



REFERENCE BOOK



**COMMERCIAL &
INDUSTRIAL**
Storage System

Project

Pramac, together with its Austrian partner **e.fit Energie GmbH**, developed an integrated renewable energy system combining photovoltaic generation, battery storage and e-mobility infrastructure.

Country

Austria

Size

2,200 kWh

The site currently includes **340 kWp** of rooftop PV (initial 200 kWp installed in 2014, expanded in 2022), with an additional **1,120 kWp** ground-mounted plant planned for 2025. In total, the PV area covers around **8,000 m²** with approx. **2,500 bifacial modules** installed. A **solar carport** with **64 parking spaces** and **six EV chargers** supports sustainable mobility on-site.

Energy storage is provided by a **40-ft rooftop-mounted BESS** with a gross capacity of nearly **2,200 kWh**. The rooftop installation is a distinctive engineering solution due to its structural and logistical complexity. The system maximizes solar self-consumption, enables **peak shaving**, reduces grid dependence and supplies the EV charging stations.

The use of European components ensures compliance with national and EU incentive frameworks, supporting local supply chains and long-term project value.



Project

The bus company installed a 235 kWp photovoltaic system at its site, supplying the office building and bus depot with green solar power. Additionally, electric buses were introduced to electrify inner-city transport in Kempten, reducing greenhouse gas emissions in the transport sector. An appropriate charging infrastructure is required to ensure reliable and CO₂-neutral passenger service. With the help of the Pramac Battery Storage Container BSC 528 / 2133, the company's self-consumption of solar energy is optimized. The 450 battery modules housed in 40-ft containers, with a total usable capacity of 1,920 kWh, ensure that as much on-site generated solar power as possible can be used. The modules are organized in 18 racks, each equipped with its own battery management system to ensure safe operation and long battery life. Air conditioning systems within the containers maintain the battery modules at their optimal operating temperature range at all times. The battery storage system is charged and discharged by the Pramac Smart Energy Controller (PSEC), an in-house-developed energy management system that acts as the brain of Pramac battery storage systems, monitoring and regulating power and energy flows within the Berchtold company's existing energy system.

Location
Kempten
Country
Germany
Size
2133 kWh

Solution provided: Pramac Battery Storage Container **BSC 528 / 2133**



Reducing the load on the interconnection point & increasing self-sufficiency

Project

Schaub Medical Supplies / Ritter Elektrotechnik GmbH uses battery storage to make efficient use of solar power, avoid the need for grid expansion, reduce grid consumption and sustainably lower operating costs.

The construction of an additional logistics hall would have required the expansion of the customer's own transformer station. Thanks to the large 550 kWp PV system and the associated battery storage, there is no need for a transformer station. This saves on both the capital costs and the running costs of the station, which could instead be channelled directly into the investment in the battery storage. This provides flexibility for the customer and the site, as well as delivering cost savings. In addition, 22 AC charging points and 2 DC fast chargers are in operation. There are also plans for an expansion in the future.

Location

Freiburg

Country

Germany

Size

BSC

352kw

474 kWh

20ft

Solution provided:

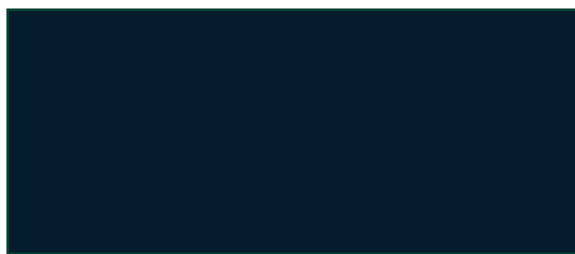
Plug & Play battery storage container comprising

- Battery module
- Pramac inverters
- Pramac Energy management system
- Fire extinguishing unit, sensors, etc...
- Flexibility through modularity

Advantages:

Peak shaving and optimising self-consumption:

- Storing your own solar power
- Minimising electricity consumption from– the grid Senkung der Betriebskosten
- Savings of €200,000 for the transformer station
- 50% self-sufficiency (in terms of electricity consumption, Air conditioning and mobility)



Netto ratisbona: sustainable energy supply for a pilot project in the food retail sector

Project & Solution

Netto Marken-Discount and Markgrafen-Getränkemarkt in Creußen are committed to climate-friendly energy supply. The stores were built entirely using solid timber construction and utilise photovoltaics, battery storage and heat pumps. Pramac, together with Walter Solar and TBM, supplied the BSI 50/109 battery storage system (50 kVA / 109 kWh). The result: high energy self-sufficiency, maximum efficiency and significant CO₂ savings.

