Łączymy
Globalnie

TFPowerPack - Industrial Energy Storage Systems

TELE-FONIKA Kable S.A. (TFKable Group), a global manufacturer of cables and wires, is expanding a strategic branch of its business — the production and integration of industrial energy storage systems, TFPowerPack. These inherently mobile solutions naturally complement the company's offerings dedicated to renewable energy sources, including medium and high voltage systems for offshore and onshore wind farms.

The European Union's energy transformation towards renewable energy presents significant challenges for Poland's energy sector, requiring comprehensive changes in the distribution and storage of energy resources. TFKable Group, leveraging its capabilities and experience in producing MV and HV cables, as well as energy storage systems, can offer clients a wide range of comprehensive services, both for small and large-scale energy storage projects.

Thanks to its experienced staff, comprehensive production infrastructure, and originally developed EMS system, TFKable Group is becoming a key partner in adapting to the changing market and regulations, enabling an effective transition towards renewable energy sources.

TFPowerPack Production Environment

The production of TFPowerPack energy storage systems is carried out at the Kraków-Bieżanów Plant, conveniently located at the intersection of Kraków's eastern and southern bypasses. We have 1,200 m² of dedicated production infrastructure, which includes office space, a warehouse, a modern laboratory, and a testing station.

Laboratory

The modern and fully equipped laboratory allows for comprehensive testing and examination of all key components used in the production process. By applying strict quality assurance procedures and concentrating the entire production process in one location, we can guarantee the highest quality of the solutions we offer.

Testing Station

We have a station that allows the testing of a real storage system with up to 3 MVA. This allows us to perform FAT (Factory Acceptance Testing) on all devices before they are shipped to the installation site. Additionally, our testing station supports the development and iterative work on BMS (Battery Management Systems). Our collaboration with battery system suppliers ensures continuous software updates to meet the latest standards. We are able to address, test, and implement new configuration requirements for the energy storage systems installed for our clients, enabling us to respond in real-time to new challenges faced by energy storage systems.

Service

We provide full after-sales service for all systems implemented in the energy storage solution. Additional service support ensures the full functionality of the product and its updates during the contract period.

TFPowerPack

TFPowerPack is an energy storage system that enables complete energy independence. The solution developed by TFKable Group is a key element in reducing energy costs and effectively protecting customers from power outages. TFPowerPack facilitates the implementation of solutions based on renewable energy sources (RES), among others, by mitigating short-term power fluctuations from RES and balancing their output profiles, thereby contributing to the effective reduction of CO_2 emissions.

The comprehensive business model of the TFKable Group covers a full range of services - starting with the analysis of network needs, through designing the ideal solution, production, assembly, and on-site installation, ensuring employee training, service support, and long-term maintenance. We customize the solution both in terms of functionality and hardware requirements and design a product line tailored to specific applications.

We began our energy storage operations in 2021 with the project POIR.01.01.01-00-0091/21 "Innovative modular, mobile energy storage," in collaboration between TELE-FONIKA Kable S.A. (TFKable Group), Lublin University of Technology, and the Municipal Transport Company in Lublin. This project received financial support from the European Regional Development Fund under the Smart Growth Program 2014-2020. The goal was to create an innovative energy storage system capable of operating in AC and DC systems, utilizing renewable energy technologies. The design and production work lasted three years, resulting in the creation of five installations with varied and customized functionalities. Two of these are modern and advanced testing laboratories where pre-implementation and industrial research are conducted, while the other three are fully operational energy storage solutions located at each of the consortium partners' sites. These solutions perform various functions, including continuous active reactive power compensation, total reduction of connection power exceedances, stabilization of DC voltages on traction lines, and elimination of power dips.

All of these implementations, along with acceptance tests and continuous supervision, confirmed the project's compliance with its original assumptions. As a result, the project has progressed to the commercial market under the name TFPowerPack—an industrial energy storage system adapted to various conditions and operating modes.

TFPowerPack addresses the real needs of the energy storage market, with the entire design, production, and testing process conducted in-house, ensuring full control over parameters and functionality at every stage. As a result, TFPowerPack provides a comprehensive solution that meets market demand, based on the standards and quality offered by TELE-FONIKA Kable (TFKable Group).

