

**expofin**  
E.S.CO

# Catalogue 2026

## PRODUCTS AND SERVICES FOR THE ENERGY TRANSITION

Expofin E.S.Co creates concrete opportunities for public, private and industrial entities, offering technologies tailored to each level of energy consumption.

Expofin E.S.Co.



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**Connect to our channels**

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# CERTIFIED INCLUSIVE SUSTAINABILITY

## About us

Expofin E.S.Co. is a unique entity in the Energy Service Company landscape, founded within an innovation center certified by the Ministry of Economic Development.

Thanks to continuous international scouting and a certified and inclusive sustainability-oriented approach, Expofin develops and proposes proprietary technologies designed, patented and produced in-house, with the aim of accelerating the energy transition.

Expofin creates concrete opportunities for energy-intensive businesses, ensuring efficiency, energy savings, and cost savings, and contributing to the construction of a more sustainable and competitive energy model.

## Energy Efficiency E-mobility Sustainable city

These are just a few verticals in which Expofin is engaged: introducing new technologies to the market through strategic partnerships aimed at systematically achieving energy transition.

## - CO2 + NATURE = FUTURE

ExpofinE.S.Co. offers all the technical and financial services necessary for energy efficiency projects, analyzing the relevant regulations, the incentives made available, and organizing the operation and execution of green energy transition projects to obtain sustainability reports.



Expofin E.S.Co. is committed to the design and implementation of Sustainable Energy and Climate Action Plans (PAESC) for public administrations, supporting institutions at every stage of the sustainability journey, using innovative and high-performance technologies.

Expofin E.S.Co. is the strategic partner for public administration bodies, SMEs, hospitals, RSAs, industries, condominiums, and private individuals who want to improve their energy consumption and implement the transition in a concrete way.

Expofin E.S.Co. manages all phases of the energy transition with its technicians, or as general contractors: from permitting to the design and construction of the plants, to the procurement of project financing and the identification of available incentives.

***“In a rapidly changing world, being a visionary is the key to success.”***







## Expofin E.S.Co. alongside ABF - Andrea Bocelli Foundation: a commitment to education, solidarity and sustainability.

Expofin E.S.Co. is proud to have contributed to the project that saw the inauguration of area B of the ABF Educational Hub 0-11 in Sforzacosta. A project that had profound significance, not only for its impact on the community affected by the 2016 earthquake, but also for the way it represented an opportunity for rebirth, inclusion, and solidarity. This intervention was not limited to the renovation of a building, but created a true landmark, a meeting and training center for children, families, and the entire community.

When the Andrea Bocelli Foundation launched its reconstruction and redevelopment project in Sforzacosta, Expofin E.S.Co. saw this initiative not only as an opportunity to contribute to infrastructure improvements, but also as a chance to promote sustainability and solidarity. The ABF's mission, which aims to give everyone, even those who have experienced hardship and marginalization, the opportunity to live a life full of opportunity and beauty, has become our mission. We share the idea that, together, we can do much more, building a better future for all.

The inauguration of the new educational center, completed in just 150 days, was a demonstration of how combining different strengths can create something extraordinary. The project included the creation of modern laboratories, green spaces, and innovative classrooms, which not only meet educational needs but also provide an inspiring environment for the entire community. For Expofin, supporting the creation of a space that fosters growth, innovation, and inclusion was natural.

This project not only restored a building destroyed by the earthquake but also revitalized and brought hope to an entire community. The Andrea Bocelli Foundation described it as "another link in the chain of good," a concept with which we deeply identify. Working together with ABF and other partners to build an educational hub that is also a center for community gathering and inclusion was an act of faith—not just in the capabilities of each participant, but also in the power of solidarity and unity. Where there are difficulties, there is always space to turn them into opportunities.

This is what Expofin E.S.Co. saw in this project: a chance to contribute not only to material reconstruction but also to social and cultural rebirth.

Watch the video



# Energy Efficiency Services Expofin E.S.Co.

## E.S.Co. Solutions

Expofin E.S.Co. offers a complete energy efficiency service through the E.S.Co. Energy Plus contract, specifically designed for public administration entities, SMEs, clinics, and condominiums.

Our integrated approach manages all regulatory and administrative procedures necessary to ensure compliance with current laws, particularly regulation 5.0 and the CACER

decreed, ensuring that each project meets specific requirements and optimizes the available incentives.

Our solutions focus on accessing government contributions and incentives, such as those related to the National Recovery and Resilience Plan (PNRR) and GSE operational guidelines for energy communities and widespread self-consumption. Within this framework, Expofin E.S.Co. ensures that all energy efficiency procedures align with the transitional regulatory mechanism.

Whether through direct supply or an EPC (Energy Performance Contract), we design the project according to the needs and relevant regulations, optimizing system performance and incentive benefits.

Expofin E.S.Co. is the strategic partner for public administrations, SMEs, clinics, and condominiums looking not only to optimize energy efficiency but also to transform regulatory incentives into tangible opportunities.



# Beyond the goals

Born from the need to achieve climate neutrality by 2050 through the green transformation of production, industry, mobility, residential, and energy generation sectors, Expofin has accepted the challenge, transforming ideas into cutting-edge integrated systems capable of streamlining energy needs: a CO2 reduction platform that uses the best benchmark metrics for each individual sector.



## RESIDENTIAL

Thanks to its innovative technologies, Expofin can provide systems for improving the efficiency of homes and condominiums by generating thermal and electrical energy from renewable sources through a cascade system.



## INDUSTRY

Expofin carries out consumption audits and proposes comprehensive energy efficiency solutions. It offers solutions in supply or EPC, suitable for all business realities, with financing or operational rental solutions.



## PUBLIC ADMINISTRATION

Expofin is committed to promoting Energy Communities (CER) in public administration. With its advanced know-how, it has won public tenders for energy efficiency projects in over a thousand Italian municipalities.



## AGRICULTURE

Expofin's green mission includes the agricultural sector. As a co-founder of Agroland Italia, Expofin promotes precision conservation agriculture, enhancing energy efficiency, agricultural practices, and biodiversity.

# Energy Effectiveness Services Expofin E.S.Co.

## E.S.Co. Solutions

Expofin is a cutting-edge digital E.S.Co, capable of implementing IoT technologies through the Logbot system to monitor in real time all the devices used to improve the energy efficiency of buildings.

This innovative approach allows the acquisition of detailed and precise data from devices, offering a comprehensive view of energy performance.

To ensure the integrity and reliability of this data, Expofin is implementing an ambitious project: the adoption of blockchain technology to securely connect and certify all relevant information. This certification process will be aligned with standards recognized by the European Community, ensuring the validity and transparency of the collected data.

Blockchain certification not only provides a secure basis for energy efficiency data, but also opens up significant opportunities.

Thanks to this validation, it will be possible to launch the protocol for requesting white certificates or carbon credits, crucial tools in Europe's efforts to promote the energy transition.

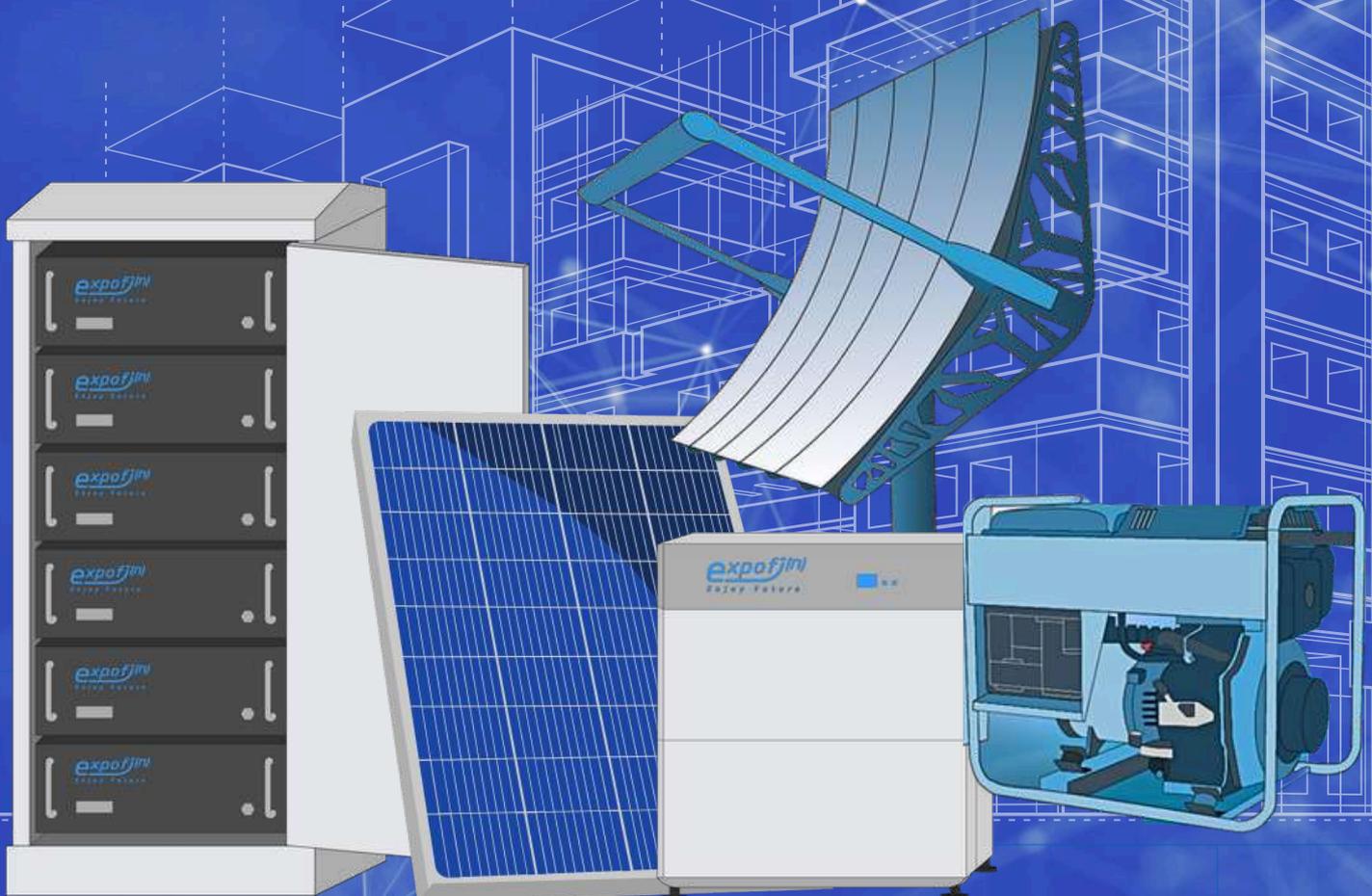
Thanks to its advanced technologies, Expofin has achieved significant milestones in residential, industrial, and public administration sectors, winning public tenders related to energy efficiency in supply and Energy Performance Contracts (EPC) for over one thousand Italian municipalities. Expofin has obtained E.S.Co. (Energy Service Company) certification, enabling it to sell energy through savings using Energy Efficiency Certificates (TEE) and white certificates.

# Interconnected Technologies

Expofin offers energy efficiency through an innovative system to optimize solar energy usage and maximize renewable energy production.

- BIAxIAL PARABOLIC SOLAR CONCENTRATOR
- HYDROVOLT COGENERATIVE PANEL
- EXPOFIN SOLID POWER / EXPOFIN ENERGY STORAGE - GRAPHENE SUPERCAPACITOR
- MICRO AND COGENERATION

Technologies are connected with an IoT system for remote monitoring and control of installations using the Expofin Logbot system.



# Cascade System



The platform provides real-time information to users and maintenance personnel about produced/consumed energy and the plant status.

Expofin's cascade system is a virtuous process representing a significant innovation in sustainable energy. By integrating various certified technologies, the system is designed to reduce costs and meet the highest energy consumption needs.

The cascade approach maximizes the efficiency of each component, creating a synergistic system capable of optimally responding to the most demanding energy requirements.

Expofin stands out as a pioneer in advanced and sustainable energy solutions, making a significant contribution to reducing environmental impact and optimizing energy resources.