Together with **Walter Solar**, **TBM** and **Ratisbona**, a benchmark project for the “supermarket of the future” was carried out.

Highlights:

- ~74% self-sufficiency rate through optimised energy management
- minimal fire safety requirements thanks to UL 9540A batteries (TÜV certified)
- Outdoor-mounted inverter
- Integration of modern energy technology into solid timber construction
- Contribution to Ratisbona’s sustainability strategy and CO₂ reduction

"Energy infrastructure is a fundamental part of our projects," emphasises Thomas Weszka, Head of Planning at Ratisbona Handelsimmobilien. "Photovoltaics and energy storage are now an integral part of what we do – and with partners such as Walter Solar and Pramac, we know we can rely on their reliability and innovation."

Location

Creußen

Country

Germany

Size

BSI 50/109
With inverter
for external
installation



Business Case: Investment in energy storage for a biogas farmer



Project & Solution

The client, a biogas farmer, intends to integrate two energy storage systems into their existing plant to enhance operational flexibility and overall profitability. The project aims to stabilize and increase long-term revenue by combining government incentives, such as the flexibility bonus under the German EEG, with optimized energy trading. By strategically storing and selling electricity during peak market periods, the plant can better manage energy output, reduce dependence on fluctuating energy prices, and support the energy transition.

Country
Germany

Proposed Solution:

Installation of two energy storage systems with technical planning and support from qualified suppliers. Stored energy is sold during high-price market periods, while the flexibility bonus under German regulations (EEG) is secured.

Client Benefits and Application

Total annual revenue of approximately €579,750 with a payback period of 1.75 years. Increases independence from energy price fluctuations, stabilizes the grid, and enhances the client's reputation as an innovative entrepreneur. Applied at a biogas plant in Germany.



Emergency Power & Energy Independence – Kalchschmidt



Project

Kalchschmidt GmbH & Co. KG operates a wood and concrete production site with high and variable energy demand. To increase energy independence and reduce grid electricity purchases, the company implemented an energy storage system supplied by Sunbit and Pramac. In addition to maximizing self-consumption of renewable energy and significantly enhancing energy autonomy, the system also provides a **reliable emergency power supply**, ensuring continuous operation even in case of grid outages. This capability allows the plant to maintain internal consumption during critical situations, strengthening operational resilience.

With this solution, Kalchschmidt can reduce grid dependency, mitigate exposure to energy price fluctuations, and benefit from a reduction of grid electricity withdrawals of up to **70%**. The project contributes to long-term operational stability and supports the company's sustainability goals.

Solution provided:

- Battery Energy Storage System for self-consumption optimization and energy independence
- Emergency power capability ensuring operational continuity
- Installed at Kalchschmidt wood & concrete production site
- Controlled via Pramac Energy Management System
- Installed system: BSI PRO 90/109

Location
Balzhausen
Country
Germany
Size
-



Charging Infrastructure - Battery Container



Project

In Pramac Pfullingen site, the parking lot has been fully electrified thanks to flexible fast charging solutions to power electric vehicles in the fleet. **Electrification of the Pramac field service fleet:**

Pramac's entire fleet is now 100% electrified. This represents a significant contribution to reducing CO2 emissions and promoting sustainable mobility.

Location

Kempton

Country

Germany

Size

218 kWh

Grid connection extension with 10 feet of battery storage:

To enable the installation of the charging infrastructure, a 10-foot battery storage unit was integrated as a grid connection extension. This buffer storage unit ensures a stable and reliable power supply and enables peak loads to be balanced efficiently.

Combined charging infrastructure:

As part of the project, two 22 kW wallboxes and an Alpitronic Hypercharger with an output of 150 kW were installed. This combination offers flexible and fast charging options for the electric vehicles in the fleet, ensuring the vehicles are always ready for use.

Integration of a PV carport:

A small PV carport was also integrated into the system. This carport contributes to the self-supply of electricity and increases the sustainability of the entire system by making effectively using of solar energy.

The project is characterized by its holistic approach and the intelligent combination of different technologies. The integration of the battery storage system, the charging infrastructure and the PV carport creates an efficient and environmentally friendly solution that meets the requirements of Pramac and Alpitronic.