TFPowerPack Applications

Public infrastructure

Lublin University of Technology:

- Power guard for a 100 kWp PV system - shifting renewable energy production surpluses to afternoon hours
- Virtual increase of connection power - servicing a 250 kW wind tunnel
- Continuous active reactive power compensation for the building
- Providing available power upon request from another laboratory
- UPS for the central server room (off-grid operation for 48 hours)
- Reducing building operating costs - working on the B23 multi-zone tariff to optimize active energy costs

Transportation infrastructure

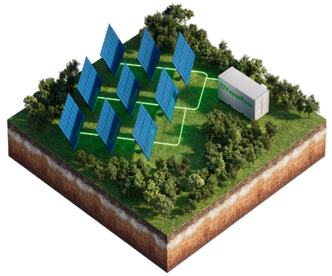
Municipal Transport Company (MPK) Lublin:

- Reducing penalties for contracted connection power - each morning, the large number of trolleybuses leaving the depot exceeds the main power limit
- Recovering braking energy from trolleybuses when returning to the depot
- Stabilizing DC voltage on traction lines, which originally fluctuated between 560 and 780 V (depending on the number of trolleybuses starting or braking) to fluctuations between 650 and 690 V

Industrial infrastructure

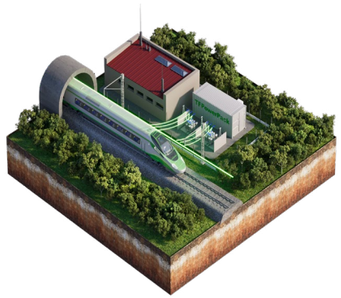
TELE-FONIKA Kable (TFKable Group):

- Eliminating power dips on the cable line, which previously caused the entire line to shut down, leading to significant costs
- Improving the network parameters of the local HV/MV substation
- Continuous active reactive power compensation in the production hall



Energy storage systems enable the efficient use of renewable energy sources (such as solar energy) by storing excess energy during periods of overproduction.

Energy storage systems in buildings and infrastructure can manage energy consumption, provide emergency power, and integrate with energy management systems and smart grids.



Energy storage systems in public transportation stabilize the parameters of traction networks, reduce peak power, and recover energy from braking electric vehicles. They also allow integration with fast charging stations.

TFPowerPack

Energy storage systems in electromobility can be used in vehicle charging systems, enabling more efficient and sustainable energy use.

Energy storage systems working with renewable energy sources, like wind power, help efficiently store energy during periods of overproduction and use it when needed.

TFPowerPack Functionalities

TFPowerPack operates in both alternating current (AC) and direct current (DC) systems. Equipped with modules for managing renewable energy sources (RES), the mobile TFPowerPack energy storage system offers a wide range of functionalities:

Reactive power compensation
– The energy storage system can perform the task of compensating reactive power generated in the user's network.

Grid stabilization
– Provides the functionality of stabilizing and balancing phase voltages and filtering higher harmonics.

Microgrid operation
– The energy storage system, together with a dedicated EMS (Energy Management System), is adapted for microgrid operation, allowing management of energy flow between different generation sources and loads.

UPS mode operation
– The energy storage system can be used for emergency power supply to selected infrastructure and protect production processes from voltage sags and interruptions.

Island mode operation
– TFPowerPack handles all tasks required for island mode operation.

Integration with RE systems
– Ensures balancing and compensating energy generated by any renewable energy source.

Optimization of locally produced energy (e.g., from PV) for use at specific times.

Shifting loads from periods of high energy demand to off-peak periods.

Operation in two voltage standards:
- **AC/DC** (distribution and transmission networks)
- **DC/DC** (traction power, fast DC chargers)

Peak power reduction

DC/DC Operation Mode
TFPowerPack energy storage systems have the capability to operate directly in DC networks, which allows collaboration with high-power EV chargers without the need for additional AC energy conversion. This increases the overall efficiency of the process and reduces the infrastructure costs of charging stations. The system effectively stabilizes DC traction networks. Cooperation with PV farms enables energy production balancing and participation in energy trading markets.

AC/DC Operation Mode
TFPowerPack energy storage systems efficiently stabilize grid parameters by balancing phase voltages, filtering harmonics, and compensating reactive power. They can shift energy system loads from periods of RES overproduction and feed it back into the grid during peak demand times, playing a critical role in ensuring energy security. When installed at production facilities, they can secure the continuity of production exposed to shutdowns, as well as balance and efficiently manage energy sourced from generation systems (PV farms, wind turbines, diesel generators). These storage systems enable reductions in contracted power, switching to a different energy tariff, and improving local grid parameters, contributing to the optimization of energy purchase costs.