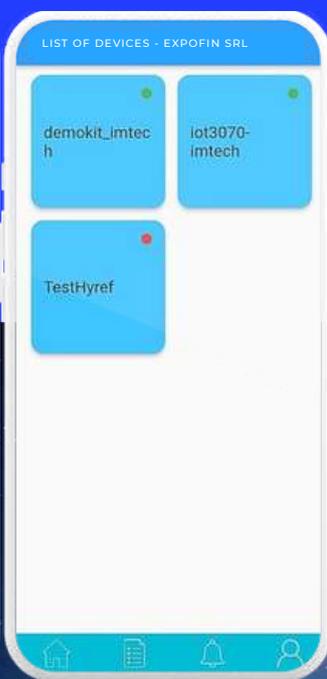
The entire cascade system can be constantly monitored and managed in IOT.

The implementation of our system does not only guarantee high-quality data but also contributes significantly to economic outcomes. Through participation in European certification programs, Expofin positions itself at the center of a virtuous sustainability process, promoting energy efficiency and actively contributing to reducing environmental impact.

Expofin is committed to accelerating the transition towards a more sustainable and conscious energy future and actively engages in leveraging green financial investments by involving private investors and/or directly engaging communities through crowdfunding and social lending platforms (SuperHeero project).



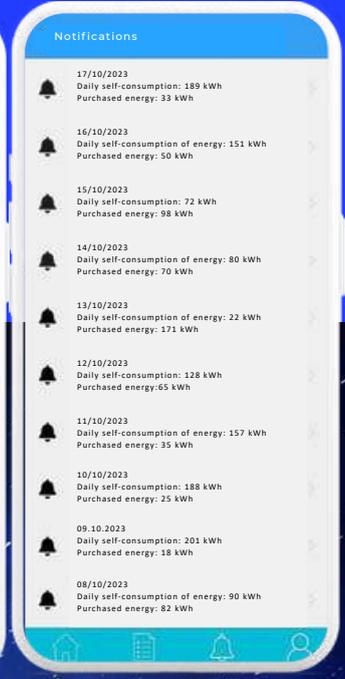
**GEOLOCATION FACILITIES**



**LIST THE CONNECTED DEVICES**



**ENERGY AND AIR QUALITY INFORMATION**



**DAILY NOTIFICATIONS ON CONSUMPTION**

# Innovative Finance at the Service of the Energy Transition

Clean energy, participatory finance and real impact on the territory.

With Expofin E.S.CO, energy efficiency becomes a shared project, open to the community.

Expofin E.S.Co., a technical partner of SUPER-HEERO, has launched its third crowdlending project dedicated to the energy transition: the construction of a 29 kWp photovoltaic system on the roof of Paradigma Exponential Hub in Padua.

A real, measurable, and community-open intervention, funded in part through crowdlending, that enables citizens and investors to contribute to clean energy production, supporting a sustainable and participatory finance model for the energy transition

 <https://www.super-heero.com/it/home>



**Expofin E.S.Co.** is committed to developing technological solutions to accelerate the energy transition and integrating financial aspects into this process. Our mission includes creating a certified digital platform to measure the reduction of CO<sub>2</sub> emissions resulting from energy efficiency installations operating across the territory, thus contributing to monitoring and certifying the positive impact of these solutions.

A fundamental step in this journey was achieving the first milestone with the energy efficiency financing project through crowdfunding, a tool recognized by the Italian government and the Bank of Italy, allowing anyone to invest via a certified digital platform (Ener2Crowd).

Through the Super Heero project managed via Ener2Crowd's digital platform, anyone can invest in energy retrofitting projects, including supermarkets, companies, and other commercial structures. The goal is to make renewable energy and energy efficiency accessible, directly involving local communities that can thus invest and engage in concrete green projects, receiving economic returns through investment interest.

Supported by **Expofin**, the Super Heero crowdfunding platform aims at sustainability, focusing on energy efficiency projects, such as photovoltaic installations, which significantly reduce CO<sub>2</sub> emissions. Participation from individuals and businesses alike creates a virtuous network towards a more sustainable, zero-impact future.



# Solar Concentrator Parabolic Biaxial 10/14 Mirrors

Created as a viable solution to pollution problems, it transforms solar energy into thermal energy at an efficiency rate of 91% thanks to its solar tracking system using reflective parabola technology.

**World Record of  
Efficiency to 91%**



Agencia nazionale per le nuove tecnologie,  
l'energia e lo sviluppo economico sostenibile



**BOND  
STREET  
AWARDS**



Today, the EOS TH parabolic solar concentrator surpasses all traditional solar thermal production systems in technical features and performance due to the following points:

- It has no performance degradation, whereas traditional systems have a lifespan between 6 and 11 years with gradual performance degradation until exhaustion.
- Thanks to its solar tracking system, it generates maximum power from the very first rays of sunlight, always maintaining the most efficient irradiation angle.
- It is negligibly affected by external temperatures, unlike panel or tube systems, which are significantly impacted.
- It offers a much more constant performance both throughout the annual irradiation cycle and daily operation.
- It supports continuous use in professional heating applications.
- Its compact size allows for the creation of district heating energy parks in significantly smaller areas compared to traditional systems.
- When integrated with other technologies, it also facilitates the production of air conditioning using dehumidification techniques (solar cooling system).





## INCENTIVES

Based on the fields of application, the following are included in the products encouraged by current regulations:

- **THERMAL ACCOUNT 2.0:** GSE incentive for the 14-mirror model
- **INDUSTRY 5.0:** eligible when integrated into an industrial process according to "industry 5.0" regulation
- **ECOBONUS:** eligible for tax deductions

## AVAILABLE TODAY CONFIGURED WITH 10 / 14 MIRRORS FOR THERMAL ENERGY PRODUCTION:

Up to 100°C water/glycol

Above 100°C upon request with diathermic oil

Set up with IOT remote control technology:  
SIEMENS hardware; Logbot cloud software

The biaxial parabolic solar concentrator is an excellent solution for recovering marginal and unused areas around buildings. It provides multiple benefits to the production process and corporate image, improving the workplace environment, reducing smoke and noise, making the production process more eco-sustainable, increasing the perceived value of the final product, significantly reducing fuel costs, extending boiler lifespan, and lowering maintenance expenses.

It drastically cuts CO<sub>2</sub> emissions and fine dust in the environment, improves

medium-to-long-term economic outcomes, and meets all needs by integrating concentration into both old and new plants, enhancing their efficiency.

It is suitable for all activities with significant heat or energy consumption that can benefit from this technology, regardless of the sector. The biaxial parabolic solar concentrator guarantees substantial energy cost savings for all uses of heat, including domestic hot water, heating, air conditioning, dehumidification, steam generation, washing, pasteurization, drying, desalination, and heat waste recovery.



<b>THERMAL</b>	<b>100% constant</b>	<b>75% 12 o'clock</b>	<b>45% 12 o'clock</b>
<b>IDEAL USE</b>	<b>Continuous/ civil-industrial</b>	<b>Domestic civil</b>	<b>Domestic</b>
<b>DURABILITY</b>	<b>Potentially unlimited</b>	<b>approx. 10 years</b>	<b>approx. 15 years</b>
<b>OPERATING TEMPERATURE</b>	<b>Up to 100°</b>	<b>Around 60-70°</b>	<b>Around 40-50°</b>
<b>SURFACE FOR EQUAL OUTPUT/YEAR</b>	<b>19.3 m<sup>2</sup></b>	<b>52 m<sup>2</sup></b>	<b>88 m<sup>2</sup></b>
<b>RELIABILITY</b>	<b>High, easy to maintain</b>	<b>Variable/manutenz. complex</b>	<b>Variable/manutenz. complex</b>
<b>LIFE CYCLE SUSTAINABILITY</b>	<b>Components easy to disassemble, recycle or reuse</b>	<b>Subject to legislation Raee (art. 40 Legislative Decree. 49/2024</b>	<b>Subject to legislation Raee (art. 40 Legislative Decree. 49/2024</b>
<b>INSTALLATION</b>	<b>On the ground in any sun area</b>	<b>On south-facing slopes</b>	<b>On south-facing slopes</b>

# Expofin Solid Power HV

## Solid-state high-voltage accumulator

The innovative Expofin Solid Power technology is a modular, three-phase, high-voltage graphene solid-state energy storage system that overcomes lithium barriers, reduces grid dependence, and optimizes self-consumption of clean, renewable energy.

Energy storage system suitable for:

- Homes, hospitals, schools, offices, SMEs, and industries
- Solar/wind power systems
- Energy backup in the event of a grid outage
- Operational benefits: electrostatic and non-electrolytic reaction / compact, high-power design / long life / consistent performance over time / stable performance even at extreme temperatures / non-flammable / dry disposal via WEEE code / IoT monitoring via the Expofin app

