

expofin
E.S.CO

Brochure 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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INDEX

05/16 Expofin E.S.Co.

Certified Inclusive Sustainability

– CO2 + Nature = Future

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

Energy efficiency services Expofin E.S.Co.

Beyond the objectives

Digital platform

Interconnected technologies

Cascade system

Innovative finance at the service of energy transition

17/20 Parabolic Solar Concentrator

21 /24 Hydrovolt Cogenerative Panel

25/32 Expofin Solid Power

Expofin Solid Power All in one

33/41 Expofin Energy Graphene Storage

42/46 Cogeneration Technology

47/50 Expofin Infinity Tower

51/53 Expofin Smart Tower 5G

54/56 Expofin Fast & Smart Carport

57/59 Fast Charging System ChargeX

60/61 Integrated Electrical Mobility

62/65 Vertical Agriphotovoltaic Solar Bloom

66/67 Green Sentinel GeoLens System

68 Expofin Innovative Agriculture



CERTIFIED INCLUSIVE SUSTAINABILITY

About us

Expofxpofin E.S.Co. is a unique company 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 and economic savings, and contributing to the construction of a more sustainable and competitive energy model.

Energy Efficiency E-mobility Sustainable cities

These are just some of the verticals in which Expofin is engaged: bringing new technologies to the market with strategic partnerships aimed at the systemic implementation of the energy transition.

- CO2 + NATURE = FUTURE

Expofin E.S.Co offers all the technical and financial services necessary for implementing 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 (PAESCs) 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 administrations, 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 lot 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 a way to contribute to infrastructure improvements, but also as an opportunity to network for 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 testament to how the union of different forces can generate something extraordinary. The project saw the creation of modern laboratories, green spaces and innovative classrooms, which not only respond to educational needs but also offer a stimulating environment for the entire community. For us at Expofin, the support for creating a space that promotes growth, innovation, and inclusion was natural. This project not only recovered a building destroyed by the earthquake, but gave life and hope back to an entire community. The Andrea Bocelli Foundation spoke of "another link in the chain of good," and we found ourselves deeply in this concept. Working together with ABF and other partners to achieve an educational hub that was also a center of aggregation and inclusiveness was a leap of faith, not only in everyone's abilities, but also in the strength of solidarity and unity. Where there are difficulties, there is always room to turn them into opportunities. This is what Expofin E.S.Co. saw in this project: an opportunity to contribute to not only material, but also social and cultural rebirth.

Watch the video



Energy Effectiveness Services Expofin E.S.Co.

E.S.Co. Solutions

Expofin E.S.Co offers a comprehensive energy efficiency service through the E.S.Co contract. Energia Plus, designed for public administration bodies, SMEs, clinics and condominiums.

Our integrated approach addresses all regulatory and administrative practices necessary to ensure compliance with current laws, ensuring that each project complies with specific regulations and optimizes opportunities arising from available incentives.

Our solutions focus on access to state-mandated contributions and incentives, such as those related to the PNRR and the GSE Operating Rules for Energy Communities and Widespread Self-Consumption. In this context, Expofin E.S.Co. ensures that all energy efficiency practices are aligned with the requirements to benefit from the regulatory transitional mechanism.

Whether in supply or in EPC (Energy Performance Contract) we build the project according to the needs and reference regulations, optimizing the returns of the plants and the benefits of the incentives.

ExpoFin E.S.Co. is the strategic partner for public administration bodies, SMEs, clinics, and condominiums that want not only to optimize energy efficiency but also to transform regulatory incentives into concrete opportunities.



Beyond the objectives

Born out of the need to achieve climate neutrality by 2050 by turning productive sectors, industries, mobility, residential and energy generation into a green key; Expofin has taken up the challenge, turning the ideas into state-of-the-art integrated systems capable of efficientizing energy needs: a CO2 abatement platform that uses the best benchmark metrics of each individual sector.



CIVILIAN

Thanks to the use of its innovative technologies, Expofin is able to provide systems to efficiency homes and condominiums through the production of thermal and electrical energy from renewable sources with the 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 PA by promoting Energy Communities (CERs) and thanks to its advanced know-how, it has won public tenders for energy efficiency in over a thousand Italian municipalities.



AGRICULTURE

Expofin's green mission includes the agricultural sector. Co-founder of Agroland Italia, Expofin promotes precision conservation agriculture, improving energy efficiency, processing, 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 in the energy efficiency of buildings. This innovative approach allows for the acquisition of detailed and precise data from devices, offering a comprehensive picture of energy performance. In order to ensure the integrity and reliability of such data, Expofin is implementing an ambitious project: the adoption of Blockchain technology to securely link and certify all relevant information. This certification process will be in line with the standards recognized by the European Community, ensuring the validity and transparency of the data collected. Certification through Blockchain not only provides a secure foundation for energy efficiency data, but also opens up significant opportunities. Thanks to this validation, it will be possible to launch the protocol to apply for white certificates or carbon credits, crucial tools in European efforts to promote the energy transition.

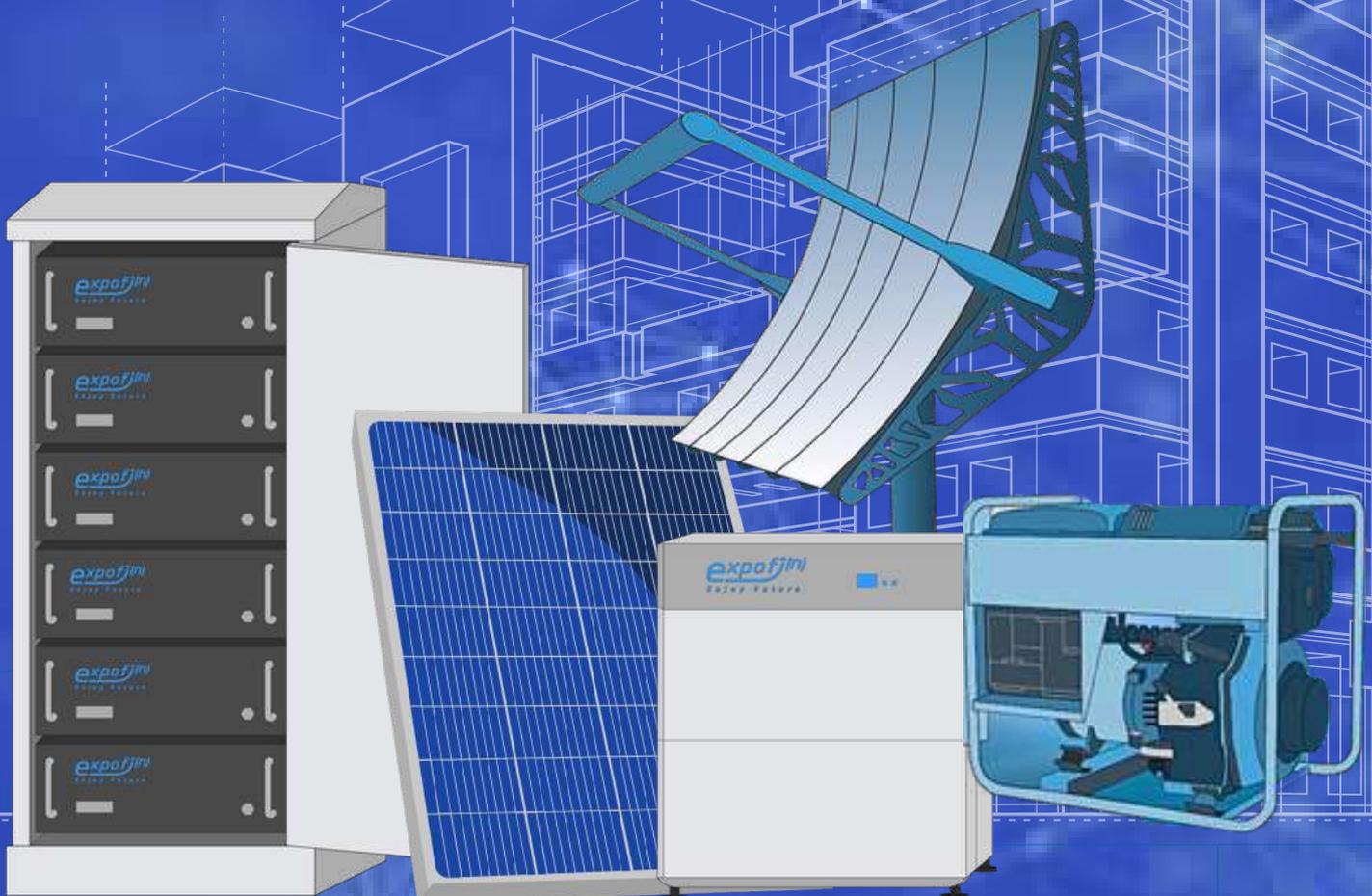
Expofin, thanks to its new technologies, has achieved important milestones in both civil, industrial, and public administration, winning public tenders for energy efficiency in supply and in Energy Performance Contracts (EPCs) for over a thousand Italian municipalities. Expofin has obtained certification from E.S.Co.. (Energy Service Company) and is therefore able to sell energy through savings with the system of TEEs (Energy Efficiency Titles) and white certificates.