TFPowerPack Key Elements

Fire Protection System

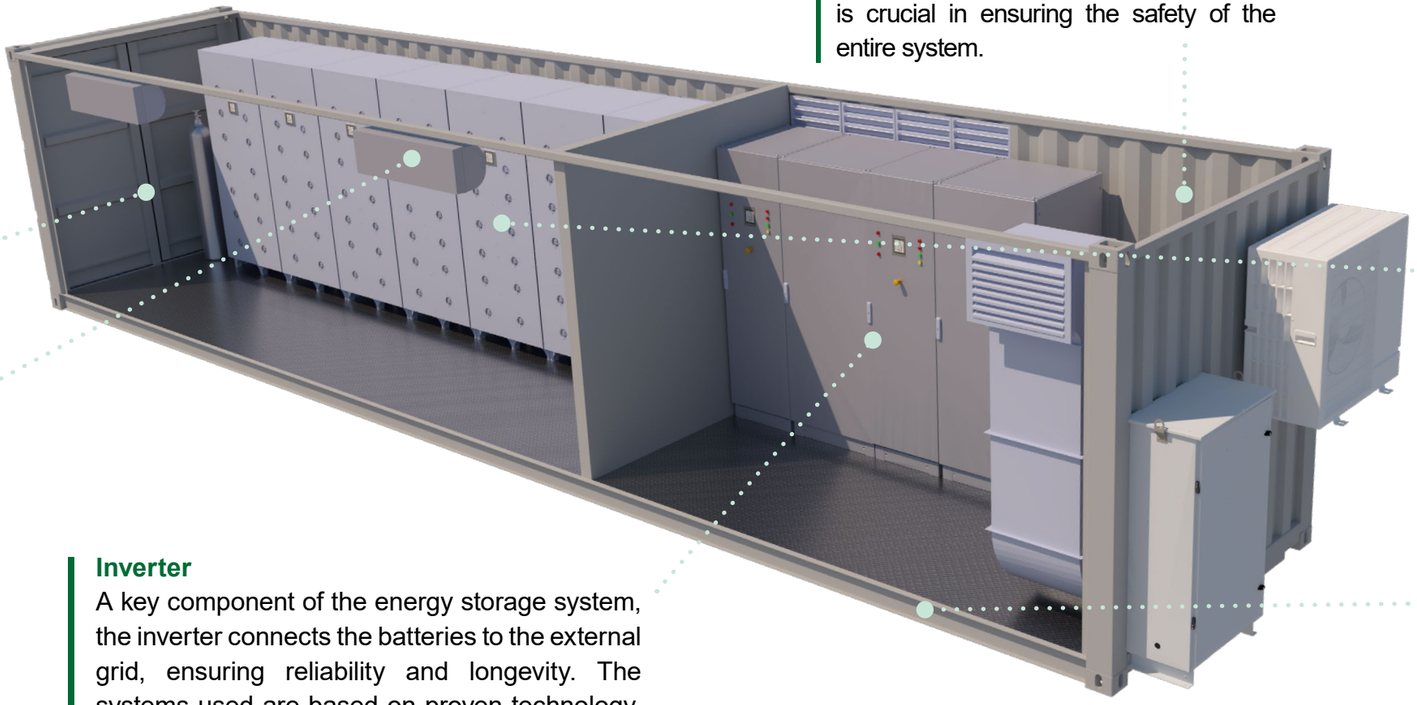
An important feature of our energy storage systems is the fire safety system, which prevents secondary fires and uncontrolled temperature increases. The systems are fully certified with all necessary certifications, such as CNBOP and VdS, ensuring their effectiveness and safety. Before any container is put into use, it undergoes a leak test to verify the functionality of the fire protection system.

Transformer

The transformer plays a protective role for the energy storage unit by isolating it from the external grid and providing additional security. In the event of a failure or sudden voltage surge in the grid, the transformer is crucial in ensuring the safety of the entire system.

Batteries

In our solutions, we carefully select batteries made from various material groups, including LFP (Lithium Iron Phosphate), NMC (Nickel Manganese Cobalt), and LTO (Lithium Titanate). We prioritize quality and safety, ensuring that every battery used has appropriate certifications and attestations from accredited laboratories such as TUV or UL. The main parameters describing a battery, besides its capacity and charge/discharge currents, include its lifespan, measured in cycle counts. Depending on the type of battery, their lifespan can range from 2,500 cycles for NMC batteries, 6,000 cycles for LFP, and up to about 20,000 cycles for LTO batteries.



* cross-section example of a TFPowerPack storage unit

HVAC System

(Heating, Ventilation, Air Conditioning)
The HVAC system ensures optimal working conditions for all components of the energy storage unit, which impacts its performance and longevity. HVAC systems are carefully designed to ensure high quality and redundancy in case of failure. They are integrated into a master management system, offering a wide range of operational settings depending on current needs and conditions.

Inverter

A key component of the energy storage system, the inverter connects the batteries to the external grid, ensuring reliability and longevity. The systems used are based on proven technology, guaranteeing efficiency and low investment and operational costs. The integrated inverter systems allow a wide range of functionalities, including unique ones such as microgrid operation or the ability to operate in two voltage standards: AC/DC and DC/DC.

Containers

TFPowerPack systems are characterized by mobility, which is why the majority of the enclosures are specially adapted shipping containers. Designed by engineers, thermally insulated, corrosion-protected, and equipped with lightning insulation, these containers ensure year-round operation in all weather conditions.