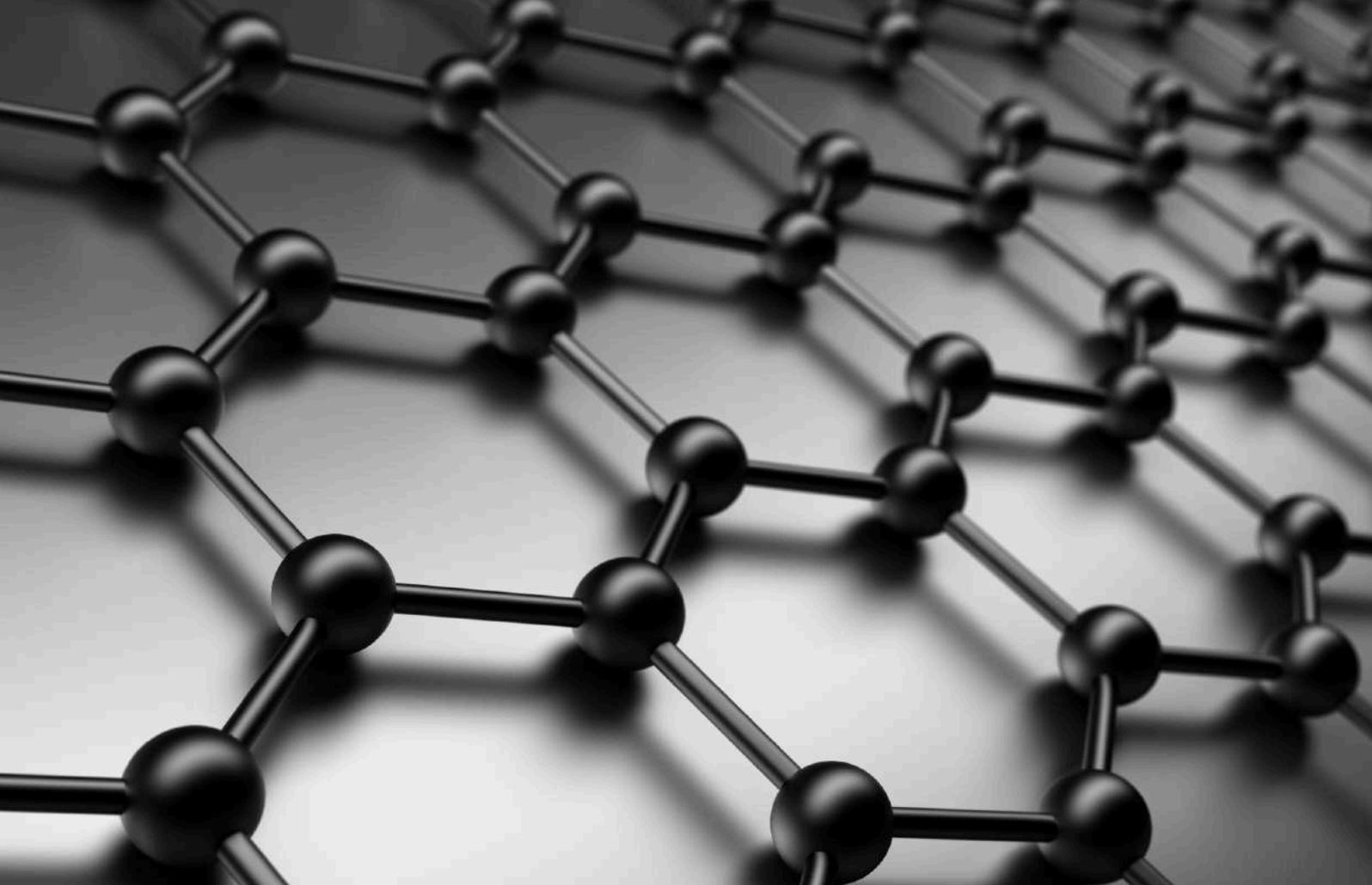


**HIGH VOLTAGE**

**INNOVATIVE, HIGH-PERFORMANCE, AND MODULAR.  
THE NEW FRONTIER OF ENERGY STORAGE**

# HIGH VOLTAGE

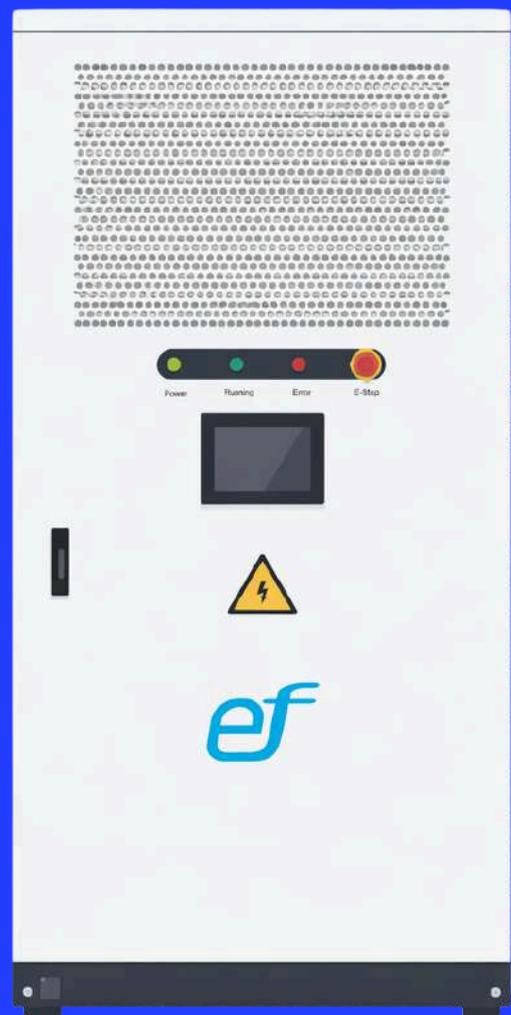
MODEL	SOLID POWER 10 kWh	SOLID POWER 15 kWh	SOLID POWER 20 kWh	SOLID POWER 25 kWh	SOLID POWER 30 kWh
STORED ENERGY	10kWh	15kWh	20kWh	25kWh	30kWh
N° OF MODULES IN SERIES	2	3	4	5	6
NOMINAL VOLTAGE	204.8Vdc	307.2Vdc	409.6Vdc	512Vdc	614.4Vdc
MAX CHARGING VOLTAGE	230.4Vdc	345.6Vdc	460.8Vdc	512Vdc	691.2Vdc
MAX DISCHARGE VOLTAGE	179.2Vdc	268.8Vdc	358.4Vdc	448Vdc	537.6Vdc
ESR/AC@1KHZ 50% SOC	<100 mΩ	<140 mΩ	<180 mΩ	<220 mΩ	<260 mΩ
MAX CONTINUOUS POWER	5kW	7.5kW	10kW	12.5kW	15kW
DIMENSIONS	mm 600 X 500 x h. 480	mm 600 X 500 x h. 640	mm 600 X 500 x h. 800	mm 600 X 500 x h. 960	mm 600 X 500 x h. 1120
WEIGHT	90kg	130kg	170kg	210kg	250kg
MAX CONTINUOUS CHARGING CURRENT	25A				
MAX CONTINUOUS DISCHARGE CURRENT	25A				
NOMINAL CAPACITY	52AH				
COMMUNICATION PROTOCOL	CAN				
MONITORING DATA	System voltage, current, temperature, SOC, SOH, cell voltage				
LIFE CYCLE (25°C)	15.000 cycles 10.000 (-75%)				
RECOMMENDED DISCHARGE LIMIT	≤90%				
ALLOWED DISCHARGE LIMIT	100%				
CHARGING TEMPERATURE LIMITS	0°C ~ 45°C				
DISCHARGE TEMPERATURE LIMITS	-20°C ~ +55°C				
CASING MATERIAL TYPE	Metal				
COOLING METHOD	Natural				
PROTECTION CERTIFICATIONS	IP20 Indoor				
PERMITTED OPERATING HUMIDITY LIMIT	0 ~ 90% RH non-condensing				
OPTIONAL PARALLEL CONNECTION	Not allowed				
REGULATORY COMPLIANCE	CE, RoHS, UN38.3				
STORAGE CONDITIONS	-20°C ~ +40°C, 25% ~ 95%RH, SOC>30%, one full charge required every two months				



## High Voltage

# Expofin Solid Power HV 261 kWh

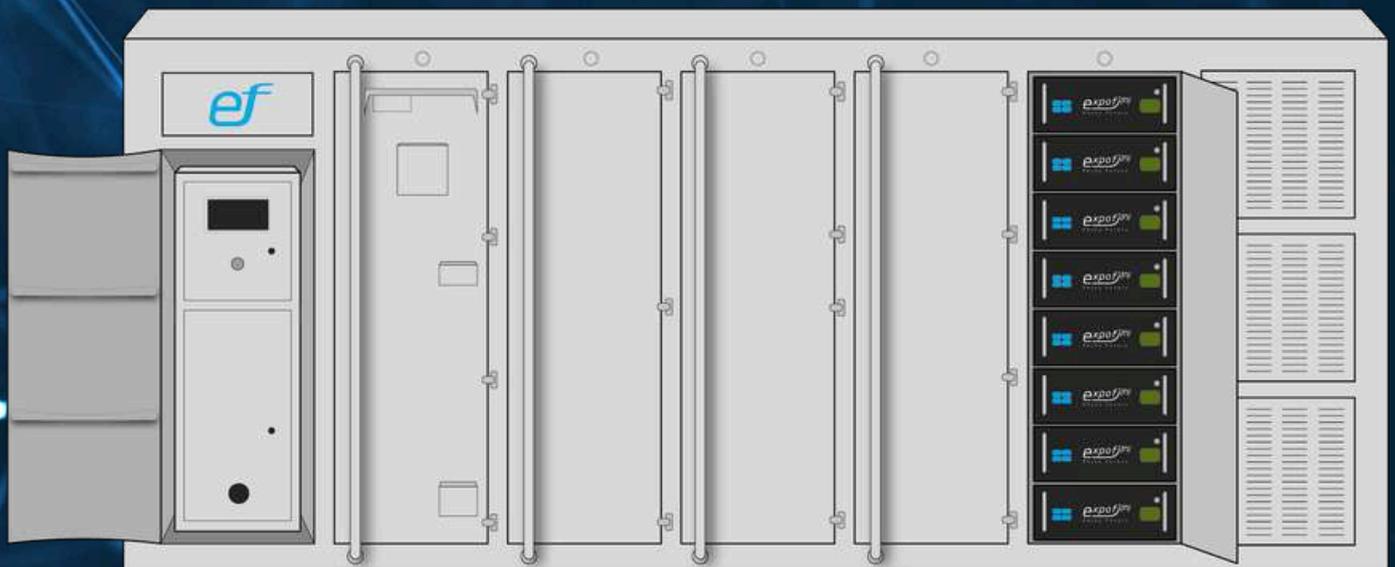
- **STORAGE SYSTEM:** 261 kWh
- **CAPACITY:** 314 Ah (cell capacity)
- **NOMINAL VOLTAGE:** 832 V
- **PROTECTION:** IP54
- **LIFESPAN:** LIFE CYCLE 20 YEARS / 15,000 CYCLES (70%)
- **PARALLEL CONNECTIONS:** single string
- **WEIGHT:** about 2,600 kg
- **DIMENSIONS:** 1100x 1445 x 2350 mm
- **FEATURES:** Maximum safety, ultra-fast charging, high efficiency, intelligent liquid cooling for stable performance even in extreme environments, integrated management IoT monitoring, fire prevention system, non-toxic, recyclable
- **COMMUNICATION CABLE:** Ethernet cable, RS485



## High Voltage

# Expofin Solid Power HV 1,075 MWh

- **STORAGE SYSTEM:** 1.075 MWh - 1075 kWh
- **CAPACITY:** 280 Ah
- **NOMINAL VOLTAGE:** 768 V
- **PROTECTION:** IP55
- **LIFESPAN:** life cycle 15/20 years - 12,000 cycles (70%)
- **PARALLEL CONNECTIONS:** various configurations
- **WEIGHT:** < 22 TON
- **DIMENSIONS:** 6058 x 2438 x 2896 mm
- **FEATURES:** high security, ultra-fast charging, integrated IoT monitoring, modular, scalable and sustainable, can be connected in parallel for multi-MWh configurations, ready to use with integrated PCS.
- **COMMUNICATION CABLE:** Ethernet cable, RS485





## High Voltage

# Expofin Solid Power HV 3,35 MWh

- **STORAGE SYSTEM:** 3.354 MWh - 3354 kWh
- **CAPACITY:** 280 Ah
- **NOMINAL VOLTAGE:** 1331.2 V
- **PROTECTION:** IP55
- **LIFESPAN:** life cycle 15/20 years - 12,000 cycles (70%)
- **PARALLEL CONNECTIONS:** various configurations
- **WEIGHT:** < 35 TON
- **DIMENSIONS:** 6096 x 2438 x 2896 mm
- **FEATURES:** high security, ultra-fast charging, integrated IoT monitoring, modular, scalable and sustainable, can be connected in parallel for multi-MWh configurations, ready to use with integrated PCS.
- **COMMUNICATION CABLE:** Ethernet cable, RS485

## High Voltage

# Expofin Solid Power HV 4,18 MWh

- **STORAGE SYSTEM:** 4.18 MWh - 4180 kWh
- **CAPACITY:** 314 Ah
- **NOMINAL VOLTAGE:** 1331.2 V
- **PROTECTION:** IP55
- **LIFESPAN:** life cycle 15/20 years - 15,000 cycles (70%)
- **PARALLEL CONNECTIONS:** various configurations
- **WEIGHT:** < 40 TON
- **DIMENSIONS:** 6058 x 2438 x 2896 mm
- **FREASURES:** high security, ultra-fast charging, integrated IoT monitoring, modular, scalable and sustainable, can be connected in parallel for multi-MWh configurations, ready to use with integrated PCS.
- **COMMUNICATION CABLE:** Ethernet cable, RS485



# Expofin Solid Power 5 kWh - All in One

- **STORAGE SYSTEM:** 5 kWh
- **CAPACITY:** 100 Ah
- **NOMINAL VOLTAGE:** 51.2 V/DC
- **PROTECTION:** IP20
- **LIFESPAN:** life cycle 15/20 years - 15,000 cycles (70%)
- **PARALLEL CONNECTIONS:** max. n° 10 pcs.
- **WEIGHT:** 50 kg
- **DIMENSIONS:** 470 x 570 x 175 mm
- **FEATURES:** high security, reliability, remote monitoring via Bluetooth, suitable for indoor environments, possibility to expand the system
- **COMMUNICATION CABLE:** CAN, RS485



# Expofin Solid Power 10 kWh - All in One

- **STORAGE SYSTEM:** 10 kWh
- **CAPACITY:** 200 Ah
- **NOMINAL VOLTAGE:** 51.2 V/DC
- **PROTECTION:** IP20
- **LIFESPAN:** life cycle 15/20 years - 15,000 cycles (70%)
- **PARALLEL CONNECTIONS:** max. n° 10 pcs.
- **WEIGHT:** 108 kg
- **DIMENSIONS:** 650 x 970 x 155 mm
- **FREASURES:** high security, reliability, remote monitoring via Bluetooth, suitable for indoor environments, possibility to expand the system
- **COMMUNICATION CABLE:** CAN, RS485



# EXPOFIN ENERGY STORAGE GRAPHENE



Extreme efficiency.  
The graphene supercapacitor of  
Expofin E.S.Co. is changing the game.