Interconnected Technologies

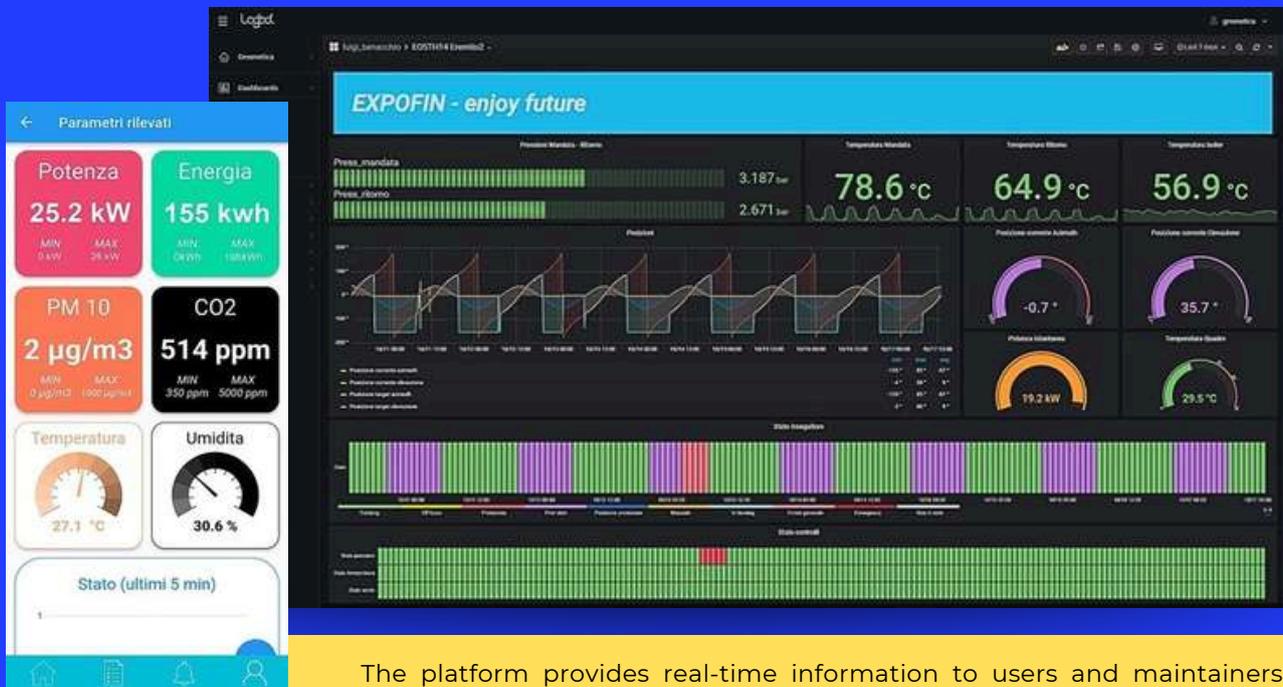
Expofin proposes energy efficiency with the use of an innovative system to make the best use of solar energy and maximise energy production from renewable sources.

- BIAXIAL PARABOLIC SOLAR COCONCENTRATOR
- HYDROVOLT COGENERATIVE PANEL
- EXPOFIN SOLID POWER GRAPHENE SUPERCAPACITOR
- MICRO AND COGENERATION

The technologies are connected with an IOT system of remote monitoring and control of the plants with Expofin Logbot system.



Interconnected Technologies



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

Expofin's cascade system is a virtuous process that represents a significant innovation in sustainable energy. By integrating several 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 challenging energy demands.

Expofin stands out as a pioneer in advanced and sustainable energy solutions, significantly contributing to the reduction of environmental impact and the optimization of energy resources.

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

The implementation of our system is not only limited to ensuring high-quality data, but also helps generate significant economic results. Through participation in European certification programmes, Expofin is positioned at the heart of a virtuous sustainability process, promoting energy efficiency and actively contributing to the reduction of environmental impact.

Expofin presents itself as a key player in accelerating the transition to a more sustainable and conscious energy future and is actively committed to triggering green financial speculative leverage with private investment and/or directly involving the community in projects through crowdfunding and social lending platforms (SuperHeero project).



GEOLOCATION OF THE INSTALLATIONS

LIST OF CONNECTED DEVICES

INFO ON ENERGY AND AIR QUALITY

DAILY NOTIFICATIONS ON CONSUMPTION

Innovative financing for energy efficiency

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 the financial aspect into this process. Our mission includes the creation of a certified digital platform that measures the CO2 abatement resulting from energy efficiency plants installed on the ground and operating, helping to monitor and certify the positive impact of solutions.

A key step in this journey was reaching the first milestone with the project to finance energy efficiency through crowdfunding, a tool that has received recognition from the Italian government and the Bank of Italy and allows anyone to invest through a certified digital platform (Ener2Crowd).

With the Super Heero project, managed through Ener2Crowd's digital platform, anyone can invest in energy retrofit projects, including supermarkets, businesses, and other commercial facilities. The goal is to make renewable energy and energy efficiency accessible, directly engaging and raising awareness among local communities who can invest and take an interest in concrete green projects and also achieve economic returns through investment interests.

With the Super Heero project also supported by Expofin, the crowdfunding platform aims for sustainability, focusing on energy efficiency projects, such as the installation of photovoltaic systems, which significantly contribute to reducing CO2 emissions. The participation of everyone, from individual citizens to businesses, allows us to create a virtuous network for a more sustainable and zero-impact future.



Solar Concentrator Parabolic Biaxial 10/14 Mirrors

Born as a valid solution to pollution problems, thanks to its solar tracking system using a mirroring dish, it transforms the sun's energy to 91% thermal energy.

**World Record of
Efficiency to 91%**



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



BOND
STREET
AWARDS



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

Today, the EOS TH parabolic solar concentrator, due to its technical characteristics and performance, outperforms all traditional solar thermal production systems in the following areas:

- it has no performance decay, while traditional systems have a duration that varies between 6 and 11 years with gradual decay until exhaustion;
- thanks to its tracking system it produces at maximum power from the first rays of the sun while always maintaining the most efficient radiation angle;
- it is negligibly influenced by external temperatures which, however, have a strong impact on other panel or tube systems;
- it has a much more constant efficiency even during the annual radiation cycle as well as the daily one;
- promotes continuous use for professional use in heating;
- with its compact size it is suitable for the creation of district heating energy parks in areas that are significantly smaller than traditional systems;
- integrated with the other technologies also promotes the production of conditioning with dehumidification technique (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** for the model 14 GSE incentive mirrors.
- **INDUSTRY 5.0** if included in an industrial process falls under the application of the regulations "industry 5.0".
- **ECOBONUS** is included in the discount products.