Specification Example of TFPowerPack Energy Storage Unit

TFPowerPack 150 kVA/772 kWh 20’

Nominal Energy:	772 kWh
Rated Apparent Power:	150 kVA
Battery Technology:	LFP
Nominal DC Voltage:	691 VDC
Nominal DC Charge/Discharge Current:	3x140 A
Nominal LV Grid Voltage:	0,4 kV (±10%)
Grid Voltage Frequency:	50 Hz (± 2,5 Hz)
Power Regulation:	4-quadrant operation with full PQ power
System Overload Capacity:	110%
Operating Modes:	On-grid/Off-grid
Separation from the Power Grid:	Dry transformer dYn5 150 kVA
THDi (Total Harmonic Distortion of Current) at Inverter Output:	<3% at full load 100%
Energy Conversion System Efficiency:	96,4%
Maximum Auxiliary Power Requirements:	3,8 kW
Charging Temperature:	0°C ÷ +50°C
Discharge Temperature:	-20°C ÷ +40°C
Communication:	MODBUS/CAN/ETHERNET
Discharge Capability:	100% DoD
Depth of Discharge (DoD) at 25°C:	6000 cycles @SoH >80%
Fire Suppression System:	Fixed gas fire suppression system with early fire detection
Master Management System:	EMS microgrid ready
Auxiliary Systems:	Air conditioning system, ventilation system, access control system
Implemented Functionalities:	Peak shaving/load shifting/time shifting/self-optimization/ reactive power regulation

TFPowerPack 1000 kVA/1800 kWh 40’

Nominal Energy:	1800 kWh
Rated Apparent Power:	1000 (2x500) kVA
Battery Technology:	LFP
Nominal DC Voltage:	920 VDC
Nominal DC Charge/Discharge Current:	7x140 A
Nominal LV Grid Voltage:	0,4 kV (±10%)
Grid Voltage Frequency:	50 Hz (± 2,5 Hz)
Power Regulation:	4-quadrant operation with full PQ power
System Overload Capacity:	110%
Operating Modes:	On-grid/Off-grid
Separation from the Power Grid:	Dry transformer dYn5 1000 kVA
THDi (Total Harmonic Distortion of Current) at Inverter Output:	<3% at full load 100%
Energy Conversion System Efficiency:	96,4%
Maximum Auxiliary Power Requirements:	9 kW
Charging Temperature:	0°C ÷ +50°C
Discharge Temperature:	-20°C ÷ +40°C
Communication:	MODBUS/CAN/ETHERNET
Discharge Capability:	100% DoD
Depth of Discharge (DoD) at 25°C:	6000 cycles @SoH >80%
Fire Suppression System:	Fixed gas fire suppression system with early fire detection
Master Management System:	EMS microgrid ready
Auxiliary Systems:	Air conditioning system, ventilation system, access control system
Implemented Functionalities:	Peak shaving/load shifting/time shifting/self-optimization/ reactive power regulation

Specification Example of TFPowerPack Energy Storage Unit

TFPowerPack 100kVA/322kWh 10’

Nominal Energy:	322 kWh
Rated Apparent Power:	100 kVA
Battery Technology:	LFP
Nominal DC Voltage:	576 VDC
Nominal DC Charge/Discharge Current:	2x140 A
Nominal LV Grid Voltage:	0,4 kV (±10%)
Grid Voltage Frequency:	50 Hz (± 2,5 Hz)
Power Regulation:	4-quadrant operation with full PQ power
System Overload Capacity:	110%
Operating Modes:	On-grid/Off-grid
Separation from the Power Grid:	Dry transformer dYn5 150 kVA
THDi (Total Harmonic Distortion of Current) at Inverter Output:	<3% at full load 100%
Energy Conversion System Efficiency:	96,4%
Maximum Auxiliary Power Requirements:	1,6 kW
Charging Temperature:	0°C ÷ +50°C
Discharge Temperature:	-20°C ÷ +40°C
Communication:	MODBUS/CAN/ETHERNET
Discharge Capability:	100% DoD
Depth of Discharge (DoD) at 25°C:	6000 cycles @SoH >80%
Fire Suppression System:	Fixed gas fire suppression system with early fire detection
Master Management System:	EMS microgrid ready
Auxiliary Systems:	Air conditioning system, ventilation system, access control system
Implemented Functionalities:	Peak shaving/load shifting/time shifting/self-optimization/ reactive power regulation

TFPowerPack 250kVA/579kWh 20’