Charging Infrastructure - Allgäu Batterie “Energiezentrale”



Project

With the modular BSI system, Pramac's partner wanted to showcase the multiuse possibilities of storage systems in combination with their local charging infrastructure, consisting of one Alpitronic Supercharge and in combination with multiple Mennekes 22 kW long duration chargers, which are used on site, to charge the companies as well as guests EVs.

The BSI is sitting in a showroom accessible for the Partners clients showing the different use cases with Pramac BESS.

Solution provided : Pramac battery storage system for multiuse applications.

1 BSI System 88kW and 109 kWh.

Location
Haldenwang
Country
Germany
Size
109 kWh



Charging Infrastructure - Puffer-Speicher Endress



Project

Endress, a company specializing in the production of power generators and a wide range of solutions for various applications, was supplied with charging stations and a PV system to ensure continuous power availability. In a recent project, 12 AC charging stations with 11 kW each, as well as a 50 kW Powercharger, were installed. To ensure full power is available at all times, a buffer storage unit was introduced, housed in a 10-ft container containing two 109 kWh battery racks and one 88 kW inverter. The planned integration of a PV system on the roof of the production building will allow the storage unit to be charged with solar power. Endress's future plans include expanding the storage system to a maximum capacity of 436 kWh and 352 kW, further increasing the use of renewable energy and reducing reliance on conventional power sources.

Location
Bempflingen
Country
Germany
Size
218 kWh

Solution provided: 1 x Pramac Battery Storage Container BSC 176/218/10



Self-consumption Optimization Max Müller Spedition



Project

At the Max Müller Spedition Opfenbach site, the logistics center is equipped with a large PV system that generates more electricity than the company consumes during the day, especially in summer. To utilize the excess electricity for nighttime lighting and charging forklift batteries, a storage solution was needed. In June 2023, Allgäu Batterie commissioned two outdoor commercial storage systems at the Opfenbach site. These systems temporarily store the solar energy generated and make it available when needed. This solution allows Max Müller Spedition to optimize self-consumption, significantly reduce energy costs, and actively contribute to the energy transition.

Location
Opfenbach
Country
Germany
Size
218 kWh

	without storage solution at 266 kWp	with storage solution at 266 kWp
Self-consumption	45%	75%
Self-sufficiency	34%	45%



Peak-shaving - ADD Antriebstechnik Dittrich



Project

ADD Antriebstechnik Dittrich GmbH, specializing in custom machinery, component manufacturing, and spare parts—particularly in drive technology—was supplied with an outdoor battery storage solution to optimize energy consumption and reduce costs. A PV system was installed on the roof to make production more sustainable. Given the high startup power requirements of the machines, ADD aims to lower energy costs and peak loads through peak shaving. In spring 2024, an outdoor storage unit was commissioned to optimize energy use, reduce costs, and contribute to the energy transition.

Location
Gernsheim
Country
Germany
Size
109 kWh

Solution provided: Pramac Battery Storage Outdoor BSO 50/109



Self-consumption Lindinger Joinery



Project

At the Germering site, Lindinger Joinery operates a PV system that generates surplus electricity during the day. To make use of this excess energy, the company needed a solution to store electricity for use across its infrastructure. In May 2024, a Pramac indoor commercial storage system was commissioned, temporarily storing the solar energy produced and making it available when needed. This enables Lindinger Joinery to optimize self-consumption, significantly reduce energy costs, and actively contribute to the energy transition.

Location
Germering
Country
Germany
Size
176kW
/ 327 kWh

Solution provided: BSI Series - 176kW inverter power - 327 kWh capacity - Joinery with 700kWp pv



Self-consumption Optimization August-meier-haus

Project

The August-Meier-Haus, care home, has a large PV system that generates more electricity in summer than the building needs during the day. Therefore, the excess electricity is stored for nighttime use. An equivalent battery capacity to match the PV power on the roof to receive appropriate funding was required. Since March 2023, the August-Meier-Haus in Nuremberg has offered up to 158 residential care places in a household community model. The new building covers several floors and courtyards over approximately 12,000 square meters. For sustainability a 200kW peak PV system was installed on the roof. In summer 2023, it was installed a Pramac indoor storage system with 50 kW and 218 kWh capacity on-site to store solar energy and make it available when needed. This helps optimize self-consumption, reduce energy costs, and contribute to the energy transition.