AVAILABLE TODAY WITH 10/14 MIRRORS FOR THERMAL PRODUCTION:

up to 100°C water/glycol

over 100°C on request with thermal 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 various benefits to the production process and corporate image by improving the quality of the work environment, reducing fumes and noise, making the production process more eco-sustainable, increasing the perceived value of the final product by making it more environmentally friendly, reducing fuel costs, extending the boiler life cycle, and reducing maintenance costs. It drastically reduces CO2 and fine dust emissions into the environment, improves the medium- to long-term economic performance, and covers all needs even by integrating the concentration into old and new plants, improving their efficiency.

It is aimed at all activities that have a significant heat or energy consumption that can benefit from this technology regardless of the sector. The biaxial parabolic solar concentrator ensures a significant reduction in energy costs in all users who use heat for various processes including: domestic hot water, heating, air conditioning, dehumidification, steam generation, washing, pasteurization, drying, desalination and recovery of thermal waste.



THERMAL	100% constant	75% 12 o'clock	45% 12 o'clock
IDEAL USE	Continuous/ civil-industrial	Domestic civil	Domestic
DURABILITY	Potentially unlimited	approx. 10 years	approx. 15 years
OPERATING TEMPERATURE	Up to 100°	Around 60-70°	Around 40-50°
SURFACE FOR EQUAL OUTPUT/YEAR	19.3 m²	52 m²	88 m²
RELIABILITY	High, easy to maintain	Variable/manutenz. complex	Variable/manutenz. complex
LIFE CYCLE SUSTAINABILITY	Components easy to disassemble, recycle or reuse	Subject to legislation Raee (art. 40 Legislative Decree. 49/2024	Subject to legislation Raee (art. 40 Legislative Decree. 49/2024
INSTALLATION	On the ground in any sun area	On south-facing slopes	On south-facing slopes

Expofin Solid Power HV

High voltage supercapacitor
solid-state graphene

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

Energy storage system indicated for:

- Housing, hospitals, schools, offices, SMEs and industries
- Solar/wind power plant
- Energy backup in case of grid outage
- Operating Plus: electrostatic and non-electrolytic reaction / compact high-power design / long life / constant performance over time / stable performance even at extreme temperatures / non-flammable / dry disposal via WEEE code / IOT monitoring Expofin App

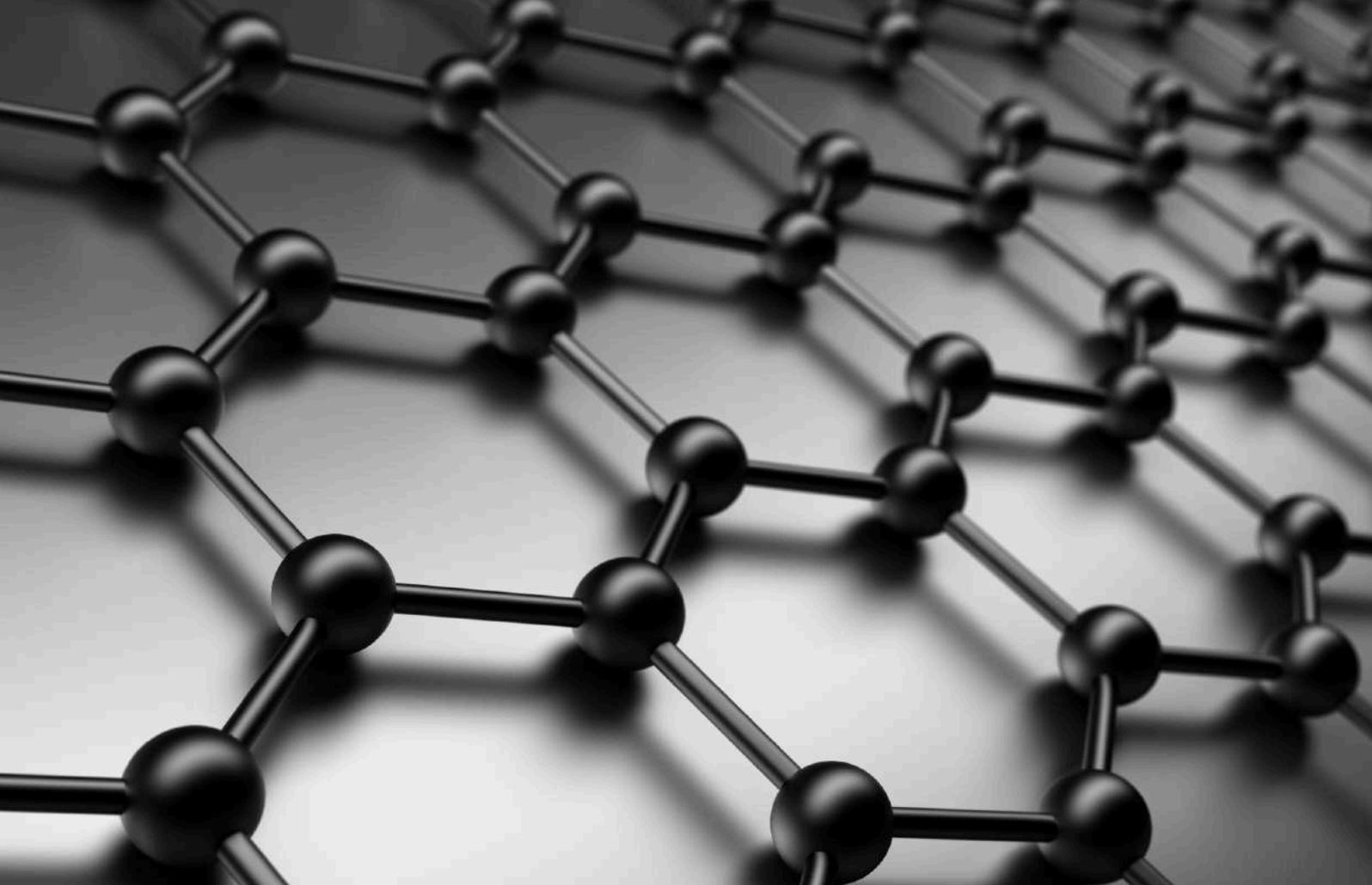


**Unique, Innovative, performing and Composable.
The new frontier of energy storage.**

HIGH VOLTAGE

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
MAXIMUM CHARGING VOLTAGE	230.4Vdc	345.6Vdc	460.8Vdc	512Vdc	691.2Vdc
MAXIMUM 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
MAXIMUM 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
DIRECT CURRENT MAXIMUM CHARGE	25A				
DIRECT CURRENT MAXIMUM DISCHARGE	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%				
PERMISSIBLE DISCHARGE LIMIT	100%				
CHARGING TEMPERATURE LIMITS	0°C ~ 45°C				
DISCHARGE TEMPERATURE LIMITS	-20°C ~ +55°C				
MATERIAL TYPE OF THE SHELL	Metal				
COOLING METHOD	Natural				
PROTECTION CERTIFICATIONS	IP20 Internal				
PERMITTED OPERATING HUMIDITY LIMIT	0 ~ 90% RH non condensante				
PARALLEL CONNECTION OPTIONAL	Not allowed				
REGULATORY COMPLIANCE	CE, RoHS, UN38.3				
STORAGE CONDITIONS	-20°C ~ +40°C, 25% ~ 95%RH, SOC>30%, one full charge needed every two months				



