Bank Financing	Supervision, Quality Control & Environmental Management	Commercial Operations Management
Grid Connection Permission & Agreement	Detailed Engineering & Drawings	Logistics	Equity & Investor Search	Health and Safety	

Hybrid Energy and Battery Storage Systems

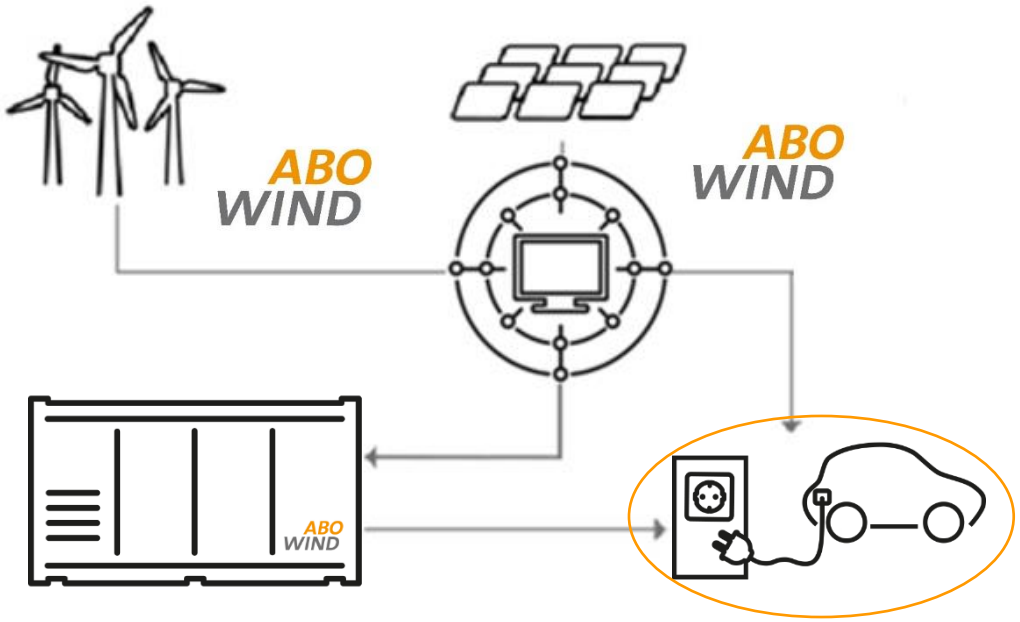
- **Micro-Grids, grid stabilisation, peak load shaving, e-mobility**: Reliable, cost-effective and ecological power supply through wind, sun and battery storages
- **Sectors**: Commercial & Industrial, mines, remote communities, islands and isolated grids, interconnected grid areas, energy market participation, **e-mobility**
- **Services:** Project development, economical and technical layout, financing, implementation, operation & maintenance

Battery container - The industry standard for battery storage systems Plug&Play and efficient.

- Battery storage systems can be quickly integrated into existing power grids at company and public locations - Plug&Play as a stand-alone solution and with up to several megawatts of power.
- Battery containers are safe and efficient: the cost of lithium-ion batteries, for example, has more than halved since 2014.
- The container design also reduces installation costs and planning times.

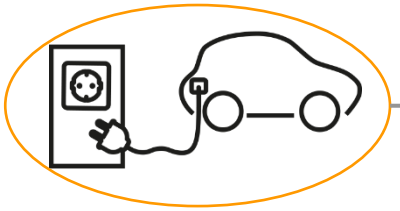


Hybrid Energy and Battery Storage Systems



- **Applications**:
  - **optimization of energy costs**
  - **access to reliable energy**
  - **integration of fluctuating renewable energy into grids and e-mobility charging infrastructure**
  - **grid services**

- **Potential clients**:
  - **Energy suppliers / energy service providers**
  - **Fleet operators / public transport**
  - **Planning authorities / DNICE / Ministries**
  - **Project owner / operators**
  - **Regional funding agencies**
  - **Industrial customers with interest in investments in e-mobility / charging station infrastructure**
  - **Private investors (e.g. trade and services, hotel industry, car rental companies)**