Nominal Energy:	579 kWh
Rated Apparent Power:	250kVA
Battery Technology:	LFP
Nominal DC Voltage:	691 VDC
Nominal DC Charge/Discharge Current:	3x140 A
Nominal LV Grid Voltage:	0,4 kV (±10%)
Grid Voltage Frequency:	50 Hz (± 2,5 Hz)
Power Regulation:	4-quadrant operation with full PQ power
System Overload Capacity:	110%
Operating Modes:	On-grid/Off-grid
Separation from the Power Grid:	Dry transformer dYn5 1000 kVA
THDi (Total Harmonic Distortion of Current) at Inverter Output:	<3% at full load 100%
Energy Conversion System Efficiency:	96,4%
Maximum Auxiliary Power Requirements:	2,9 kW
Charging Temperature:	0°C ÷ +50°C
Discharge Temperature:	-20°C ÷ +40°C
Communication:	MODBUS/CAN/ETHERNET
Discharge Capability:	100% DoD
Depth of Discharge (DoD) at 25°C:	6000 cycles @SoH >80%
Fire Suppression System:	Fixed gas fire suppression system with early fire detection
Master Management System:	EMS microgrid ready
Auxiliary Systems:	Air conditioning system, ventilation system, access control system
Implemented Functionalities:	Peak shaving/load shifting/time shifting/self-optimization/ reactive power regulation

Specification Example of TFPowerPack Energy Storage Unit

TFPowerPack 1000kVA/2064kWh 40’

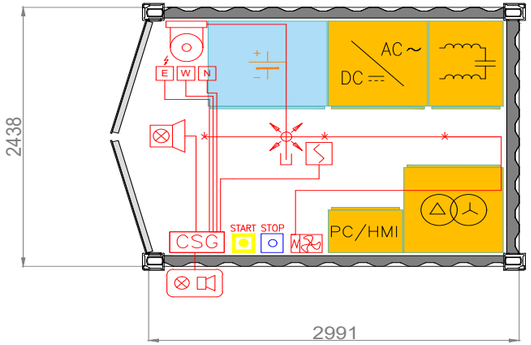
Nominal Energy:	2064kWh
Rated Apparent Power:	1000 (2x500) kVA
Battery Technology:	LFP
Nominal DC Voltage:	921 VDC
Nominal DC Charge/Discharge Current:	8x140 A
Nominal LV Grid Voltage:	0,8kV (±10%)
Grid Voltage Frequency:	50 Hz (± 2,5 Hz)
Power Regulation:	4-quadrant operation with full PQ power
System Overload Capacity:	110%
Operating Modes:	On-grid/Off-grid
Separation from the Power Grid:	Dry transformer dYn5 1000 kVA
THDi (Total Harmonic Distortion of Current) at Inverter Output:	<3% at full load 100%
Energy Conversion System Efficiency:	96,4%
Maximum Auxiliary Power Requirements:	10,3 kW
Charging Temperature:	0°C ÷ +50°C
Discharge Temperature:	-20°C ÷ +40°C
Communication:	MODBUS/CAN/ETHERNET
Discharge Capability:	100% DoD
Depth of Discharge (DoD) at 25°C:	6000 cycles @SoH >80%
Fire Suppression System:	Fixed gas fire suppression system with early fire detection
Master Management System:	EMS microgrid ready
Auxiliary Systems:	Air conditioning system, ventilation system, access control system
Implemented Functionalities:	Peak shaving/load shifting/time shifting/self-optimization/ reactive power regulation

TFPowerPack 600kVA/2580kWh 40’

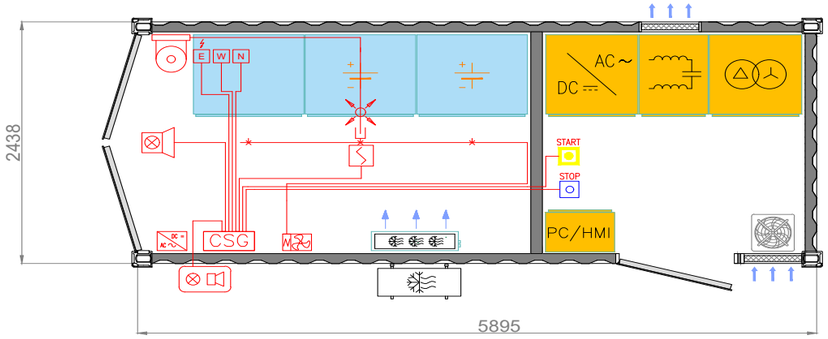
Nominal Energy:	2580 kWh
Rated Apparent Power:	600 kVA
Battery Technology:	LFP
Nominal DC Voltage:	921 VDC
Nominal DC Charge/Discharge Current:	10x140 A
Nominal LV Grid Voltage:	0,4 kV (±10%)
Grid Voltage Frequency:	50 Hz (± 2,5 Hz)
Power Regulation:	4-quadrant operation with full PQ power
System Overload Capacity:	110%
Operating Modes:	On-grid/Off-grid
Separation from the Power Grid:	Dry transformer dYn5 1000 kVA
THDi (Total Harmonic Distortion of Current) at Inverter Output:	<3% at full load 100%
Energy Conversion System Efficiency:	96,4%
Maximum Auxiliary Power Requirements:	12,9 kW
Charging Temperature:	0°C ÷ +50°C
Discharge Temperature:	-20°C ÷ +40°C
Communication:	MODBUS/CAN/ETHERNET
Discharge Capability:	100% DoD
Depth of Discharge (DoD) at 25°C:	6000 cycles @SoH >80%
Fire Suppression System:	Fixed gas fire suppression system with early fire detection
Master Management System:	EMS microgrid ready
Auxiliary Systems:	Air conditioning system, ventilation system, access control system
Implemented Functionalities:	Peak shaving/load shifting/time shifting/self-optimization/ reactive power regulation

