Primary Energy

1 Wind turbine

WT GE 5.5/158/5500 (Falkenwalde wind field)

Technical info

5.5 MW	rated power
20 GWh	annual production
2021	commissioning
> 25 years	service life

How it works

Wind turbines use the power of the wind to drive rotor blades, which run a generator and thus generate electricity.

Role in the ENERTRAG Verbundkraftwerk®

- Large quantities of electricity are generated sustainably
- 24/7 production is possible
- Energy can be stored in combination with battery and H_2 production

2 Photovoltaic system


Kreuz Uckermark photovoltaic system

Technical info

20 MW	rated power
20 GWh	annual production
2023	commissioning
24 ha	space

How it works

Incident solar radiation is used to generate electricity in solar cells.

Role in the ENERTRAG Verbundkraftwerk®

- Consistent generation of clean electricity during the day
- Energy can be stored in combination with battery and H_2 production

Why ENERTRAG makes a difference

The large number of wind turbines and photovoltaic systems in the ENERTRAG Verbundkraftwerk® means that the different and fluctuating generation patterns balance each other out, thus guaranteeing consistent electricity generation.

Grid and Infrastructure

3 Feed-in and collector substation


Bertikow feed-in substation

Technical info

20–30 kV	medium-voltage level
110–380 kV	high-voltage level
2003	commissioning
605 MW	connected power

How it works

Collector and feed-in substations collect electricity from producers and transfer it to the national electricity grid. They also increase or decrease the voltage with the aid of transformers.

Role in the ENERTRAG Verbundkraftwerk®

- Collecting electricity
- Providing a link to the electricity grid
- Transforming/regulating between different voltage levels

Why ENERTRAG makes a difference

To control power, the Bertikow feed-in substation uses its own power plant controller to control flexi-type power plants and those subsidised under the German Renewable Energy Sources Act (EEG) efficiently and to help keep the electricity grid stable.

Conversion and Storage

4 Wind heat storage


Nechlin wind-based thermal energy storage facility

Technical info

2,000 kW	rated power
780 MWh	annual production
2020	commissioning
35	homes

How it works

The wind-based thermal energy storage facility converts electricity into energy for heating. To do so, it heats water with a heating rod. The hot water is stored and supplies consumers with heat as necessary.

Role in the ENERTRAG Verbundkraftwerk®

- Surplus wind power is stored
- Clean energy for heating is provided
- Energy for heat and electricity is coupled (power-to-heat)

Why ENERTRAG makes a difference

The Nechlin wind-based thermal energy storage facility is partly operated with surplus electricity from wind turbines so that the turbines do not have to be curtailed.

5 Battery storage system


Cremzow battery storage system

Technical info

22 MW	rated power
34.8 MWh	storage capacity
2019	commissioning
17 million euros	investment

How it works

A battery stores the power from the generating facilities by converting it into chemical energy and converting it back again when required.

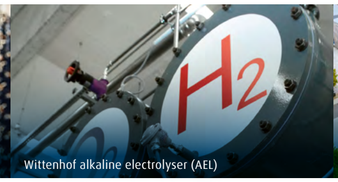
Role in the ENERTRAG Verbundkraftwerk®

- Batteries compensate for fluctuations in the electricity grid and provide extra power
- Services such as black starts and balancing energy are provided
- Peak loads are covered

Why ENERTRAG makes a difference

ENERTRAG's Cremzow battery storage system has black-start capabilities and can restore the grid in the event of a power failure.

6 Electrolyser



Wittenhof alkaline electrolyser (AEL)

Technical info

560 kW	rated power
94,000 kg H_2/a	annual production
2011	commissioning
21 million euros	investment

How it works

Electrolysers use electric current to split water into hydrogen and oxygen. The gas generated is easy to store and transport.

Role in the ENERTRAG Verbundkraftwerk®

- Renewable energy can be stored in the coupled hydrogen storage system
- Greater flexibility and grid stability because surplus electricity is obtained from wind turbines and photovoltaic systems

Why ENERTRAG makes a difference

At ENERTRAG, we only generate green hydrogen because we operate the electrolyser with renewable energy.

Control

7 Control room


Dauerthal control room

Technical info

1,100	plants monitored
1999	commissioning
24/7	operation
2.6 GW	monitored power

How it works

The control room constantly monitors operation of the whole Verbundkraftwerk and its components, energy generation, conversion, distribution and connection to the grid.