High Voltage

Expofin Solid Power HV 261 kWh

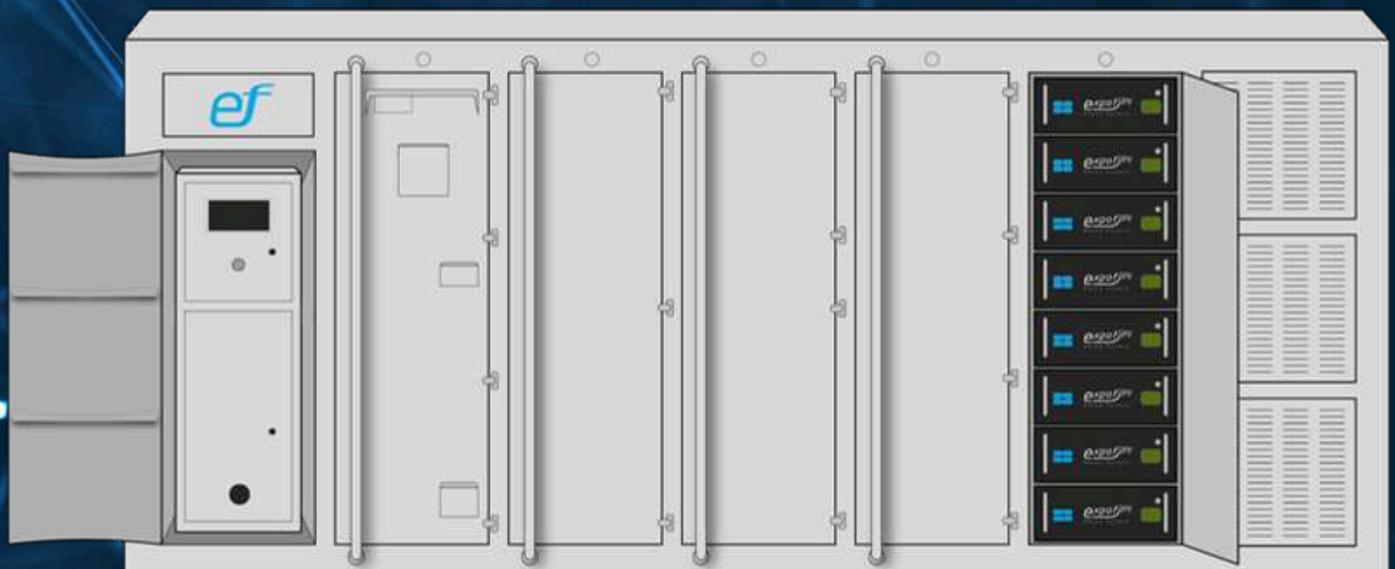
- **ACCUMULATION:** 261 kWh
- **CAPACITY:** 314 Ah (cell capacity)
- **NOMINAL VOLTAGE:** 832 V
- **PROTECTION:** IP54
- **DURABILITY:** LIFE CYCLE 20 YEARS / 15,000 CYCLES (70%)
- **PARALLEL CONNECTIONS:** single string
- **WEIGHT:** about 2,600 kg
- **DIMENSIONS:** 1100x 1445 x 2350 mm
- **OPERATING PLUS:** 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

- **ACCUMULATION:** 1.075 MWh - 1075 kWh
- **CAPACITY:** 280 Ah
- **RATED VOLTAGE:** 768 V
- **PROTECTION:** IP55
- **DURATION:** life cycle 15/20 years - 12,000 cycles (70%)
- **PARALLEL CONNECTIONS:** various configurations
- **WEIGHT:** < 22 TON
- **DIMENSIONS:** 6058 x 2438 x 2896 mm
- **OPERATIONAL PLUS:** 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

- **ACCUMULATION:** 3.354 MWh - 3354 kWh
- **CAPACITY:** 280 Ah
- **RATED VOLTAGE:** 1331.2 V
- **PROTECTION:** IP55
- **DURATION:** life cycle 15/20 years - 12,000 cycles (70%)
- **PARALLEL CONNECTIONS:** various configurations
- **WEIGHT:** < 35 TON
- **DIMENSIONS:** 6096 x 2438 x 2896 mm
- **OPERATIONAL PLUS:** 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

- **ACCUMULATION:** 4.18 MWh - 4180 kWh
- **CAPACITY:** 314 Ah
- **RATED VOLTAGE:** 1331.2 V
- **PROTECTION:** IP55
- **DURATION:** life cycle 15/20 years - 15,000 cycles (70%)
- **PARALLEL CONNECTIONS:** various configurations
- **WEIGHT:** < 40 TON
- **DIMENSIONS:** 6058 x 2438 x 2896 mm
- **OPERATIONAL PLUS:** 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

- **ACCUMULATION:** 5 kWh
- **CAPACITY:** 100 Ah
- **RATED VOLTAGE:** 51.2 V/DC
- **PROTECTION:** IP20
- **DURATION:** 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
- **OPERATING PLUS:** 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

- **ACCUMULATION:** 10 kWh
- **CAPACITY:** 200 Ah
- **RATED VOLTAGE:** 51.2 V/DC
- **PROTECTION:** IP20
- **DURATION:** 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
- **OPERATING PLUS:** 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. changes the rules of the game.

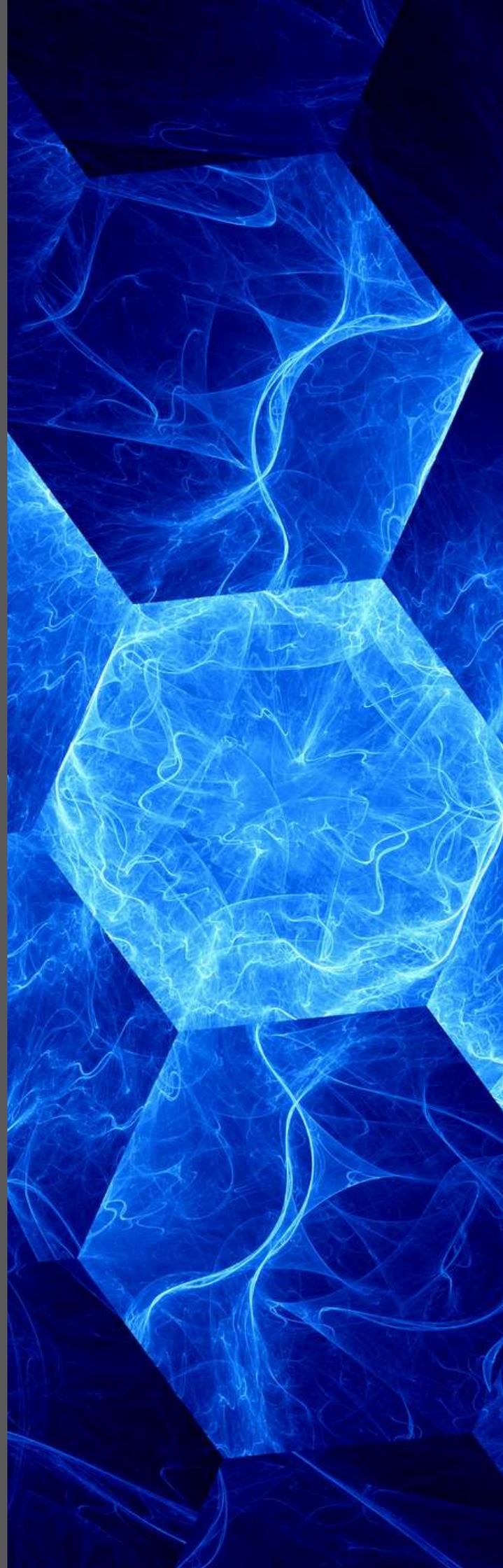
Expofin Energy Graphene Storage

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, energy-saving future.