Location
Nürnberg
Country
Germany
Size
218 kWh

Solution provided: Pramac Battery Storage Indoor **BSI 50/218**



Self-consumption Optimization Peak-shaving Charging Infrastructure

Project

The energy hub with charging park of the distributor AKKU SYS illustrates sector coupling and application possibilities of commercial storage systems at the production and logistics site in Süderholz.

The system features the following components:

- Control of the entire system by a central energy management system
- Self-consumption optimization of the PV system on the site roof through battery storage
- Charging park consisting of four public fast-charging points, each with 50 kW, and additionally four charging points, each with 22 kW, equipped with dynamic load management
- Commercial storage units shave peak loads, which are, for example, generated by the charging infrastructure
- Energy hub enables testing of components and functions under real conditions

Location

Süderholz

Country

Germany

Size

200 kWh

/ 176 kW

Solution provided:

- 110 kWp PV system
- 176 kW total inverter capacity
- 200 kWh total capacity of the indoor commercial storage units



Commercial Storage Installation At Brosch Standardlift GmbH

Project

By integrating a commercial storage system, Brosch Standardlift GmbH optimized the self-consumption of their self-generated electricity from the photovoltaic system. This reduces operating costs and minimizes the purchase of expensive grid electricity.

Particularly interesting, an energy management solution for storage provides the opportunity to combine dynamic electricity prices with a spot market-based electricity tariff, allowing electricity consumption when it is cheapest.

Solution provided:

Battery storage system consisting of Pylontech commercial storage and Pramac inverter:

- Capacity: 109 kWh
- Power output: 88 kW
- Battery type: Lithium iron phosphate

Location

Ellerbek

Country

Germany

Size

109 kWh

/ 88 kW



Peak Load Capping - The Grueber Cider Factory



Project

In 2022, Grueber Factory was able to use 54% of his electricity from the photovoltaic system (30 kWp), feeding the rest into the grid. Thanks to the battery storage system, the Grueber cider factory will be able to use large parts of the electricity from the photovoltaic system, enabling a significant reduction of energy costs and making the factory an active contribution to the energy transition.

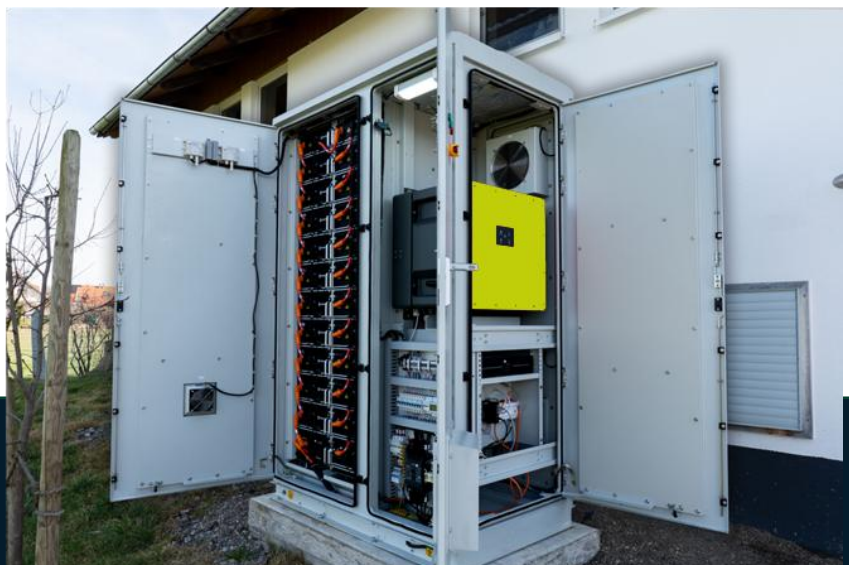
Location
Rettenbach
Country
Germany
Size
109 kWh

Solution provided:

Battery storage system consisting of Pylontech commercial storage and Pramac inverter:

- Capacity: 109 kWh
- Power output: 88 kW
- Battery type: Lithium iron phosphate

	2022 at 30 kWp	2023 at 60 kWp
Self-consumption	54%	70%
Self-sufficiency	25%	60%



Self-consumption / Peak – Shaving Horse Farm

Project

The indoor system was installed in March 2023. This solution temporarily stores the solar energy generated and makes it available again when needed, allowing the farm to optimize its own consumption, significantly reducing energy costs and actively contributing to the energy transition.