Standard Configuration

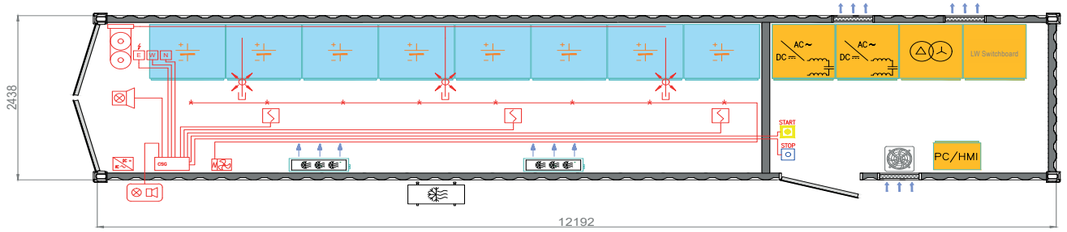
TFPowerPack	Power/Capacity Range:
10'	100 kVA/256 kWh



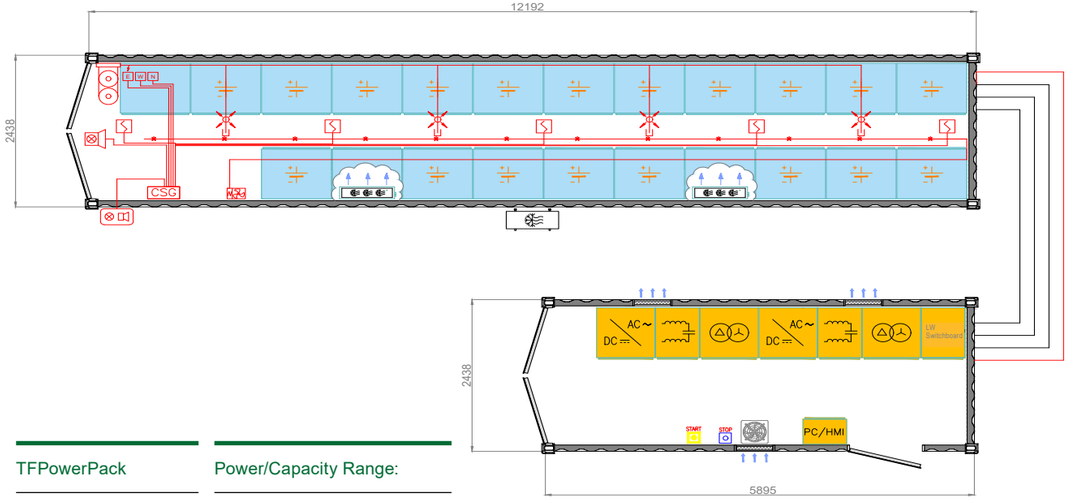
TFPowerPack	Power/Capacity Range:
20'	100 kVA/1280 kWh
	500 kVA/1024 kWh



TFPowerPack	Power/Capacity Range:
40'	250 kVA/2560 kWh
	500 kVA/2048 kWh
	700 kVA/2048 kWh



TFPowerPack	Power/Capacity Range:
Custom made	To be agreed upon



Service Range

We offer our clients comprehensive energy storage solutions, which include:

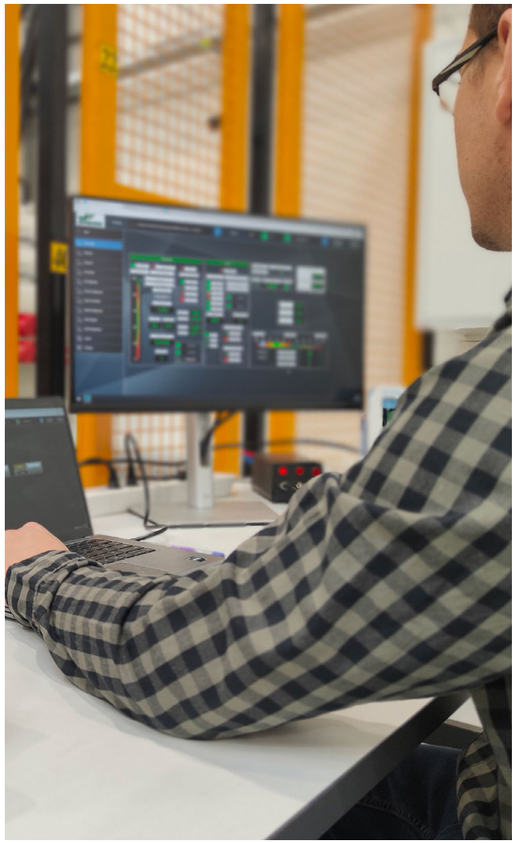
- Energy Analysis – We collect and analyze data on energy consumption and equipment performance, identifying areas for improving energy efficiency.
- We prepare a detailed conceptual report that evaluates the potential for energy efficiency improvements, outlining the costs of proposed changes and the savings that can be achieved.
- We provide transport and carry out installation work.
- We program the functionalities of the energy storage system based on our own energy management system (EMS).
- We conduct Factory Acceptance Testing (FAT) in the presence of the client to ensure the performance and quality of our solutions.
- We offer service support, including inspections, repairs, upgrades, and IT support related to energy management systems (EMS) and battery management systems (BMS).
- We perform Site Acceptance Testing (SAT), confirming the readiness and compliance of our solutions with the initial requirements.
- We ensure full integration of the energy storage system with the power grid.
- Production is carried out in modern and fully equipped facilities.
- We provide complete technical documentation, including the selection of optimal solutions tailored to the investor's needs.

Test Stand for Large-Scale Energy Storage Systems

The test stand, located in the production hall of the BES (Battery Energy Storage) at the Bieżanów plant, is an advanced, multifunctional engineering laboratory dedicated to testing large-scale energy storage systems. It is designed to enable precise testing and optimization of various energy storage systems and their integration with other components, such as photovoltaic (PV) systems or traditional solutions, including diesel generators.

Location and Safety

The test stand is situated in a designated section of the production hall, providing convenient access to the necessary industrial infrastructure and enabling integration with other production processes. The testing area is fully secured by safety systems, such as motion detectors, monitoring, and emergency switches that automatically cut off power in hazardous situations.



Test Field

The test field is equipped with several key components that allow for comprehensive testing of energy storage systems and their integration with other sources and systems. The main elements of the test stand include:

- **Energy Storage Systems** equipped with lithium-ion (Li-Ion) batteries and a proprietary Energy Management System (EMS) that enables monitoring and control of operational parameters.
- **High-power laboratory power supplies** allow simulation of various power and load conditions - from standard operating conditions to extreme scenarios, such as overloads or sudden changes in energy demand.
- **Photovoltaic (PV) systems** and solar light simulators enable the testing of energy storage integration with renewable energy sources.
- **Isolation transformers** ensure safety and circuit isolation.
- **Power analyzers** enable precise measurements and analysis of electrical parameters, such as voltage, current, active and reactive power, and power factor.
- **Atmospheric condition sensors** allow the simulation of energy storage operations in real-world environments.
- **Control and measurement equipment** enable detailed analysis of electrical signal waveforms and the study of system behaviors in various operating states.

Test Stand for Large-Scale Energy Storage Systems

Testing Capabilities and Scenarios

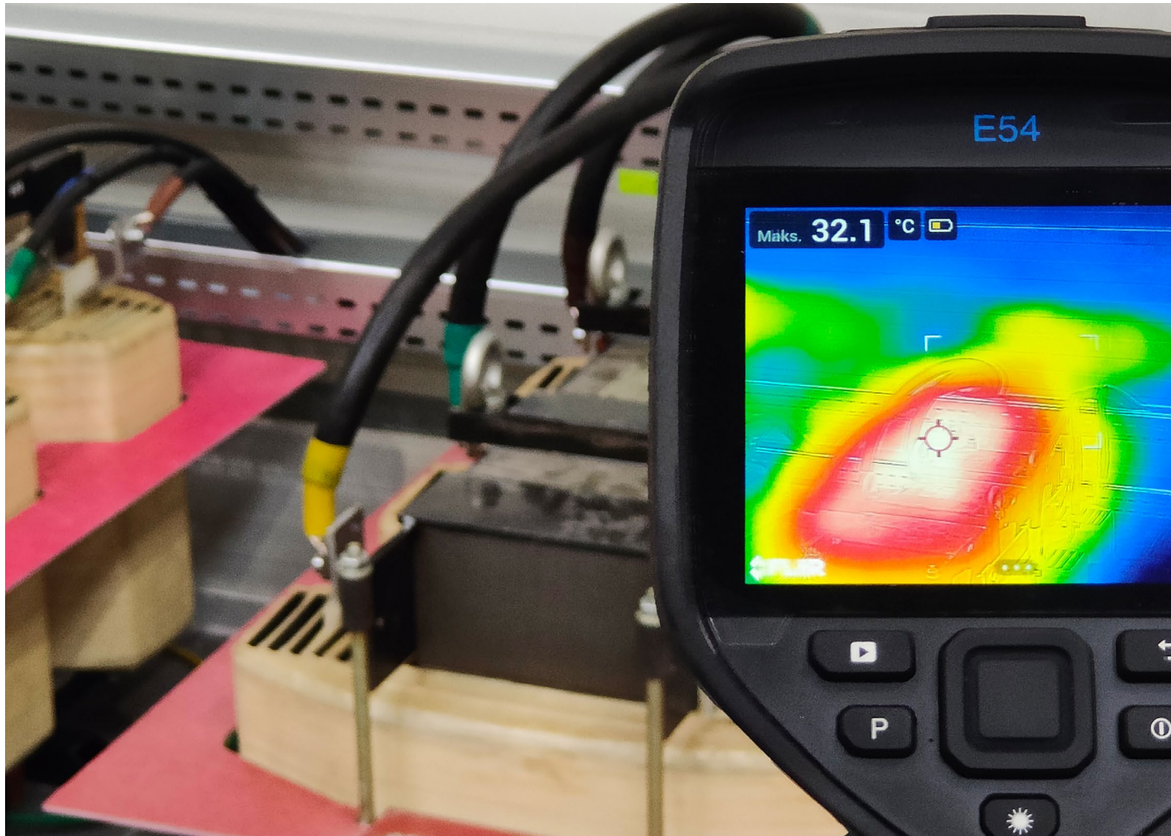
The range of tests and simulations allows for a comprehensive evaluation of the performance, reliability, and efficiency of energy storage systems under various operating conditions. Possible test scenarios include:

- **Charging and discharging**
- **PV system operation simulation:**
  Testing real-world scenarios of energy storage systems working with renewable energy sources, such as photovoltaic (PV) systems.
- **Emergency situations**:
  Simulating power system failures or sudden load surges, enabling the assessment of system responses under critical condition
- **Cyclic tests**:
  Examining the long-term durability of energy storage systems by evaluating their performance after repeated charging and discharging cycles.
- **Integration with the power grid**:
  Testing the role of Battery Energy Storage as voltage and frequency stabilizers, as well as assessing their ability to return energy to the grid during peak demand periods.
- **Testing modern algorithms:**
  Implementing innovative IT solutions and expanding the system with new, fully verified functionalities.

Applications and Benefits

Testing energy storage systems under these conditions is crucial for developing modern storage technologies that play a key role in the energy transition. The test stand offers:

- **Optimization and calibration of systems:**
  Precise testing allows for the optimal adjustment of energy storage operating parameters, leading to increased efficiency and longevity.
- **Research on new technologies:**
  The facility provides an ideal environment for testing innovative energy storage technologies, accelerating their market implementation.
- **Improved safety**:
  Emergency simulations and cyclic tests help identify potential hazards, increasing the safety of the systems.
- **FAT testing on-site:**
  Factory Acceptance Testing (FAT) is conducted directly at the production site.



Key Solutions

The TFPowerPack is characterized by its flexibie operation modes and offers the option for custom programming.

TFPowerPack Structure

- Insulated, thermally protected, and corrosion-resistant container
- Equipped with air conditioning and ventilation systems
- Lightning protection system
- Access control system **(ACS)**
- Fire protection system **(FPS)**
- **SCADA** interface
- Uses **NMC** or **LFP** battery cells
- Lifespan up to 6,000 cycles

Containerized System Design Solution

- Container sizes: 10/20/40/45 feet
- Output power up to 1.5 MVA per container
- Capacity up to 3 MWh per container
- Parallel connection possible for up to 254 containers
- Optional rooftop **PV system** on the container

"An important aspect of this solution is the ability to integrate with a photovoltaic farm, which reduces energy losses by eliminating the need to shut it down in cases like voltage increases in the grid. This integration significantly enhances the self-consumption rate of photovoltaic parks," emphasizes Jakub Siemiński, Director of Development at TELE-FONIKA Kable S.A.

Industrial Energy Storage Systems

The TFKable Group is a global leader in the production of cables and cable systems, with manufacturing facilities across Europe and a comprehensive distribution network in various markets. It consists of multiple commercial companies, numerous production facilities, and research and development centers. In 2017, the UK-based JDR Cable Systems, specializing in subsea cables and services for the wind energy sector, became part of the group.

Thanks to the extensive infrastructure of research and development centers, the company can conduct qualification tests, routine inspections, and technological trials, including fire testing of cables.

TFKable Group's expertise is demonstrated not only through ongoing supplies to electricity distribution operators and projects for conventional and wind power plants but also by the positive results of production process audits conducted by reputable certification bodies.

„Green energy" is a key component of the global development strategy and aligns with TFKable Group's environmentally friendly solutions under their #ThinkGreen approach.

100%
Polish capital

Over
50
global deliveries completed for the wind energy sector

Since 2022 over
16,000 km
of cables supplied to the renewable energy sector in the Polish market

TOP
one of the top Polish exporters

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