Role in the ENERTRAG Verbundkraftwerk®

- Central monitoring and control unit
- Monitoring and enhancing plant performance
- Launching and monitoring technical services

Why ENERTRAG makes a difference

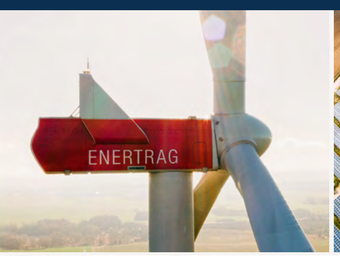
ENERTRAG's very own "Powersystem" software is responsible for monitoring and analysing incoming information.

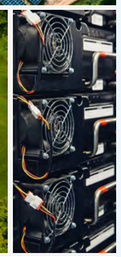
Usage


Hydrogen is fed into the gas grid plus, in future, into H_2 pipelines and derivatives


Electricity used for homes and industry


Local heat extraction from surplus electricity





GUIDE

The **ENERTRAG Verbundkraftwerk®** Uckermark

"We produce renewable energy sustainably **to keep the world a place worth living in.**"

ENERTRAG in figures

945 MW
of wind, solar and biogas from own portfolio

> 1.7 TWh
own annual electricity production

> 1,200
employees

1,800 MW
of power for all turbines constructed

> 6.9 GW
of power connected to the Powersystem software

> 450 million euros
revenue annually from electricity sales, project business and services

The **ENERTRAG Verbundkraftwerk®** Uckermark

	Installed power 2023	Target 2030	Target 2040
	622 MW	1.1 GW	1.8 GW
	Wind power		
	20 MW	224 MW	624 MW
	Photovoltaics		
	560 kW	760 MW	1.4 GW
	Electrolysis		
	22 MW	322 MW	822 MW
	Battery		
	> 600 km	> 700 km	~ 800 km
	Collector and feed-in grid (length of cable)		
	–	–	up to 1 GW
	H_2 reconversion to electricity		

Replacing conventional power plants. Completely.

ENERTRAG's Verbundkraftwerk Uckermark generates wind-based and solar energy, green hydrogen and heat. Hydrogen reconversion and battery storage systems also stabilize the electricity grid. This combination enables ENERTRAG to supply renewable energy predictably and in line with demand, just like conventional power plants do. The ENERTRAG Verbundkraftwerk® can replace these completely. It is a blueprint for modern CO_2-free power plants.

Energy locally and for Europe. And reliable.

We feed electricity generated in the Verbundkraftwerk Uckermark directly into the synchronous grid of continental Europe. The hydrogen is fed into the public H_2 grid and, in turn, supplies areas and buildings in the region with power to heat. Coupling electricity from wind and solar power with green hydrogen production and the supply of heat enables the provision of predictable output in the gigawatt range. Additionally, the ENERTRAG Verbundkraftwerk® provides all necessary system stability services to guarantee grid stability.

A pioneer supplying fossil-free energy. Worldwide.

Since the first wind farms in 1998 and the construction of the world's first hybrid power plant in Uckermark in 2011, ENERTRAG has gained valuable experience in supplying energy reliably from renewables. Countries and regions all over the world are already reaping the benefits because the ENERTRAG Verbundkraftwerk® can be implemented globally.

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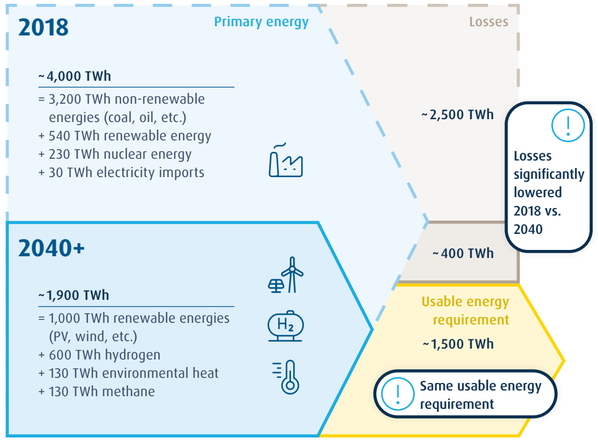
ENERTRAG one energy ahead

As of: 08/2025

Energy System of the Future

Energy flows in Germany



Conclusion:
In the future, we will not have to give up anything when it comes to electricity, heat and transport while also halving our primary energy requirements.

Focus on H_2 + Electricity – The ENERTRAG Verbundkraftwerk®