**CONNECTED
POWERFUL
ECONOMIC
COMPACT
EXPANDABLE**





Expofin Energy Graphene Storage

Graphene Expofin Energy Storage with its fast and constant 100% yield allows you to maximize the use of solar energy up to 85%, with 20,000 cycles guaranteed for over 30 years of operation without performance degradation.

It is a complete all-in-one inverter system suitable for both single-phase (3/4/5/6 kW) and three-phase (3 to 12 kW inverter power) production plants.

It is the solution that allows you to store excess electricity for use day/evening/night rather than handing it over to the grid, maximizing self-consumption by up to 85%.

It is an all-in-one integrated system with all the elements inserted into a single piece of furniture of small dimensions and equipped with an AC panel, a DC panel and connection cables to the network meter that can be positioned both to the right and left of the cabinet.

It features a modular rack storage system with:

- single-phase graphene supercapacitors, 100% DoD,
- > 20,000 cycles (duration 30/40 years) with charged current discharged 100 A (fast cycles).
- Operating temperature: -10° to 50° without performance reduction and without the need for cooling.
- Active BMS included.

It does not require transport for dangerous goods.

It is able to power utilities in the event of a grid blackout with EPS MODE (optional on request) integrated into the system and which, at the same time, provides continuity to photovoltaic production.

GRAF series graphene supercapacitors offer a variety of energy storage solutions with varying power ratings, each designed to meet specific storage energy needs safely, long-lasting, and efficiently. They support expansion with remote monitoring, require low maintenance and are ideal for the most varied applications: from industrial to residential.

- MADE IN ITALY
- FAST AND CONSTANT YIELD
- 20,000 GUARANTEED CYCLES
- ALL-IN-ONE SYSTEM WITH INVERTER
- SINGLE-PHASE AND THREE-PHASE PLANTS
- ENERGY STORAGE FOR SELF-CONSUMPTION
- CONTAINED DIMENSIONS
- MODULAR STORAGE SYSTEM IN RAC
- ACTIVE BMS INCLUDED
- POWER IN BLACKOUT
- CONTINUITY PHOTOVOLTAIC PRODUCTION
- REMOTE MONITORING
- ACCESSIBILITY: PC, SMARTPHONE, TABLET, DEDICATED APP
- POSSIBILITY OF CONNECTING TO WALL BOXES FOR ELECTRIC VEHICLE CHARGING FROM PV, BATTERY AND NETWORK
- DISPOSAL BY WEEE CODE (NON-POLLUTING)

**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 Energy Graphene Storage

COMPARISON OF LITHIUM BATTERIES AND GRAPHENE SUPERCAPACITORS.

DURABILITY	
GRAF20 Over 20,000 cycles guaranteed. Superior durability.	LITHIUM BATTERIES Approximately 6,000 charge cycles. Strong decay.
PERFORMANCE	
GRAF20 They maintain a constant return at 100% of the nominal kWh value, with minimal decay. (17.825 cycles/25°C +80,25% (8958 cycles 45°C +80%)	LITHIUM BATTERIES They undergo a progressive decay over time, with a reduction in the nominal kWh value in subsequent cycles.
DISPOSAL & SAFETY	
GRAF20 They have no disposal costs, They are non-flammable and do not overheat during the cycle, ensuring greater safety.	LITHIUM BATTERIES They present disposal costs and risks related to flammability and overheating during the life cycle.
LOW - TEMP. PERFORMANCE	
GRAF20 They work effectively even at low temperatures.	LITHIUM BATTERY Reduced performance at low temperature.

DIMENSIONS & CURRENT MANAGEMENT

GRAF20

They offer small dimensions and are capable of handling high currents, proving superior in high power demand situations.

LITHIUM BATTERIES

Less efficient in handling high currents. The process is slower and strongly influenced by operating temperatures.

DISCHARGE/ENERGY USAGE

GRAF20

They can be completely discharged and always work at 100% of their capacity, ensuring optimal use of energy.

LITHIUM BATTERIES

They have limitations in full discharge capacity and do not always work at maximum capacity.

CHARGING/DISCHARGING SPEED

GRAF20

It boasts a much faster charging and discharging speed than lithium batteries. Its ability to charge and discharge quickly is a great advantage, especially in applications that require a fast and efficient energy response.

LITHIUM BATTERIES

They have a slower charging and discharging speed. This is due to the limitations imposed by the control electronics and the nature of the electrolytic reactions that occur inside the battery.

UPS FUNCTION

GRAF20

They can be completely discharged and always work at 100% of their capacity, ensuring optimal use of energy.

LITHIUM BATTERIES

Although used in UPS systems, they have limitations in terms of lifespan and instability of power supply.

Expofin Energy Graphene Storage

COMPARISON OF LITHIUM BATTERIES AND GRAPHENE SUPERCAPACITORS.

COMPLETE SYSTEM: Expofin Energy Graphene Storage



INVERTER

12 kWp supports up to n° 5 GRAF20/5.5 kWp for a total of 27.5 kW.



GRAF20

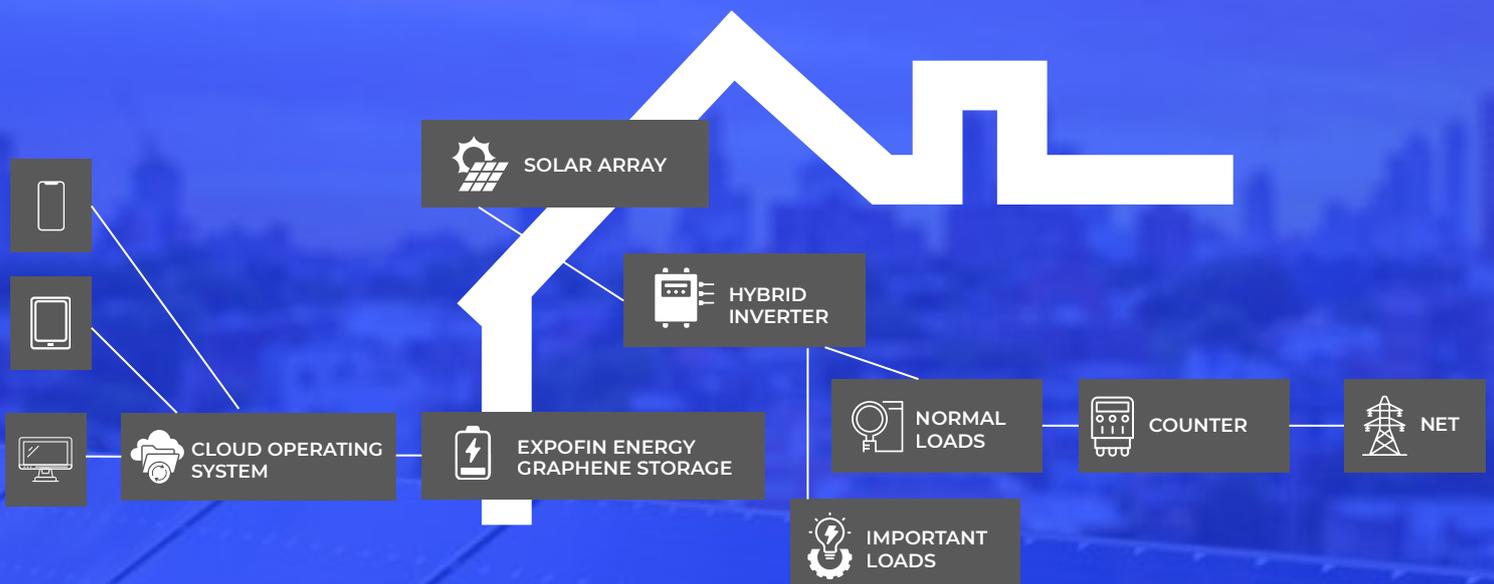
Graphene supercapacitor 5.5 kWp.