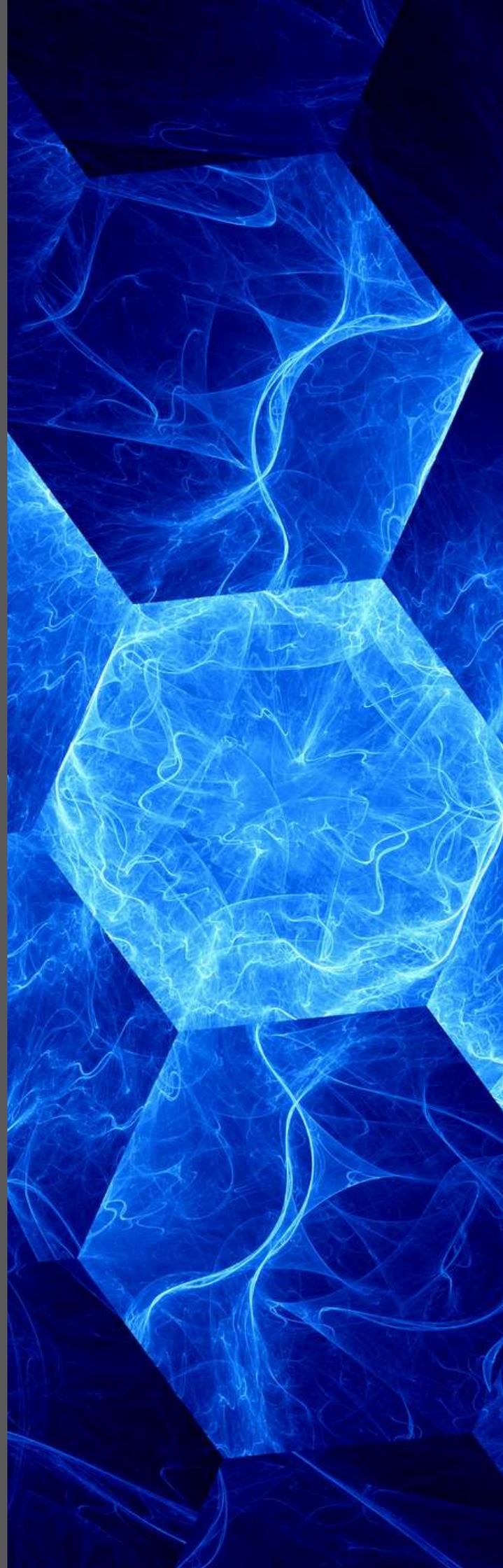
# Expofin Energy Storage

Graphene Expofin Energy Storage represents a breakthrough in the electricity storage industry, overcoming the limitations of traditional lithium batteries. This innovative technology, proposed by Expofin E.S.Co, uses graphene supercapacitors, offering highly efficient and flexible energy management.

Thanks to the Expofin system, energy produced by photovoltaic systems can be stored and used even at night or in the absence of sun, ensuring superior performance and immediate availability when needed. This approach not only improves energy efficiency, but also contributes to a transition to more sustainable and innovative energy sources.

**Choosing Expofin Energy Storage/Expofin Solid Power means investing in a cutting-edge and cost-effective energy future**

**CONNECTED  
POWERFUL  
ECONOMIC  
COMPACT  
EXPANDABLE**





## Expofin Graphene Energy Storage

The Expofin graphene energy storage system, with its fast and stable 100% output, allows for maximizing solar energy usage up to 85%, with 20,000 cycles guaranteed for over 30 years of operation without performance.

Degradation. It is an all-in-one system, equipped with an inverter, suitable for both single-phase (3/4/5/6 kW) and three-phase (3 to 12 kW inverter power) energy production systems.

This solution allows for storing excess electrical energy for use during the day, evening, or night, instead of feeding it back into the grid, maximizing self-consumption up to 85%.

It is an integrated all-in-one system, where all components are contained in a compact cabinet equipped with an AC panel, DC panel, and connection cables to the electricity meter, which can be positioned either on the right or left side of the cabinet.

Features of the Modular Rack Storage System:

Graphene supercapacitors (single-phase) with 100% Depth of Discharge (DoD)  
> 20,000 cycles (lifespan 30-40 years) with 100 A charge/discharge current (fast cycles)  
Operating temperature range: -10°C to 50°C with no performance reduction and no need for cooling  
Integrated active Battery Management System (BMS).

No special transport for hazardous materials is required.

It can power loads in case of a grid blackout using the EPS MODE (optional feature) integrated into the system, while also ensuring continuity of photovoltaic energy production.

The GRAF series graphene supercapacitors offer various energy storage solutions with different power capacities, each designed to meet specific energy storage needs safely, durably, and efficiently. They support expansion with remote monitoring, require low maintenance, and are ideal for various applications, from industrial to residential use.

- MADE IN ITALY
- FAST AND CONSTANT DELIVERY
- 20,000 GUARANTEED CYCLES
- ALL-IN-ONE SYSTEM WITH INVERTER
- SINGLE-PHASE AND THREE-PHASE PLANTS
- ENERGY STORAGE FOR
- SELF-CONSUMPTION
- CONTAINED DIMENSIONS
- MODULAR RACK STORAGE SYSTEM
- ACTIVE BMS INCLUDED
- POWER IN BLACKOUT
- CONTINUITY PHOTOVOLTAIC PRODUCTION
- REMOTE MONITORING
- ACCESSIBILITY PC, SMARTPHONE, TABLET,
- DEDICATED APP
- POSSIBILITY OF CONNECTION TO WALL
- ELECTRIC VEHICLE CHARGING BOX FROM
- FV, BATTERY AND NETWORK
- DRY WASTE DISPOSAL

## MODULARITY, EFFICIENCY AND SECURITY



**IP20 Indoor houses**  
L 577 x H 823 x P 512 mm



**IP65 Outdoor houses**  
L 711 x H 1348 x P 576 mm

# Expofin Graphene Energy Storage

## COMPARISON BETWEEN LITHIUM BATTERIES AND GRAPHENE SUPERCAPACITORS

LIFESPAN	
<p><b>GRAF20</b> Guaranteed over 20,000 cycles. Longer lifespan.</p>	<p><b>LITHIUM BATTERIES</b> Approximately 6,000 charge cycles. Significant degradation.</p>
PERFORMANCE	
<p><b>GRAF20</b> Maintains 100% constant efficiency compared to nominal kWh value, with minimal degradation.</p> <p>(17.825 cycles/25°C +80,25% (8958 cycles 45°C +80%)</p>	<p><b>LITHIUM BATTERIES</b> Experience progressive degradation over time, reducing the nominal kWh value in subsequent cycles.</p>
DISPOSAL & SAFETY	
<p><b>GRAF20</b> No disposal costs. Non-flammable and do not overheat during operation, ensuring higher safety.</p>	<p><b>LITHIUM BATTERIES</b> Have disposal costs and risks of flammability and overheating during their lifecycle.</p>
LOW - TEMP. PERFORMANCE	
<p><b>GRAF20</b> Operates efficiently even at low temperatures.</p>	<p><b>LITHIUM BATTERY</b> Reduced performance in cold conditions.</p>

## DIMENSIONS & CURRENT MANAGEMENT

### GRAF20

Compact size and high-current handling capability, making it superior in high-power demand situations.

### LITHIUM BATTERIES

Less efficient in managing high currents. The process is slower and strongly affected by operating temperatures.

## DISCHARGE/ENERGY USAGE

### GRAF20

Can be fully discharged and always operates at 100% of its capacity, ensuring optimal energy utilization.

### LITHIUM BATTERIES

Have limitations on complete discharge and do not always function at maximum capacity.

## CHARGING/DISCHARGING SPEED

### GRAF20

Boasts a much faster charging and discharging rate compared to lithium batteries. Its ability to rapidly charge and discharge is a great advantage, especially in applications requiring fast and efficient energy response.

### LITHIUM BATTERIES

Slower charging and discharging speeds due to limitations imposed by control electronics and the nature of electrolyte reactions inside the battery.

## UPS FUNCTION

### GRAF20

Can be fully discharged and always operates at 100% capacity, ensuring optimal energy usage.

### LITHIUM BATTERIES

Although used in UPS (Uninterruptible Power Supply) systems, they have limitations in lifespan and stability of energy supply.

# Expofin Graphene Energy Storage

## COMPARISON BETWEEN LITHIUM BATTERIES AND GRAPHENE SUPERCAPACITORS

# COMPLETE SYSTEM: Expofin Graphene Energy Storage



## INVERTER

12 kWp, supports up to 5 GRAF20/5.5 kWp units, totaling 27.5 kW.



## GRAF20

Graphene supercapacitor 5.5 kWp.

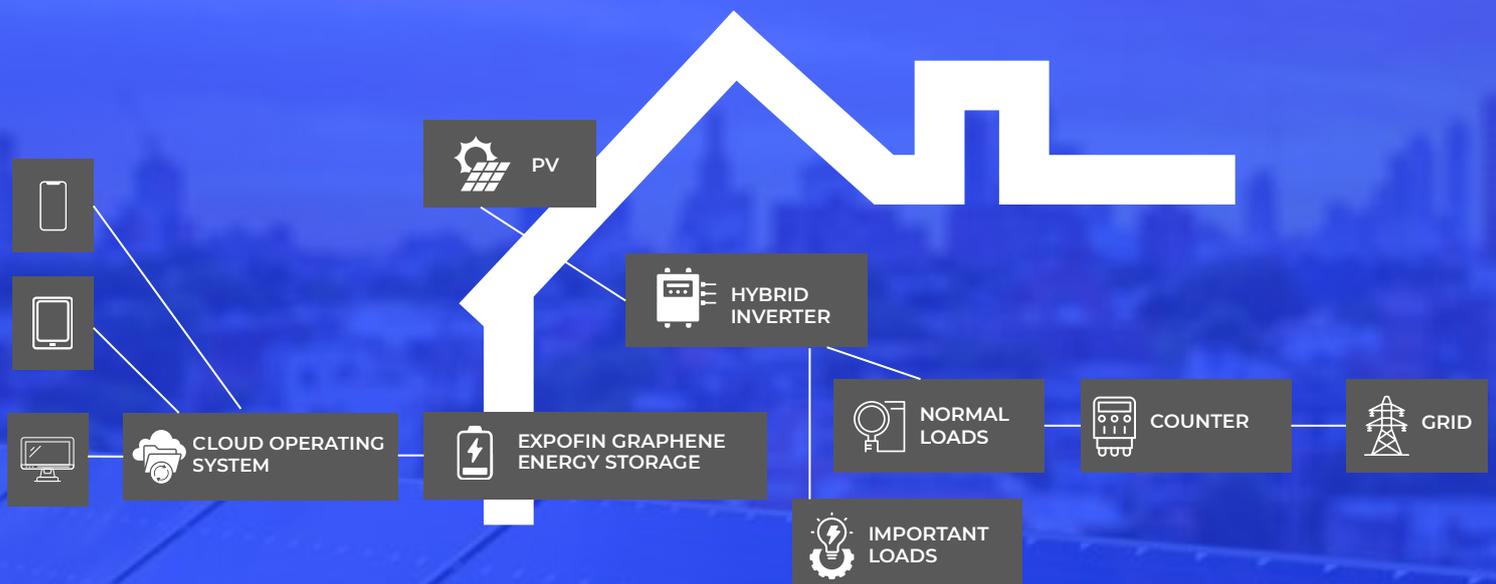


## CABINET IP65

Outdoor cabinet capable of housing GRAF20/5.5 kWp (up to 6 units).

## CABINET IP20

Indoor cabinet capable of housing GRAF20/5.5 kWp (up to 4 units).