Location

Allgäu

Country

Germany

Size

50kW
/ 327 kWh

Solution provided:

BSI Series

- 50kW inverter power
- 327 kWh capacity
- Horse farm with 70kWp pv



Project

The potential revenues from energy trading range between €180.000 and €250.000 per year per MW. A significant portion of the investment costs for the battery storage can be earned during the construction phase, spanning two years.

This project in southern Germany serves as a showcase for the region, demonstrating the diverse possibilities of battery storage. After completion of the construction phase, trading will continue. Additionally, one of the three battery storages will be used for self-consumption, enabling the entire site to operate almost autonomously during the evening and night hours.

Commissioning is planned for the end of 2024.

Solution provided:

2x Pramac Battery Storage Container BSC 1408/1896/40

1x Pramac Battery Storage Container BSC 528/2133/40

Location

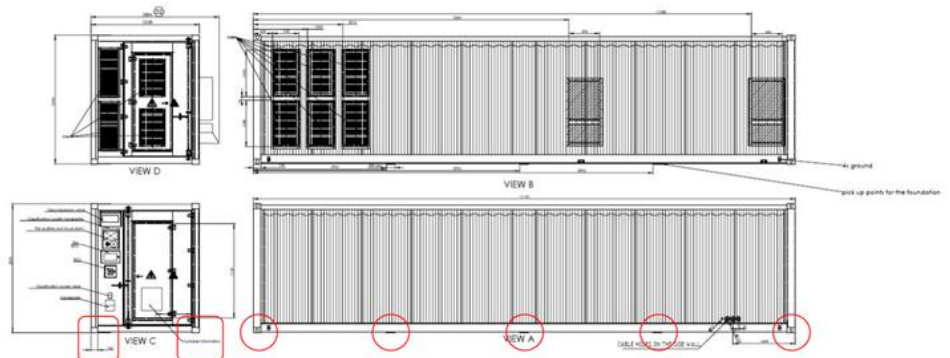
Lörrach

Country

Germany

Size

5.925 kWh



Self-consumption / Peak-shaving

Harry Wubben



Project

Harry Wubben, greenhouse horticulture company, was frustrated with the constant fluctuations in electricity prices. At certain peak times, the company had to buy 500 kWh of electricity at high prices but received nothing when he supplied electricity back to the grid. For example, on the imbalance market, which changes prices every fifteen minutes, the price could peak at 600 euros per MW at noon and drop to minus 200 euros per MW at 5:00 PM. The imbalance is caused by the rapid increase in solar panels and electric cars in the Netherlands, leading to grid disruptions and price volatility.

Location
Nootdorp
Country
Netherlands
Size
948 kWh

Solution provided:

704 kW with 948 kWh 20ft storage container BSC 704/948/20.

Harry Wubben has integrated the container software into company system to take advantage of the energy storage system from both ends. The container will be kept at about 50% capacity on average, allowing it to charge and discharge energy as needed. It's essentially an energy-trading container.



Project

The battery system ensures grid stability when operating a 410 kWp rooftop solar PV system in conjunction with two 400-kW diesel generators at the resort island. The battery ensures that the gensets are not overloaded in the case of solar output fluctuations.

Key Features

BSI 176/218 & 88/109

- Helps to save 170,000 l of diesel & 65 tons of CO2 per year
- Helps to power a resort with 121 rooms during daytime
- Helps to reduce operational costs of the resort island by ~50,000 USD/year

Location
Gaafu Dhaalu
Atoll
Country
Maldives
Size
264 kW / 327
kWh



Project

The battery system ensures grid stability when operating a 669 kWp rooftop solar PV system in conjunction with an 800-kW diesel generator at the resort island. The battery ensures that the genset is not overloaded in the case of solar output fluctuations.

Key Features

BSI 176/218 (2X)

- Helps to save 270,000 l of diesel & 100 tons of CO2 per year
- Helps to power a resort with 150 rooms during daytime
- Helps to reduce operational costs of the resort island by ~50,000 USD/year

Location
Noonu Atoll
Country
Maldives

Size
352 kW / 436
kWh



Swimsol – Solar + Storage System for RIU Palace Resort

Project

Swimsol implemented a hybrid solar-plus-storage system for the RIU Palace Resort on Kedhigandu (Dhaalu Atoll).

The project expands the existing PV installation with **1,074.57 kWp** of flat-roof photovoltaic modules and integrates a **1,064 kWh Pramac Battery Energy Storage System** delivered in a pre-engineered 40-ft container.