CABINET IP65

Outdoor cabinet that can hold GRAF20/5.5 kWp (n° 6 pcs.)

CABINET IP20 Indoor cabinet that can hold GRAF20/5.5 kWp (n° 4 pcs.)

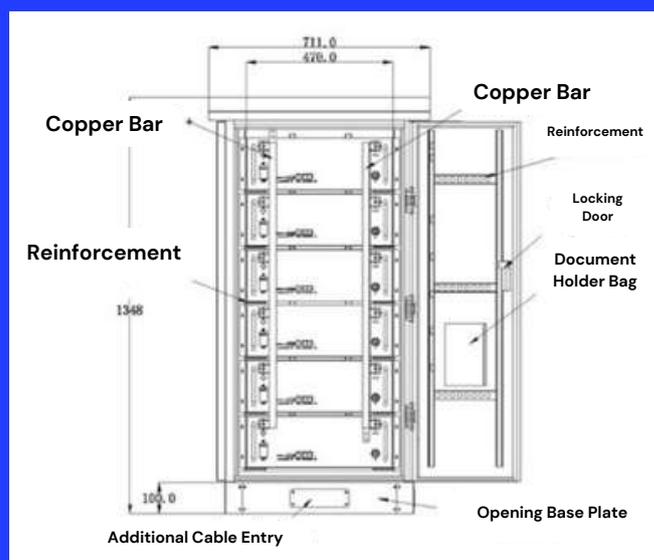
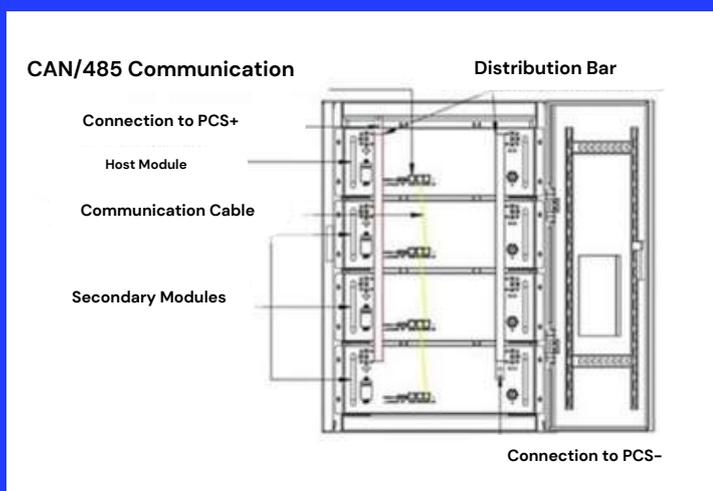


Expofin Energy Graphene Storage



TECHNICAL SPECIFICATIONS

- **ACCUMULATION:** 5.5 kWh (MAX N°4 x 5.5 kWh)
- **CAPACITY:** 100 Ah (MAX N°4 x 100 Ah)
- **RATED VOLTAGE:** 51.8 V/DC
- **PROTECTION:** IP20
- **DURATION:** life cycle 15 years - 20,000 cycles
- **PARALLEL CONNECTIONS:** max. n° 10 pcs.
- **WEIGHT:** 38 kg
- **DIMENSIONS:** 470 x 462 x 170 mm
- **OPERATING PLUS:** 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 version (slot)

Cogeneration Technology

Cogeneration is a highly efficient system for the simultaneous production of electricity and heat from a single power source (for example methane gas).

The qualification of “High Yield Cogeneration” to a cogeneration plant is recognized when there is effective use and consumption of both energies produced.

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

There are many incentives dedicated to this type of plant (e.g. white certificates, tax exemption of the fuel used, substantial exemption from paying network charges,..). Energy is produced where it is needed, while also avoiding transmission losses in the grid.

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

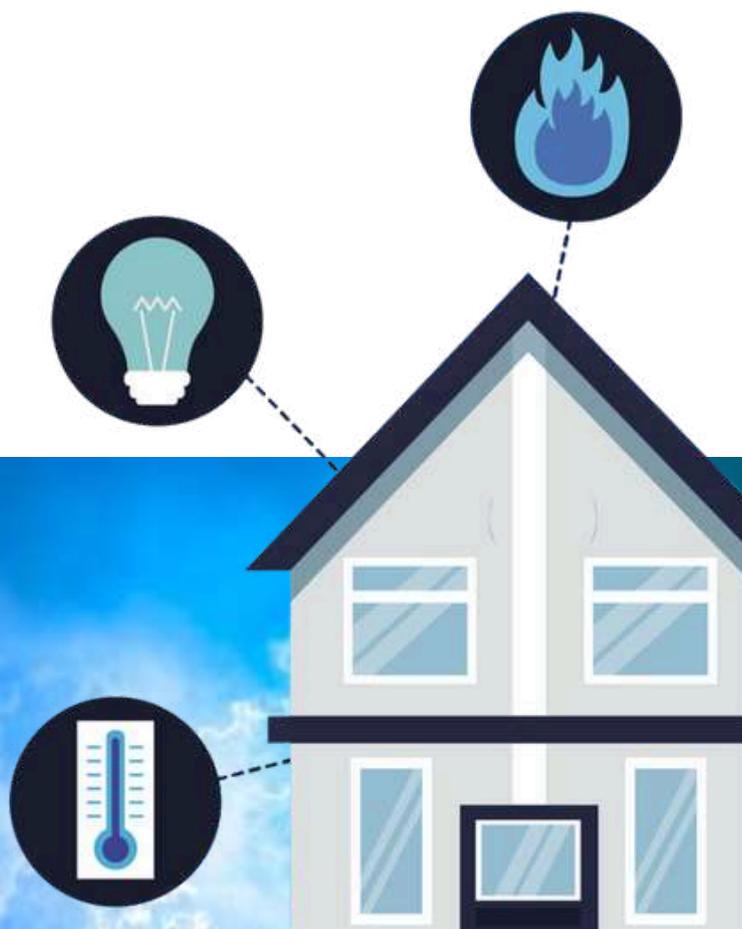
SAVINGS
PRIMARY ENERGY

ECONOMIC SAVING

REDUCTION OF
CO2 EMISSIONS

PROGRAMMABILITY

HMO ENERGY



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

RMB Energie (Yanmar) mCHPs have the following characteristics:

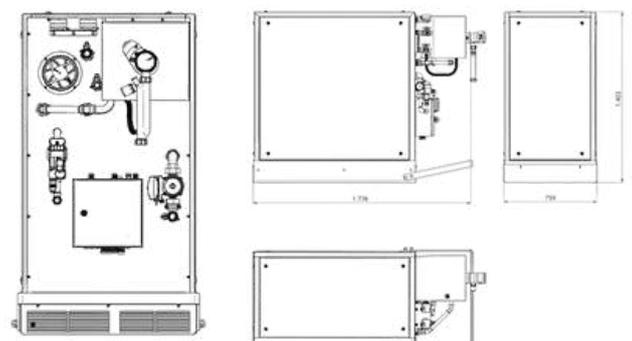
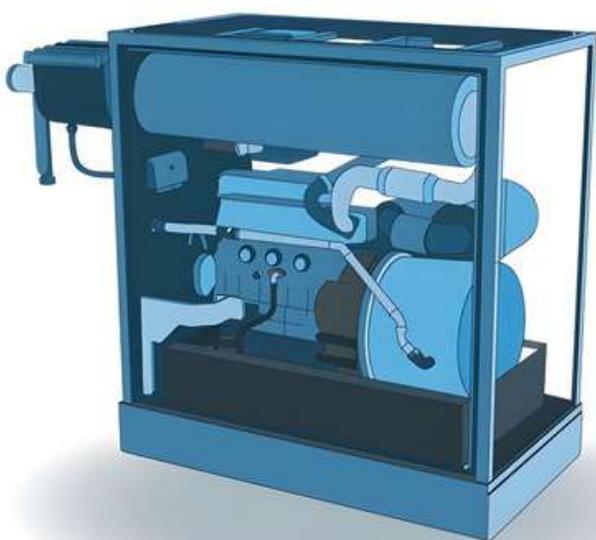
- 5-50 kW electric
- 27-80 kW thermal
- 3.5-13.5 mc/h methane or LPG gas supply

Dimensions:

adaptable to uses by
1093 x 613 x 1100
2523 x 804 x 1964m.