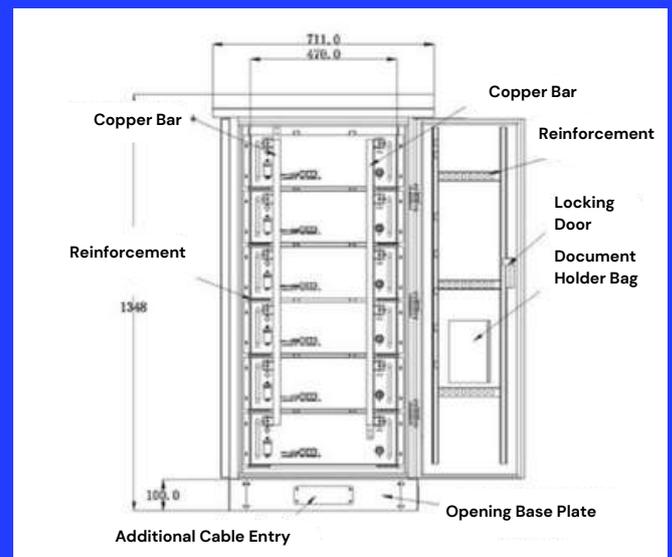
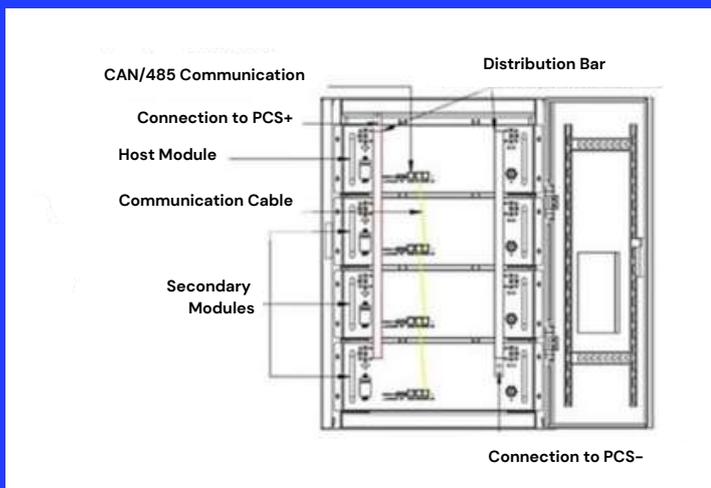


# GRAF20 Three-Phase 5.5 kWh Modules



## TECHNICAL SPECIFICATIONS

- **STORAGE SYSTEM:** 5.5 kWh (MAX N°4 x 5.5 kWh)
- **CAPACITY:** 100 Ah (MAX N°4 x 100 Ah)
- **NOMINAL VOLTAGE:** 51.8 V/DC
- **PROTECTION:** IP20
- **LIFESPAN:** life cycle 15 years - 20,000 cycles
- **PARALLEL CONNECTIONS:** max. n° 10 pcs.
- **WEIGHT:** 38 kg
- **DIMENSIONS (GRAF20):** 470 x 462 x 170 mm
- **ADVANTAGES:** high security, reliability, remote monitoring via Bluetooth. Suitable for indoor environments, with the possibility of expanding the system
- **COMMUNICATION CABLE:** Ethernet cable



Also available in 5-piece (slot) version

# Cogeneration Technology

Cogeneration is a highly efficient system for the simultaneous production of electricity and heat using a single energy source (e.g., natural gas).

A cogeneration plant is qualified as "High-Efficiency Cogeneration" when both produced energies are efficiently used and consumed.

Compared to conventional separate energy production (e.g., a fossil fuel power plant supplying electricity to the grid and a traditional boiler for thermal energy), cogeneration allows for primary energy savings of approximately 30%.

There are many dedicated incentives for this type of plant (e.g., white certificates, tax exemptions for used fuel, and exemption from network charges). The energy is produced where it is needed, avoiding transmission losses in the grid.

A properly sized and operated cogeneration plant allows for significant economic savings compared to traditional energy supply methods.



# WE-X PLATFORM



- Availability of all consumption and production data: objective to facilitate billing, permitting, trading, demand side management.
- Remote control (app and remote) with access to all machine operation parameters.
- Provision for the cogenerator to act as a data hub for other plants (e.g. fv, boilers, pdc, Smart Meter...).
- Open source platform compatible and integrable with others. Telegestion.

## TECHNICAL DATA

The mCHP systems have the following characteristics:

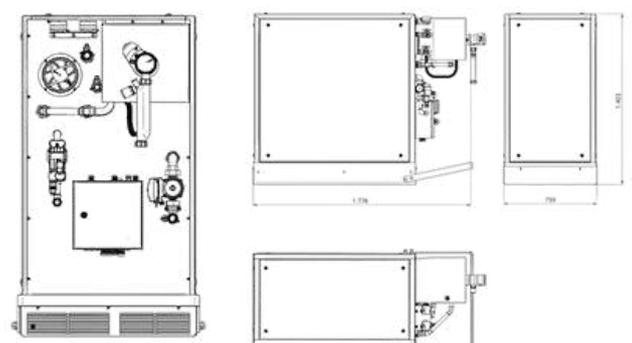
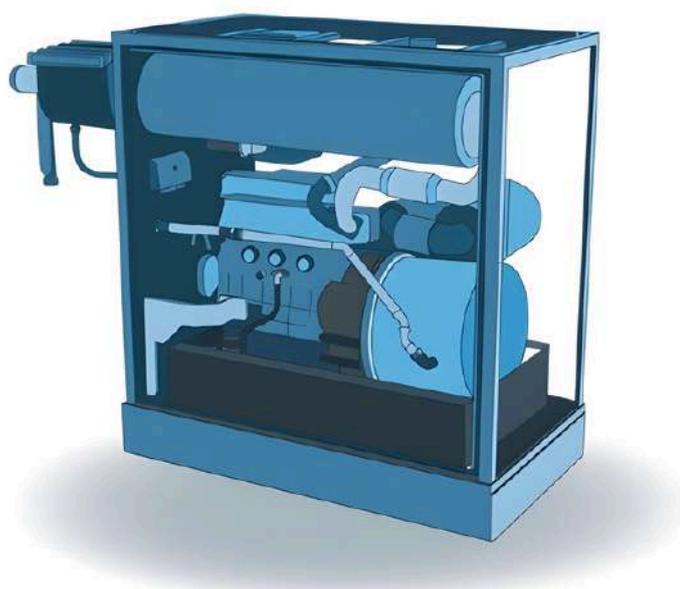
- 5-50 kW electric power
- 27-80 kW thermal power
- 3.5-13.5 m<sup>3</sup>/h fuel supply with natural gas or GPL.

### Dimensions:

Adaptable to various applications, ranging from 1093 x 613 x 1100 to 2523 x 804 x 1964m.

### Atmospheric emissions:

Halved compared to traditional energy production methods.



# COGENERATION TECHNOLOGY

## MCHP INSERTION



The micro-cogenerator:

- Operates for 5,000 hours per year
- It is connected in parallel to the site's electricity grid and contributes part of the site's electricity needs; the remaining part is met by drawing on the electricity grid
- It is inserted into the building in a suitable position to support the existing heating systems, with priority operation; when the thermal energy demand cannot be met by the cogenerator alone, the traditional heating system also comes into play.

The project benefits from the 65% Ecobonus incentive on the investment and/or Conto Termico 2.0/white certificates.

### MCHP INTEGRATION

The supply or EPC for 10 years includes:

- mCHP unit
- Installation
- Design and administrative procedures
- 2-year all-inclusive warranty on the mCHP unit
- Full-service Kasko insurance



The CHP unit is engineered and built in Germany.

Main features:

- Modular construction consisting of three elements: power unit, control and power panel, and thermal module.
- Plug & Play: the cogenerator is supplied complete with all components needed to interface with the user's systems. (Hydraulic flanges for the secondary circuit; gas train; hour meter; MID-certified electricity meter for customs purposes; CEI 0-21 interface protection system, etc.)

## COGENERATION TECHNOLOGY

- Control panel integrated with an IT web platform: in addition to managing parallel operation with the electrical grid, it allows for remote technical and operational control of the system. Includes metering of both self-produced energy and all other energy parameters of the site (optional). Data transmission is carried out through the controller with an RS48 port.
- CAR setup: Thermal priority operation at constant power (in accordance with GSE's micro-cogeneration regulations). Other operational configurations can be implemented upon request.
- Technical options available on request.
- Silent operation, suitable for residential and hotel applications.

The mCHP system has been designed without thermal energy dissipation during normal operation, as it lacks emergency dissipators.

To prevent engine overheating, the system will shut down until the primary circuit fluid temperature returns to a safe level. This configuration enables ON/OFF operation in thermal tracking mode, which cannot be modified by the customer during operation to comply with CAR-SEU standards imposed by GSE.



### MCHP CERTIFICATIONS

- Gas Directive 142/2009, chap.1 art.1 // Gas appliance directive 2009/142CE, chap.1 art.1.
- Machinery Directive 42/2006/ Machine directive 2006/42CE. Low voltage directive
- 95/2006/Low voltage directive 2006/95 EC. Compatibility Directive
- 108/2004/Electromagnetic Compatibility Directive 2004/108CE.

### ADVANTAGES:

- Cost savings
- Energy savings (-30/40%) and CO2 emissions savings (-40%)
- Practical ENEA management compared to traditional separate energy production, approximately 50,000 kg/year per mCHP

## LARGE-SCALE COGENERATION

Large-scale cogeneration units with power ranging from 50 to 530 kW are designed to simultaneously produce electricity and heat, using fuels such as natural gas, biogas, propane, and landfill gas. These units can be installed indoors (open or soundproof module) or outdoors (container version) and are equipped with synchronous or asynchronous generators and advanced control systems.

### Key Features:

- Automatic air-fuel ratio control to reduce emissions.
- Modular and compact design, allowing for easy integration with other systems.
- Low noise level if equipped with soundproofing.
- High adaptability to temperature variations in heating systems.

Additionally, they feature digital control that ensures automatic operation, real-time performance monitoring, and simple management via a high-resolution display and multilingual user interface.

The units are certified according to European regulations and are compatible with a wide range of fuels, making them ideal for industrial and civil applications.

The advanced technology and energy efficiency of these units provide a sustainable and versatile solution for those looking for a reliable combined energy source.



# Expofin Infinity Tower

The Infinity Tower is designed to combine innovation and sustainability into a single solution.

This futuristic tower integrates advanced energy management features, environmental monitoring, and digital connectivity, addressing the challenges of digitalization and ecological transition with a visionary approach.

Thanks to its bi-facial vertical photovoltaic panels, the Infinity Tower generates clean energy and significantly reduces electricity consumption, ensuring unparalleled energy sustainability.

With a CO<sub>2</sub> emission reduction of 10,000 kg per year and PM10 reduction of 5.2 kg, this solution represents a tangible contribution to the fight against climate change, promoting a greener future for our cities.

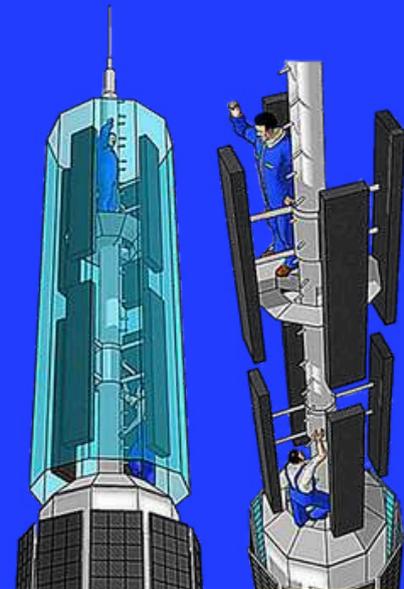
**Innovation  
Design  
Multifunctionality**



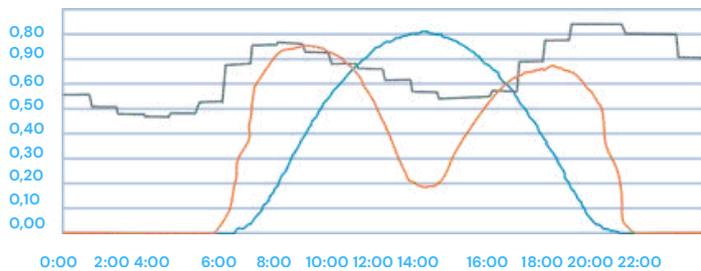
# EXPOFIN INFINITY TOWER

Infinity Tower Vertical Bi-Facial Technology  
Installation:

Estimates locations: Central Italy  
 Plant power: 18.4 kWp  
 Estimated annual production: 19,260 kWh  
 Infinity Tower annual consumption: 25,258 kWh  
 Reduction of energy purchases from the electricity grid:  
 -76%  
 Full digital tower management.  
 Annual reduction in CO2 emissions: -10,000 kg  
 Annual reduction in PM10 emissions: -5.2 kg  
 Energy efficiency securities: TEE 4.7 equivalent  
 1,000€/year



## SOLAR POWER CURVE VERTICAL PRODUCTION

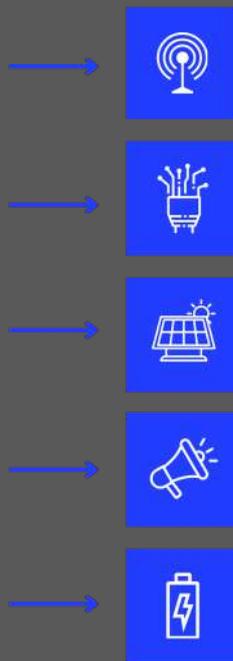
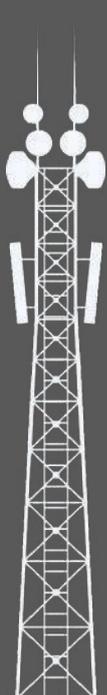


The solar energy production curve fits well with the consumption needs of the Infinity Tower.