The Pramac BESS connects to the island's isolated grid and is designed to maximize solar penetration while reducing generator operating hours.

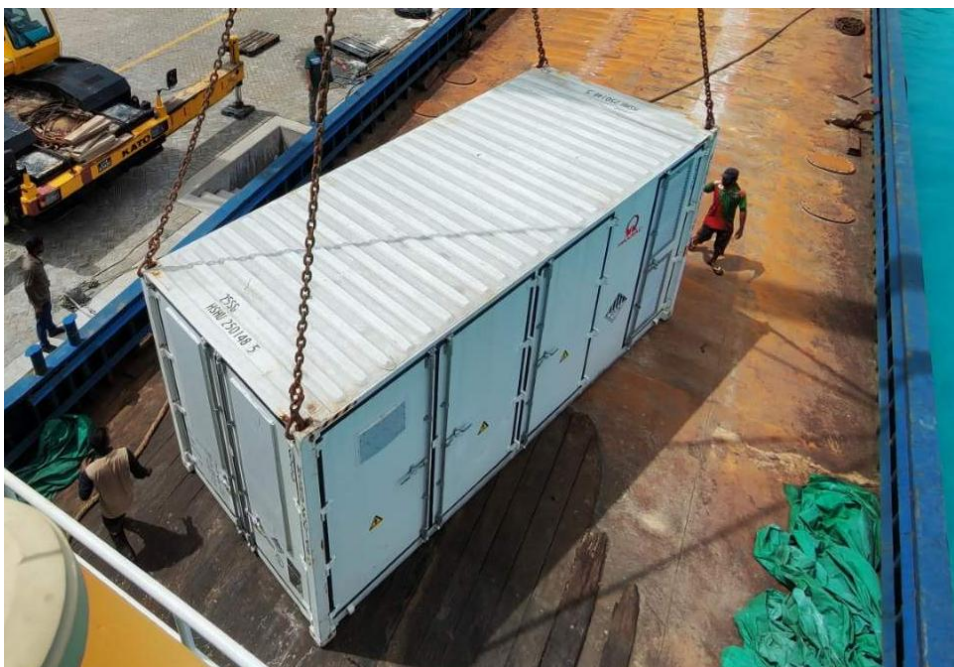
The system charges during daylight from the 1 MW+ PV array and provides regulated power to the island grid during peak demand, enabling the resort to operate with **one generator out of four**.

The combined solar and storage installation delivers estimated annual savings of **~800,000 liters of diesel**, **~2,120 tons of CO₂**, and approximately **€560,000** in reduced operating costs.

Solution provided:

Pramac Battery Energy Storage System – 1,064 kWh containerised solution

Location
Kedhigandu,
Dhaalu Atoll,
Maldives
Country
Maldives
Size
1,064 kWh



Technological Ecosystem for Remote Self-Consumption



Project

The solution is designed to offer a complete, scalable, and highly technological system capable of enhancing the energy produced by multiple photovoltaic plants distributed across different sites but connected to the same primary substation. Thanks to this innovative architecture, the generated energy can be made available for consumption within a single energy user, maximizing self-consumption even in the presence of distributed installations. The system synergistically integrates battery energy storage systems (BESS), advanced control infrastructures, and Pramac's proprietary Energy Management System (EMS), creating a virtual energy network that optimizes self-consumption, reduces grid withdrawals, and increases users' energy autonomy.

Location
Trentino
Alto Adige
Country
Italy
Size
270 kW

Key Features

- Containerized system: 20-foot container housing the battery energy storage unit
- Power capacity: 264 kW
- Energy capacity: 1,066 kWh
- Safety features: Advanced sensors and fire protection systems
- Environmental control: Climate control for optimal operation
- Intelligent control: Smart devices for efficient system management
- Monitoring: Remote interfaces for continuous supervision and operational reliability



Power increase and energy arbitrage

Project

The company **Borri**, specializing in UPS systems, needed to increase the electrical power at its Bibbiena (AR) plant to support the development and testing of new high-efficiency solutions. Due to technical constraints and the local power grid's timelines, it was not possible to obtain a power increase quickly. The project's goal was therefore to overcome these limitations by installing a Battery Energy Storage System (BESS) to increase the usable power, intelligently manage energy flows, and dynamically support the plant's loads.