Emissions into the atmosphere:

halved compared to traditional energy production methods!



THE MICROGENERATION

MCHP INSERTION



The microcogenerator:
is armed for 5,000 h/year

- It is connected in parallel to the site's electricity grid and contributes a portion of the site's electricity needs; the remainder is met by withdrawal from the electricity grid;
- It is inserted into the building in a suitable position to support existing heating systems, with priority for operation; when the thermal energy demand cannot be met by the cogenerator alone, the traditional heating system also comes into action.

The intervention enjoys the Ecobonus 65% incentive on the investment and/or thermal account 2.0/ white certificates.

MCHP INSERTION

The 10-year EPC or supply includes:

- mCHP Unit
- Installation
- Administrative design and procedures
- Practices All-inclusive 2-Year Warranty on mCHP
- Full service Kasko.



The CHP unit is engineered and built in Germany.

Main features:

- Modular construction in 3 elements: power unit, control and power panel, thermal module.
- Plug & Play: The cogenerator is supplied complete with all components for interfacing with the user's systems. (Hydraulic flanges for secondary circuit; gas ramp; hour meter, tax-certified MID electricity meter for customs agency, CEI 0-21 interface protection system, etc.)

THE MICROGENERATION

- Control framework, integrated with an IT-WEB platform: in addition to managing the parallel with the electricity grid, it allows for remote control of the technical and management machinery, metering not only self-produced energy but also all the energy quantities of the site (optional). Data transmission occurs through the controller with RS485 port.
- CAR setup: i.e. with constant power thermal priority (according to the GSE micro cogeneration requirement); however, other operating configurations can also be implemented upon request.
- Technical options on request.
- Quiet: Also suitable for residential and hotel applications.

The mCHP was designed so as not to provide the possibility of dissipating thermal energy during normal operation, as it is not equipped with emergency heatsinks. In order to protect the engine from overheating, the system provides for its shutdown until a temperature level of the primary circuit fluid that is not dangerous for the engine is reached. Such machine setup is for thermal tracking ON/OFF mode operation and this cannot be changed in any way during its operation by the customer for the purposes of the CAR-SEU standards imposed by the 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.
- Electromagnetic Compatibility Directive 108/2004/Electromagnetic Compatibility Directive 2004/108CE.

ADVANTAGES:

- Economic savings on costs
- Savings CO2 emissions (-40%) energy (- 30/40%)
- ENEA practical management compared to separate traditional energy production, approx. 50,000 kg/year each mCHP

LARGE-SCALE COGENERATION

Large-scale cogeneration units with power outputs 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, which can be installed indoors (open or soundproof module) or outdoors (container version), are equipped with synchronous or asynchronous generators and advanced control systems.

Key features include:

- Automatic air-fuel ratio control to reduce emissions.
- Modularity and compactness that allow easy integration with other systems.
- Low noise level if equipped with soundproofing.
- High adaptability to temperature variations of heating systems

In addition, they are equipped with digital control that ensures automatic operation with real-time performance monitoring and simple management via high-resolution displays 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 applications in industrial and civil sectors.

The advanced technology and energy efficiency of these units offer a sustainable and versatile solution for those seeking a combined and highly reliable energy source.



Expofin Infinity Tower

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

This futuristic tower integrates advanced capabilities for energy management, environmental monitoring, and digital connectivity by responding to the challenges of digitalization and ecological transition with a visionary approach.

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

With a reduction in CO2 emissions of 10,000 kg per year and PM10 of 5.2 kg, this solution represents a concrete contribution to the fight against climate change, promoting a greener future for our cities.

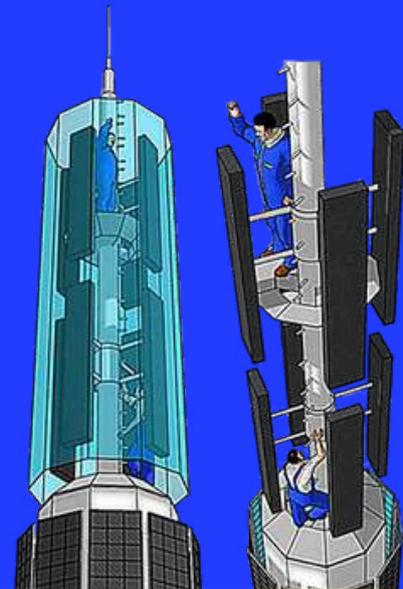
Innovation Design Multifunctionality



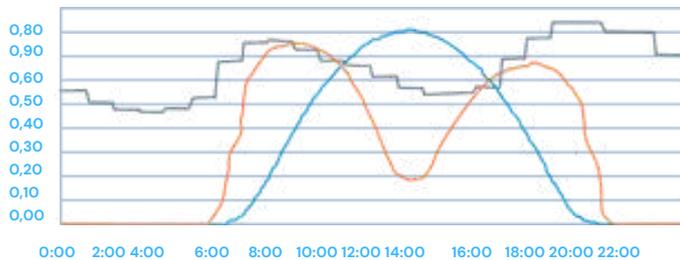
EXPOFIN INFINITY TOWER

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



VERTICAL SOLAR PRODUCTION CURVE

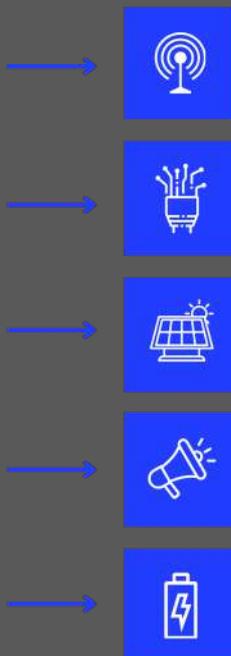
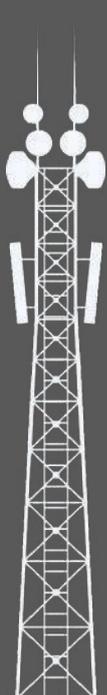


The solar energy production curve fits well with the consumption needs of the Infinity Tower.