Not only that: unlike standard solar systems facing south (blue line), the production curve of a vertical system (in orange) develops during the hours of highest electricity costs (grey line), thus more significantly reducing the operating energy costs of the Infinity Tower.

STANDARD SYSTEM

INFINITY TOWER



DEDICATED SPACE FOR INTEGRATION  
SMALL CELLS AND TELECOMMUNICATION  
EQUIPMENT

TELECOM AND FIBER OPTIC  
EQUIPMENT

VERTICALLY INTEGRATED PHOTOVOLTAIC  
PANELS

VERTICALLY INTEGRATED LED WALL

INTEGRATED POWER + STORAGE +  
ENERGY MANAGEMENT

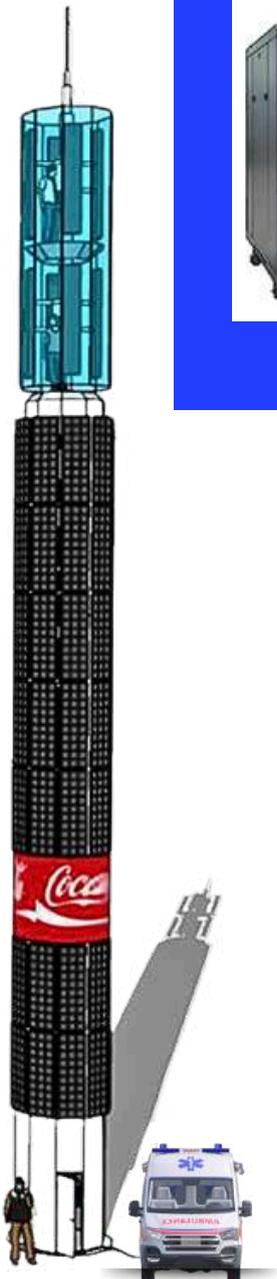
The modern and versatile design integrates perfectly with urban environments, transforming it into a point of reference for sustainable architecture. The possibility of including high-visibility circular LED walls allows the creation of innovative advertising spaces at points of interest and city gathering places, opening up new business opportunities for dynamic and high-intensity contexts.

Furthermore, the tower serves as a technology hub, housing 5G equipment, small cells, and mini-data centers for advanced connectivity and cutting-edge digital management. It also supports sustainable mobility through the integration of electric vehicle charging stations, encouraging environmentally friendly maintenance and reducing the environmental impact of transportation.



Equipped with photovoltaic panels, the tower is capable of generating and storing energy during daytime hours, operating, depending on its configuration, completely autonomously without the need for electrical connections, pipes, or excavations

The energy produced from renewable sources must be managed through an intelligent and efficient energy storage and management system.



This technology represents the future of urban and energy management, combining aesthetic, functionality, and innovation. Infinity Tower is not just a technological infrastructure, but a symbol of progress, a commitment to sustainability, and a concrete response to the needs of a world in constant evolution.

Adopting Infinity Tower means choosing a connected future and also a business opportunity, as it allows for the integration of an 85-inch high-brightness LED wall, ideal for advertising and visual communications in increasingly connected urban environments.

ELEMENT	VALUE
Investment	
Energy cost in 30 years <small>(average cost in BT 0.17 €/kWh)</small>	
TEE for 5 years	
Security against equipment intrusions	high
EV charger integration <small>(maintenance electric mobility incentive)</small>	easy
Architectural integration solar system	yes
External shelter for equipment	no
Annual CO <sub>2</sub> reduction	yes
Annual PM10 reduction	yes
Integration and management of LED panels <small>(advertising revenue)</small>	yes
Mini-data center integration	yes
Architectural integration in urban environments	yes
Infrastructure sustainability	high
New business models	yes
Infrastructure sustainability	yes
Efficiency certificates (TEE)	yes
Reduction of signal losses (dB)	yes



An 85-inch high-brightness LED-wall can be integrated, ideal for advertising messages and visual communications in urban settings and in line with the needs of an increasingly connected world.



# Expofin Smart Tower 5G

SMART TOWER 5G is a multifunctional photovoltaic structure designed to offer adaptive lighting and intelligent energy management. Equipped with photovoltaic panels, the tower is able to generate and store energy during daylight hours, operating autonomously without the need for electrical connections, pipes or excavations. With wireless connection to other similar facilities, it provides efficient remote management and control. The Tower can hand over the energy produced to the power grid or store it in a centralized system for overnight use or other purposes.

This structure is not limited to lighting alone but can also host multiple integrated devices, such as:

- LED screens
- Wi-Fi
- Thermographic cameras, environmental and weather sensors
- Antennas for telephony and radio.

Its modularity and customization options make it suitable for a wide range of applications, both in urban environments and in remote areas that require energy and communication infrastructure.

The SMART 5G TOWER is designed in compliance with European standards and CE certification, ensuring safety and quality according to UNI EN 1090-1 for steel and aluminum structures. Additionally, due to its solar-powered self-sufficiency, it reduces dependence on traditional energy sources, contributing to sustainability goals and facilitating integration with smart grids and renewable energy sources.

Expofin E.S.Co. introduces the SMART 5G TOWER, developed and patented to create real smart cities, reducing energy consumption while ensuring lighting, digitalization, security, data transmission, and automation services, in a sustainable energy approach under the E.S.Co. model.



- Lamp
- Telephone and radio antennas
- Wi-fi
- Thermographic cameras
- Photovoltaic panels
- Environmental and weather sensors
- Inverter
- Router
- Rasperry
- Amplifier
- Speakers
- Led screen
- Microcamera
- Battery
- Electrical boxes
- Touch panel
- Card reader
- Defibrillator
- SOS button



# SMART TOWER 5G

These towers, integrated with bi-facial vertical solar panels, are designed to reduce energy consumption by up to 76%, optimizing energy management through intelligent storage and distribution systems.

The Smart 5G Tower not only provides advanced telecommunications services, but also includes innovations such as integrated LED displays for advertising, electric vehicle charging stations, and mini data centers. Key Benefits Include reduction of CO<sub>2</sub> and PM10 emissions, energy efficiency with TEE certificates lower operational costs, sustainable business model integrating advanced technologies to support electric mobility and smart cities.

The Smart 5G Tower can be further enhanced with numerous additional services for smart cities, such as: facial recognition video surveillance for enhanced urban security; defibrillators, particularly useful in public squares, offering immediate support in case of medical emergencies.



SOLAR ENERGY



MODULARITY



CUSTOMIZATION



OPERATIONAL EFFICIENCY



CE CERTIFICATION



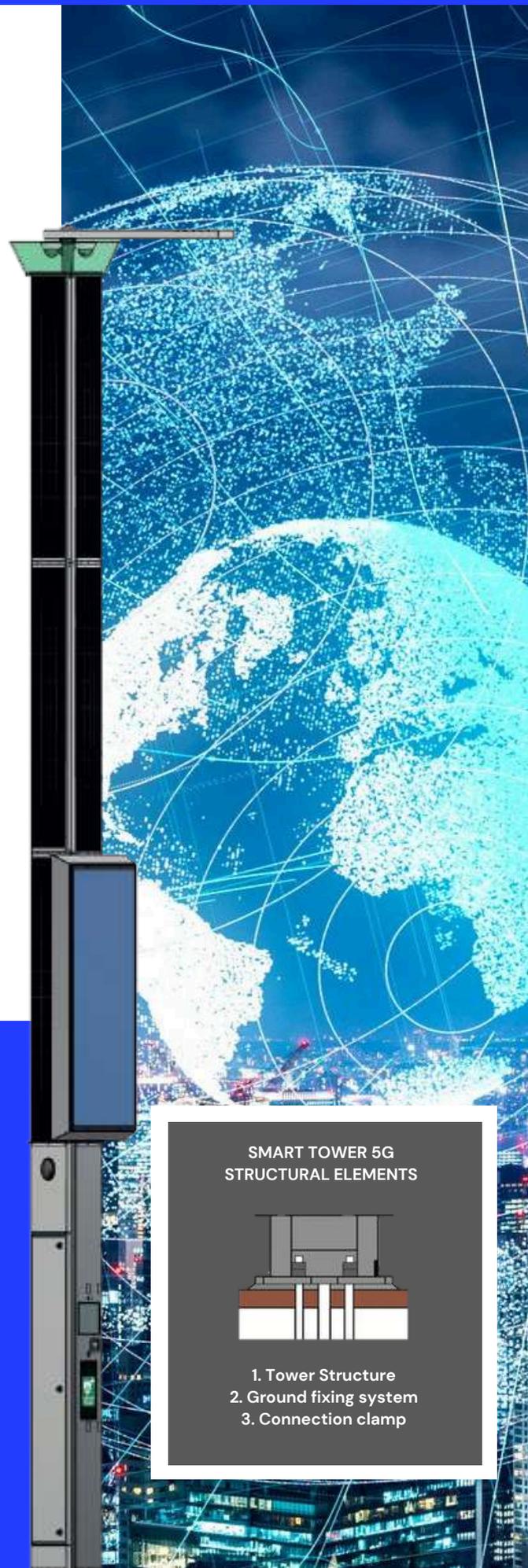
SUSTAINABILITY



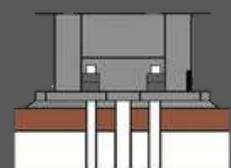
SMART GRIDS



SAFE MAINTENANCE



## SMART TOWER 5G STRUCTURAL ELEMENTS



1. Tower Structure
2. Ground fixing system
3. Connection clamp



# CARPORT PENSILINA

DESIGN, PERFORMANCE  
AND EFFICIENCY

GREEN ENERGY

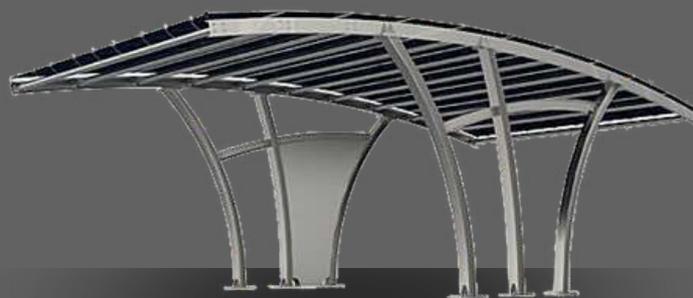
MULTI-SERVICE

INNOVATIVE  
INFRASTRUCTURE

CO2 REDUCTION

A product designed to maximize  
the benefit from bifacial glass  
photovoltaic panels.

(Customized models available for  
all types of vehicles).