Location

Bibbiena
(AR)

Country

Italy

Size

Pramac
Battery
Storage
Container 20ft
– BSC 1056
kW / 2258 kWh

Key Features

The solution implemented to achieve the project's objectives has the following key features:

- **Storage System:** A high-performance Pramac battery storage container (model BSC 1056 kW / 2258 kWh), specifically for industrial applications, was installed.
- **EMS:** The system is managed by Pramac's proprietary software (Energy Management System) that implements operating strategies based on operational needs.
- **Peak Shaving:** The system can reduce power consumption peaks from the grid, stabilizing the withdrawal and allowing the use of new machinery without exceeding contractual limits.
- **Real-Time Monitoring:** The EMS constantly monitors consumption, power demand, and the batteries' state of charge to ensure stability and operational continuity.
- **Increased Production Capacity:** Thanks to this solution, Borri was able to increase its production and testing capacity without having to wait for lengthy grid upgrade interventions.
- **Cost Optimization:** Energy arbitrage strategies and intelligent management allow for the optimization of energy costs, improving economic efficiency.



Installation at a fruit and vegetable company

Project

The project involves the implementation of an **advanced hybrid energy system** for a **fruit and vegetable company**, combining an existing **221 kWp of photovoltaic generation** with a **564 kWh Pramac Battery Energy Storage System (BESS)**, delivering up to **270 kW of discharge power**.

Facing **high and continuous energy demand**, the client experienced **elevated electricity costs** and **strong dependence on the grid**. At the same time, ensuring **operational stability** and improving **sustainability performance** were key priorities.

To address these challenges, Pramac deployed a **tailored PV + BESS solution** designed to **optimise self-consumption**, **reduce peak demand**, and **enhance energy efficiency**. The system enables the customer to **maximise the use of renewable energy**, **improve supply reliability**, and move towards a more **sustainable and cost-efficient energy model**.

Location

Fuerteventura,
Canary Islands

Country

Spain

Size

264 kW

Key Features

- **Storage System:** 3 × BSO MAX 90/188 all-in-one outdoor units, designed to deliver power, safety, and flexibility in a compact and modular configuration.
- **Hybrid PV + BESS Integration:** Optimised combination of photovoltaic generation and energy storage to maximise self-consumption and reduce grid reliance.
- **Energy Management System (EMS):** Advanced control platform enabling intelligent energy management, real-time monitoring, and seamless integration with existing systems.
- **Peak Shaving & Demand Optimisation:** Reduction of peak loads and improved energy usage profile, leading to lower electricity costs and more efficient operations.
- **High Reliability & Safety:** LFP battery technology combined with advanced monitoring systems and integrated fire protection ensures long lifecycle performance and operational safety. Scalability & Flexibility: System designed to support future expansion and adapt to increasing energy demand or additional loads.
- **Sustainability & Cost Efficiency:** Reduced carbon footprint and significant energy cost savings through improved efficiency and increased use of renewable energy.



Battery Energy Storage System at Warings Furniture

Project

The project involves the installation of a **Pramac BSO MAX 90/188 Battery Energy Storage System** at Warings Furniture, a furniture manufacturing facility. The client faced inefficiencies related to **excess solar PV generation**, which exceeded on-site demand and resulted in **surplus energy being exported to the grid** with limited financial return. In addition, the customer aimed to optimise energy costs by leveraging **tariff arbitrage strategies**. To address these needs, Pramac implemented a **tailored BESS solution** enabling the **storage of surplus solar energy** and optimised **time-of-use energy management**. The system enhances **self-consumption**, **reduces reliance on grid imports**, and supports a more **efficient and cost-effective energy model**.

Location
Watton Rd
Country
United Kingdom
Size
188 kWh

Key Features

- **Storage System:** BSO MAX 90/188 all-in-one outdoor unit, combining power, safety, and flexibility in a compact solution.
- **Energy Storage Capacity:** 188 kWh battery capacity with 90 kW PCS power output.
- **PV Energy Optimisation:** Capture and storage of excess solar generation for on-site use.
- **Time-of-Use Optimisation:** Charging during low-tariff periods and discharging during peak demand to reduce energy costs.
- **Energy Cost Reduction:** Improved cost efficiency through self-consumption and tariff arbitrage.
- **Operational Efficiency:** Enhanced energy management tailored to the site's consumption profile.
- **Reliability & Performance:** Stable and efficient operation supporting manufacturing activities.
- **Scalability:** Flexible solution adaptable to future energy needs and potential system expansion.





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