Client / Client Group

Project Example - E-Charging Park in the Wiesbaden Headquarters

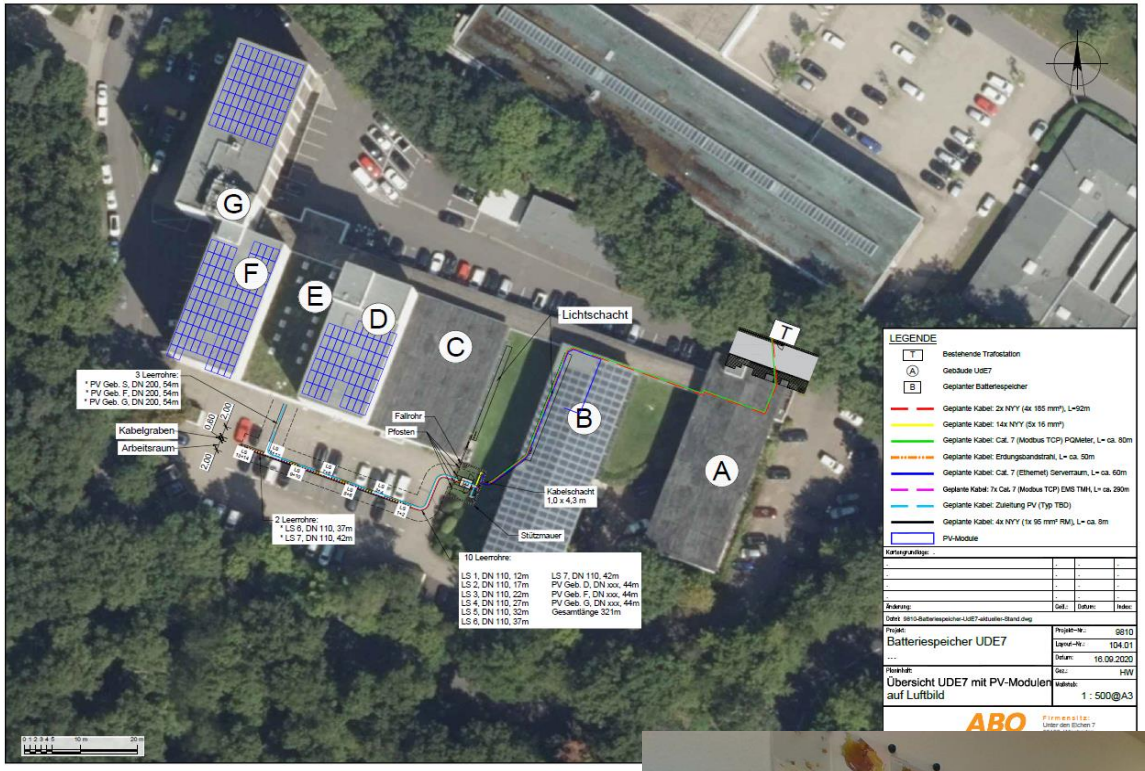
- **Background** – ABO Wind is continuously expanding its own e-charging points and the electric car fleet. The company also intends to increase its own production and the corresponding consumption of clean electricity.

- **Implementation** – The electricity is generated via a PV roof system. The storage system provides electricity for 14 e-charging stations, among others. An intelligent energy and charging management system continuously ensures maximum energy efficiency.

- **Success** – Own consumption is increased by 20 percent. CO_2 emissions and fleet operating costs are greatly reduced; the latter by up to 60k Euro annually.

Project Example - E-Charging Park in the Wiesbaden Headquarters

- ABO Wind will install charging points to allow as many employees as possible to load the office/private e-vehicle.
- A total of 14 charging points = 7 charging points with up to 22 kW (AC output) per point are to be realized.
- PV expansion of 92 kWp (55 kWp already installed).
- Applications for Battery: Peak-Shaving while charging the cars reduces cost for buying energy from utility. Increasing the self consumption of the produced PV energy.



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