SMART LIGHTING / GREEN ENERGY /  
TELECOMMUNICATIONS / EV CHARGER /  
SAFETY / HEALTH AND SOS / ADVERTISING



SMART MODELS					
CAR SPACES	2	4	2	4	1
VAULT EXPOSURES	CURVE	CURVE	LINEAR	LINEAR	LINEAR
VAULT HEIGHT	MIN 2,2 mt MAX 3,2 mt	MIN 2,76 mt MAX 3,32 mt	MIN 2,3 mt MAX 3,2 mt	MIN 2,2 mt MAX 2,9 mt	MIN 2,2 mt MAX 2,9 mt
DIMENSIONS (LXD)	5,3mt x 5,3mt	5,3mt x 10,6mt	5,3mt x 5,3mt	5,3mt x 10,4mt	5,7mt x 4,5mt
MATERIAL	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel
COLUMN CLADDING	Painted sheet metal casing	Painted sheet metal casing	nd	nd	nd
INTEGRATED ELECTRONICS & DEVICES	OPTIONAL	OPTIONAL	nd	nd	nd
PHOTOVOLTAIC MODULES	Compatible with TW Solar / LONGi solar 460 - 500 - 585 Wp modules				10x LONGi solar LR5-72HTH-585Wp
N° OF PV MODULES	15	30	15	30	10
NOMINAL POWER OF THE INTEGRABLE PV SYSTEM	6.9KWP	13.8KWP	6.9KWP	13.8 KWP	5.85 KWP
INSTALLATION TYPE	ON GRID	ON GRID	ON GRID	ON GRID	ON GRID
METAL STRUCTURE WEIGHT	1100 Kg (950Kg average multiple blocks)	1600 Kg (1200Kg media blocchi)	760 Kg (600Kg media blocchi multipli)	2150 Kg (1550Kg media blocchi multipli)	510 KG
MAIN REFERENCE REGULATIONS	CEI / IEC and / or JRC / ESTI, ITA D.M. 17/01/2018, ITA CNR-DT207 / 2008, EN 1993-1-1, CEI 0-21				

# ChargeX. Fast Charger

Expofin ESCo's ChargeX fast charging system is the ideal solution for charging battery electric vehicles and plug-in hybrid electric vehicles.

Designed for high-power, high-efficiency charging, it is perfect for public and private spaces such as commercial parking lots, highway rest areas, charging depots, corporate facilities, and residential communities.

Featuring a robust, self-contained design, ChargeX supports a wide range of charging applications, with a focus on durability and performance. The modular architecture ensures scalability and easy maintenance, making it an economical choice for long-term use.

Equipped with advanced network communication capabilities, ChargeX integrates seamlessly with remote management systems, offering real-time updates to users.

Drivers can easily locate nearby charging stations, monitor charging progress, and access billing details through a simple user interface.

With certifications for safety, water and dust resistance, ChargeX is designed to withstand outdoor environments. Its clear display and intuitive controls make it the reliable choice for businesses and operators looking to provide high-quality charging services.

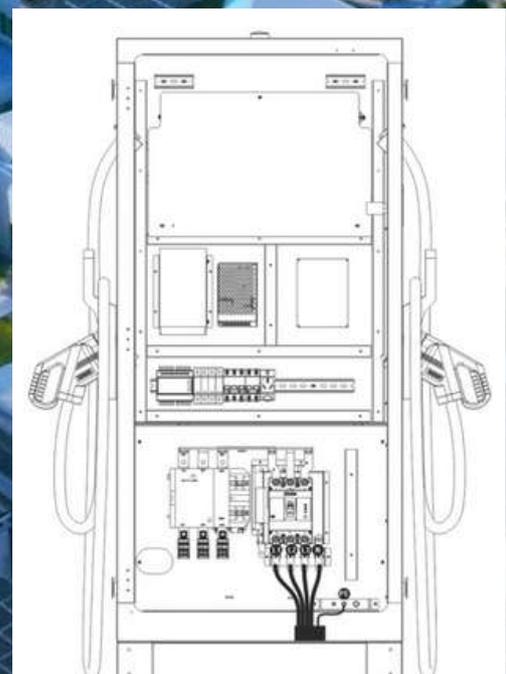
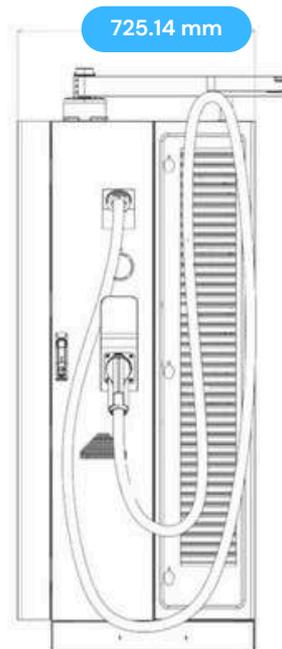
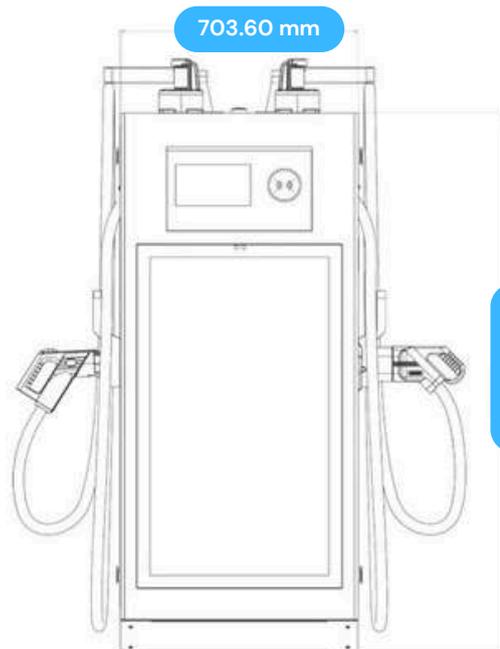


## CHARGE X FEATURES

- It offers users the convenience of controlling the start/stop of charging via an authorized RFID card or mobile app. Based on the latest industry standards for DC charging.
- It is IP55 certified for outdoor use and can resist solid and liquid intrusion, making the unit more stable and highly reliable.
- Provides a high-contrast screen interface with multi-function buttons.

## APPLICATIONS

- Public and private parking areas
- Community parking areas, corporate parking areas
- Parking areas of hotels, supermarkets and shopping centres
- Charging stations
- Motorway rest areas



# CHARGE X TECHNICAL CHARACTERISTICS

MAXIMUM POWER	120KW	160KW	180KW	240KW
INPUT/OUTPUT POWER	400VAC ±10% – 50/60Hz – Three-phase (CCS2 and GB/T) 480VAC ±10% – 50/60Hz – Three-phase (CCS1)			
POWER FACTOR	≥0.98			
EFFICIENCY	>95%			
MEASURING ACCURACY	Class 0.5			
OUTPUT VOLTAGE RANGE	CCS: 250~1000VDC			
OUTPUT CURRENT RANGE	0-200A   0-250A			
COMMUNICATION	ISO15118/DIN70121 (between charging station and vehicle) Ethernet/4G/OCPP1.6J			
USER INTERFACE	10.1 inch LCD Touch Screen / 43 inch LED Screen / RFID and APP			
VERSATILITY STANDARDS	EN/IEC 61851-1: 2019, EN/IEC 61851-23: 2014, UL 2202, UL2594			
SAFETY DESIGN	Overvoltage/undervoltage protection - Overload protection - Leakage protection - Grounding protection - Surge protection			
DC CONNECTOR	5m cable			
ENERGY METER	CE certified			
RCD	Type A			
LOAD BALANCING	Load Balancing Meter and CT (optional)			
COOLING	Air cooling			
IP RATING	IP55 - outdoor			
NOISE LEVEL	<70DB in all directions			
OPERATING TEMPERATURE	-30°C a +50°C			
HUMIDITY	Max. 95% (not adjustable)			
DIMENSIONS / NET WEIGHT	L 17500 x P 84 x H 500 mm / 320 kg			

# Integrated Electric Mobility

Expofin E.S.Co., a leader in accelerating the energy transition, offers cutting-edge solutions to achieve carbon neutrality by integrating innovative technologies with intelligent energy management. In addition to offering photovoltaic canopies (ballasted and/or ground-mounted), which harness solar energy to generate clean electricity, Expofin E.S.Co. also develops advanced energy management software to optimize the charging of electric vehicles through energy produced by photovoltaic systems.

Expofin's solutions go beyond simple energy production and extend to energy storage systems using next-generation storage technologies (GRAF20 and Expofin Solid Power). These systems allow excess energy produced during solar peak hours to be stored.

Such energy storage is essential to balance the mismatch between overproduction and the energy demand needed to charge electric vehicles — whether they are private, commercial, or utility vehicles — especially for small municipalities.

Thanks to this innovative system, electric vehicles can be efficiently charged even during periods of low solar production, ensuring zero environmental impact. Additionally, the energy management software enables real-time monitoring and control of energy flow, optimizing the charging process according to needs and energy availability. This approach reduces operating costs and increases the overall system efficiency, making the entire process — from energy production to vehicle charging — both sustainable and cost-effective.



# Integrated Electric Mobility

Expofin E.S.Co. recognises the importance of setting the right example, particularly in the public sector.

Municipalities, which are the primary actors in the change, can become role models for the energy transition, demonstrating to citizens that electric mobility and renewable solutions are not only possible, but also beneficial. In this context, the ESCo contracts. EPCs proposed by Expofin include the provision and management of electric mobility solutions, powered by solar energy, creating a fully sustainable, zero-impact system.

Expofin E.S.Co.'s proposal is also extended to PMI and all market players, offering them the opportunity to adopt innovative technologies to reduce environmental impact, improve efficiency, and lower energy costs.

Through integrated solutions of solar energy, storage, and electric mobility, Expofin supports its clients in their journey towards greater sustainability and carbon neutrality.

In this way, Expofin E.S.Co. not only promotes the energy transition but also offers concrete and innovative solutions that enable municipalities, companies, and local communities to become active players in change, helping to build a greener, cleaner, and more sustainable future for all.



# Vertical Agrivoltaics. Solar Bloom

The innovative approach to sustainable energy also involves soil conservation and enhancing agricultural activity through vertical agrifotovoltaics. With this patented system, we not only produce green energy, but do so in harmony with the environment and agriculture. The vertical agrifotovoltaic, Solar Bloom, exploits the area above the crops, using solar panels installed on vertical structures. This innovative approach enables simultaneous energy production and plant cultivation under panels, offering multiple benefits.

The energy produced, in fact, on the one hand reduces environmental impact, contributing to the fight against climate change, and on the other,

the efficient use of space allows for soil conservation, combating soil erosion and preserving natural resources. Economically, vertical agrifotovoltaic represents a beneficial investment; not only does it generate clean energy, but it also creates an opportunity for farmers to diversify their sources of income by increasing the economic sustainability of their operations without having to choose whether to produce energy or grow crops.

With vertical agrifotovoltaics we redefine the concept of sustainability, combining clean energy, environmental conservation and agricultural innovation. Solar Bloom is also equipped with a rainwater harvesting system for agrivoltaic irrigation.



Solar Bloom offers several key technological advantages and features:

- **Dual Functionality:** Combines solar energy generation with agricultural cultivation, offering both energy production and increased agricultural yield.
- **Greater Efficiency:** Maximizes the use of sunlight for plant growth, supporting more efficient and sustainable agricultural practices.
- **Adaptability:** Suitable for a wide range of crops, from fruits and vegetables to industrial crops like wheat and sugar beets.
- **Climatic and Soil Flexibility:** Adaptable to various climatic conditions and soil types, supporting diverse agricultural needs.
- **Cost Reduction:** Helps lower energy costs by integrating solar technology into agricultural processes, leading to long-term savings.
- **Reduced Environmental Impact:** Offers a sustainable farming solution with a smaller ecological footprint, supporting eco-friendly agricultural practices.
- **Increased Productivity:** Both artisanal and industrial crops benefit from the system, which increases productivity while maintaining high quality.
- **Space Efficiency:** Vertical solar panels optimize land use, allowing cultivation underneath and saving valuable space.



These systems are characterized by the vertical positioning of solar panels, allowing the passage of agricultural machinery with minimal shading of the land.



The vertical design allows for greater energy efficiency than traditional solar systems.

Installation is simple and requires no foundation or leveling of the land, reducing installation and maintenance costs.

At the end of life, the implants can be removed without any modification of the host lands, leaving the original landscape intact.

# From soil to energy, from water to harvesting: Solar Bloom the circular economy in action.

The Solar Bloom vertical agrivoltaic system integrates solar power generation, cultivation, and water management to optimize sustainable agriculture. Designed to collect stormwater, the system collects up to 8000 litres of water per kW installed in Northern Italy and 4000 litres in the South, maximizing the use of water resources. Stormwater is intercepted by solar panels and channeled into a conduit beneath the panels, from where it is transported through underground pipes to tanks or collection basins.

## VERTICAL CAPTURING SURFACES

Both faces of the panels capture water droplets and direct them downward.

## ALUMINIZED PANELS

The aluminized panels, in addition to helping collect part of the rain, channel it into the gutter beneath the panels.

## COLLECTION GUTTER

The gutter carries the water using the slope of the vertical system rows into underground pipes.

## RAINWATER STORAGE

Rainwater is collected in tanks and dedicated basins with the aim of optimizing water resources.



**A system,  
double function,  
triple benefit.**

RAINWATER COLLECTION  
GREEN ENERGY PRODUCTION  
SOIL SAVING

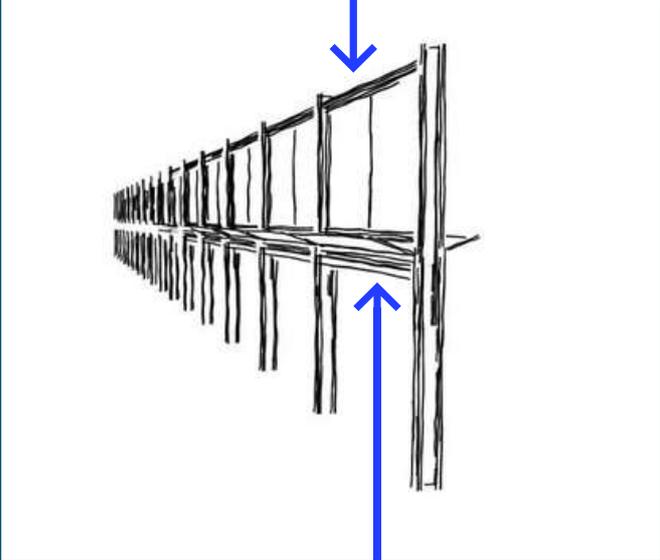
The irrigation system offers two main configurations: Solar Bloom - Radiant and Solar Bloom - Precision.

Solar Bloom – Radiant uses PE/HDPE pipes of 1-2 inches with 360° sector sprinklers to maximize water efficiency and can be managed through smart systems for precise irrigation.

Solar Bloom – Precision, instead, offers a double pipe PE/HDPE system and 180° sprinklers or drip system, ensuring localized and highly efficient irrigation.

This solution reduces water waste and adapts to the specific needs of crops, increasing resilience to climate changes and improving agricultural yield.

**SOLAR BLOOM - RADIANT**



**SOLAR BLOOM - PRECISION**

Solar Bloom is the ideal choice for sustainable agriculture, reducing dependency on external sources and optimizing the use of natural resources. Solar Bloom is versatile: it can be applied to any type of land and is suitable for all types of activities — agricultural, artisanal, and industrial.



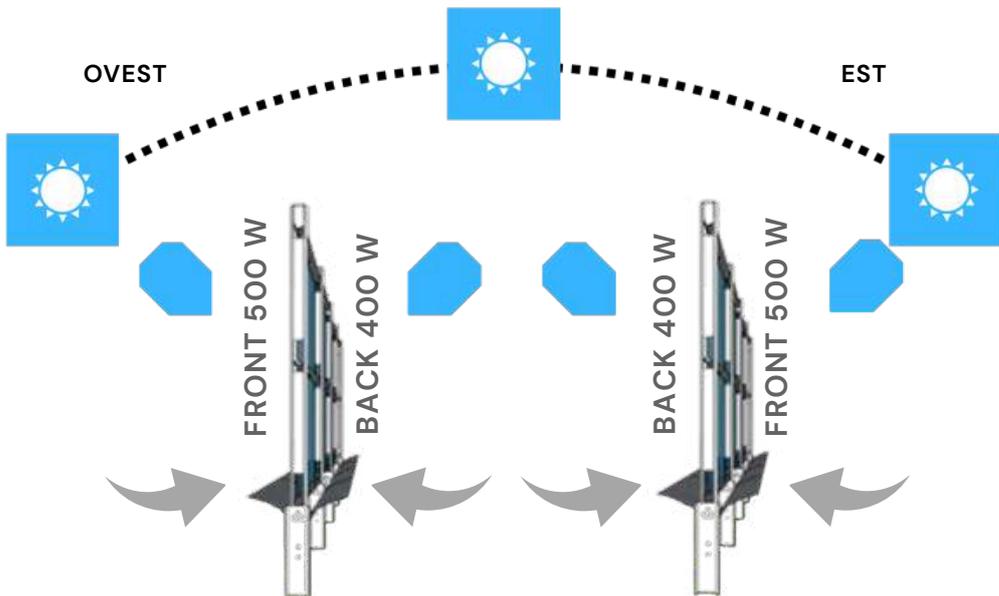
**TRADITIONAL SYSTEM**

**50 % LAND USED**



**EXPOFIN SYSTEM**

**5% LAND USED**



**DIRECT LIGHT**

**REFLECTED LIGHT**

# Green Sentinel GeoLens System

Expofin E.S.Co. presents the innovative Green Sentinel technology — a patented solution for territory monitoring and control, with particular focus on verifying, tracking, and observing the status of agricultural fields, whether they host agri-voltaic solar systems or not.

Main application areas:

- Verification and tracking of crops
- Cooperative air quality monitoring.

Green Sentinel is the autonomous solar energy solution equipped with the GeoLens cloud platform, in a multifunctional product that is completely autonomous in terms of energy generation and management, it supports various services (e.g. Video surveillance combined with AI, connectivity, sensors and IoT) necessary for the implementation of correct predictive maintenance, real-time alerts of interest phenomena and security of interesting points.

**GeoLens**, an IoT system equipped with a sophisticated system for recovering data and environmental parameters using integrated sensors and/or cameras with Artificial Intelligence, combined with a cloud platform for remote management, is able to ensure continuous and up-to-date monitoring of the areas under control.

The fully autonomous system can autonomously detect the status of areas of interest by producing comprehensive reports and/or timely information on the status of spaces of interest/monitoring.

The GeoLens system can be easily installed on piles, pylons, buildings, plants, rocks and other infrastructure already present on site.



## GREEN SENTINEL CARD BASE TECHNIQUE

<b>DIMENSIONS</b>	1200 mm
<b>MAXIMUM DIAMETER</b>	18 cm
<b>MATERIAL</b>	galvanized steel
<b>NOMINAL POWER PV SYSTEM</b>	120 Wp
<b>TYPE PV MODULES</b>	cell efficiency 120 Wp 22%
<b>BATTERIES</b>	LiFePo04 72Ah 12V
<b>MPPT CHARGE CONTROLLER</b>	2 Charge regulators 10A automatic operation 12V/24V
<b>TYPE OF INSTALLATION</b>	OFFGRID
<b>MAIN FEATURES</b>	<ul style="list-style-type: none"> <li>• 3G, 4G, LTE CAT 4</li> <li>• Central control</li> <li>• Antifreeze houses</li> </ul>
<b>CERTIFICATIONS</b>	CEI/IEC e JRC/ESTI ITA D.M. 17/01/2018 ITA CNR-DT207/2008 UNI EN 40-5: 2003 UNI EN 40-3-1: 2013 EN 1993-1-1

## REMOTE MANAGEMENT

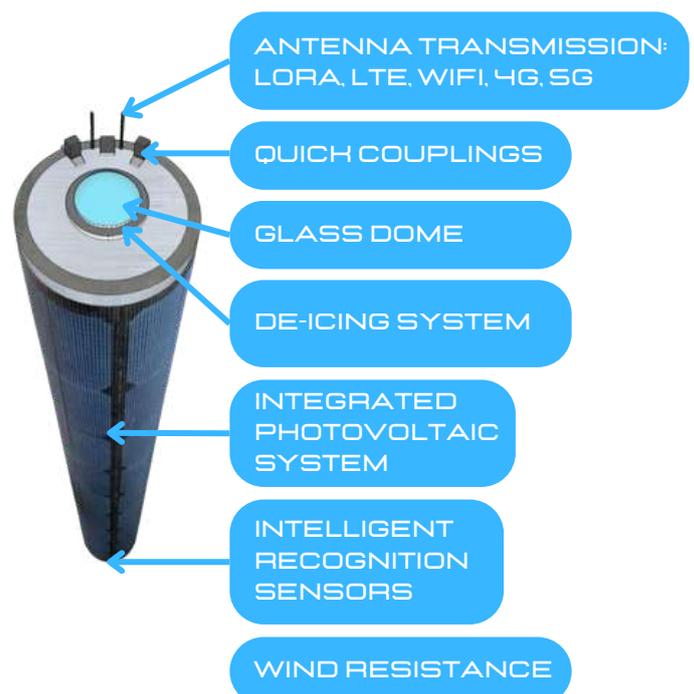
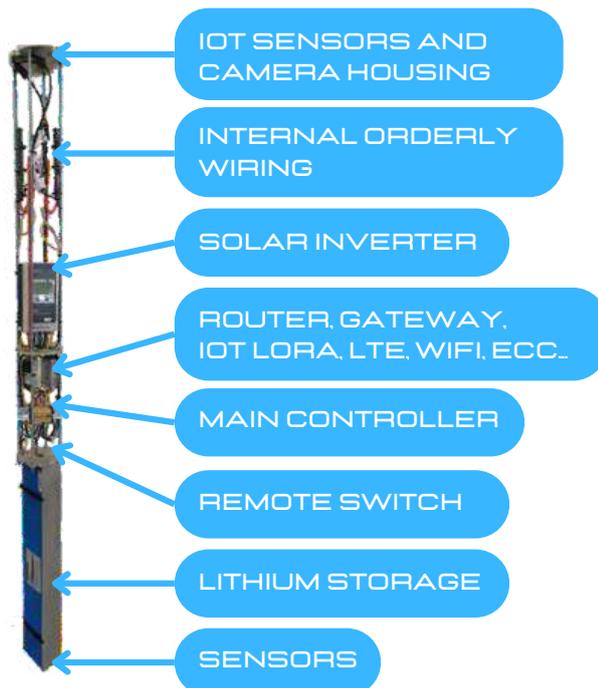


## BASIC CONFIGURATION

structure,  
integrated photovoltaic  
system,  
electrical part management,  
glass dome,  
connectivity,  
de-icing system,  
remote management platform

## EXTRA CONFIGURATION

air quality station (ENEA)  
video analysis  
GeoLens IoT system  
sockets 12-24- 48vdc  
video system  
Lora, WiFi, Zigbee, GPS, RF  
sensors



# Expofin Innovative Agriculture

Expofin ESCo, co-founder of Agroland Italia, has made respect for the environment and sustainability the heart of its mission. In the agricultural context, we promote precision conservation agriculture, with the aim of reducing environmental impact and improving the efficiency of agricultural production. To achieve these goals, Expofin, with Agroland Italia, uses cutting-edge technologies, such as the Mzuri system, an innovative solution for improving soil quality, reducing the use of natural resources, and increasing productivity.

The practice of precision sowing on firm soil allows the soil to be worked in a targeted manner, only on narrow strips of soil where fertilizers and seeds are inserted. With hard-boiled sowing, plant residues are left intact in the unworked areas (interfile).

This approach allows water to be retained in the soil and reduces erosion, as well as improving soil fertility and structure.

This technology integrates perfectly with Solar Bloom, transforming today's massive agriculture into conservation agriculture with significant environmental and economic effects, favoring the inclusion of this process in supply chains.

Precision conservation agriculture integrated with Solar Bloom agrifotovoltaic allows the field energy production, zero processing costs, reduce CO2 emissions, increase soil organic content, improve harvests, combat drought, and grow a wide range of crops, even in difficult terrain, thus entering a market for high-value-added supply chain products.

A central aspect of the process is energy efficiency: this technology allows for a reduction in the use of fuel for soil cultivation, as it requires fewer steps than traditional cultivation methods, thus reducing operating costs (5 fewer steps in the field). This also translates into a significant reduction in CO2 emissions, thus aligning with European climate policies, particularly the objectives of the European Green Deal.

The use of integrated precision robotics allows fertilizers to be applied in a more targeted and precise manner, reducing the excessive use of mineral fertilizers, improving crop quality, and preserving local ecosystems.



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