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 PLANT

INFINITY TOWER



DEDICATED SPACE FOR SMALL CELLS
INTEGRATION AND TELECOMMUNICATIONS
EQUIPMENT

TELECOM AND OPTICAL FIBRE
APPARATUS

VERTICALLY INTEGRATED PHOTOVOLTAIC
PANELS

VERTICALLY INTEGRATED LED WALLS

POWER + STORAGE + INTEGRATED
ENERGY MANAGEMENT

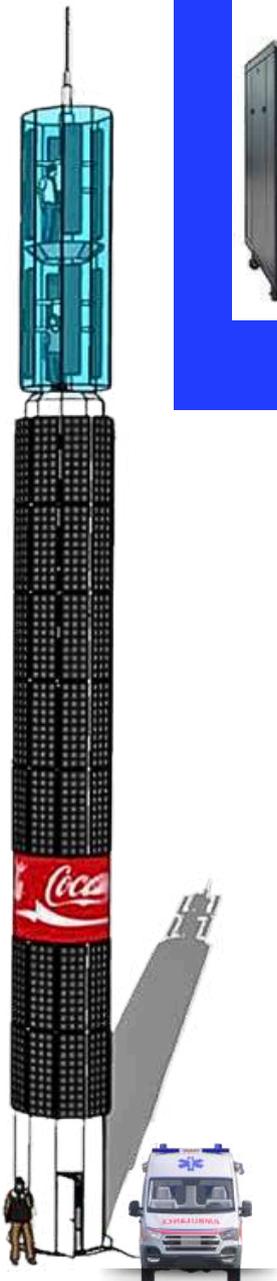
The modern and versatile design integrates seamlessly with urban environments, transforming it into a benchmark for sustainable architecture. The ability to include high-visibility circular LED walls allows for the creation of innovative advertising spaces at points of interest and city gatherings, opening up new business opportunities for dynamic, high-intensity contexts.

In addition, the tower serves as a technology hub, hosting 5 G equipment, small cells and mini-data centres for advanced connectivity and cutting-edge digital management. It also supports sustainable mobility by integrating electric vehicle charging stations, encouraging environmentally friendly maintenance management and reducing the environmental impact of transportation.



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

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 by combining aesthetics, functionality and innovation. Infinity Tower is not just a technological infrastructure: it is a symbol of progress, a commitment to sustainability, and a concrete response to the needs of an ever-changing world.

Adopting Infinity Tower means choosing a connected future but also a business opportunity as it is possible to integrate a high-brightness 85-inch LED-wall, ideal for advertising messages and visual communications in increasingly connected urban contexts.

ELEMENT	VALUE
Investment	
Energy cost in 30 years <small>(average cost in BT 0.17 €/kWh)</small>	
TEE for 5 years	
Security of intrusions equipment	high
Integ. EV charger <small>(maintenance electric mobility incentive)</small>	easy
Architectural integration solar system	yes
External equipment shelter	no
Annual CO2 abatement	yes
Annual PM10 abatement	yes
LED Panel Integration and Management <small>(advertising revenue)</small>	yes
Mini-data center integration	yes
Architectural integration in an urban environment	yes
Infrastructure sustainability	high
New business models	yes
Infrastructure sustainability	yes
TEE efficiency securities	yes
Reduction of signal losses db	yes



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



Expofin Smart Tower 5G

SMART TOWER 5 G 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 accommodate numerous integrable devices, such as:

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

Its modularity and customization capabilities make it suitable for a wide range of applications, both in urban environments and in remote areas requiring energy and communications infrastructure.

SMART TOWER 5G is designed in accordance with European standards and CE marking, which certifies its safety and quality according to the UNI EN 1090-1 standard for steel and aluminum structures. Furthermore, thanks to its ability to self-power itself via solar energy, it reduces dependence on traditional energy sources, thus contributing to sustainability goals and promoting integration with smart grids (smart grids) and renewable energy sources.

Expofin E.S.Co. deploys the 5 G SMART TOWER developed and patented to create true smart cities, containing energy consumption and guaranteeing lighting, digitalization, security, data transmission and automation services, with a view to energy sustainability in an E.S.Co. formula.



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



SMART TOWER 5G

These towers, integrated with two-sided 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 offers advanced telecommunications services, but also includes innovations such as integrated LED displays for advertising, electric vehicle battery charging, and mini data centers. Benefits includes reduced CO2 and PM10 emissions, energy efficiency with TEE titles, reduced operating costs, and a sustainable business model that integrates advanced technologies to support electric mobility and smart cities.

The Smart 5 G Tower is further deployable with numerous useful services for smart cities, such as video surveillance with facial recognition for greater urban security. Furthermore, it can be equipped with defibrillators, particularly suitable for installation in public squares, providing immediate support in case of medical emergencies.



SOLAR ENERGY



MODULARITY



CUSTOMIZATION



OPERATIONAL EFFICIENCY



CE MARKING



SUSTAINABILITY



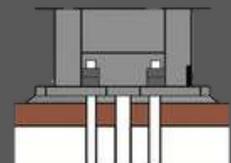
SMART GRIDS



SAFE MAINTENANCE



Smart Tower 5G
load-bearing
structure

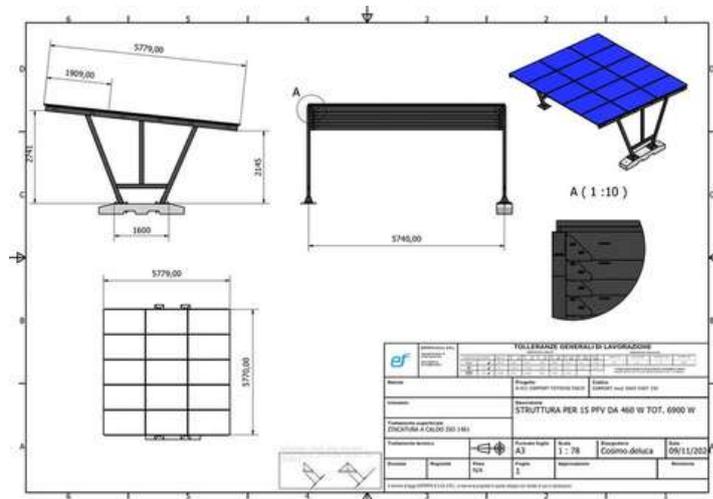
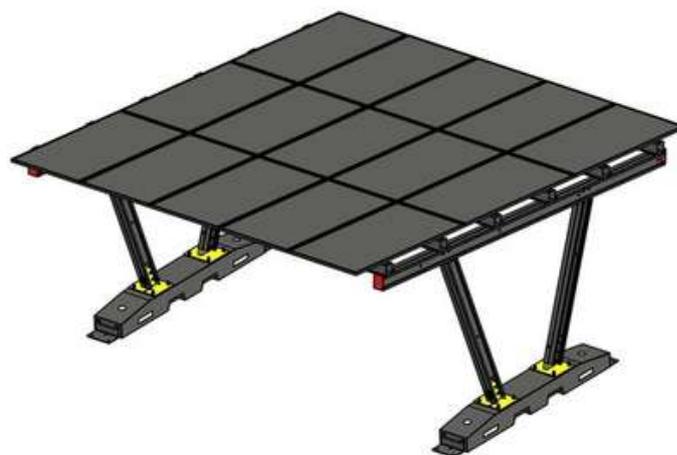


1. Tower Structure
2. Fixing soil structure
3. Clamp for connection

Expofin Fast Shelter

Expofin E.S.Co produces the innovative technology called FAST SHELTER, an advanced facility designed to support smart cities and contribute to environmental sustainability, equipped with certified ballasts, allowing free-standing above-ground installation without the need for plinths. FAST SHELTER is equipped with glass photovoltaic solar panels, capable of producing clean energy and optimizing energy efficiency. Also available in a curved design version that can maximize production even in installations that are not perfectly oriented to the south or with tracker systems, these structures are designed to provide renewable energy to cities without additional land consumption by integrating seamlessly into urban environments. Implementable with a wide range of useful services for smart cities, including smart lighting, electric vehicle charging, video surveillance, and digital signage, these facilities represent true multifunctional hubs. They can accommodate technological components such as inverters and protection systems, reducing the need for external systems and improving overall efficiency.

FAST SHELTER, entirely manufactured at the industrial comparto di Expofin in Colognola ai Colli (VR), can be equipped with additional services, such as video surveillance with facial recognition to improve safety in urban parking areas and can include a defibrillator, particularly useful for installations in public spaces such as parking lots and squares, providing immediate intervention in the event of medical emergencies. All FAST products are equipped with monitors (anti-vandalism) that can broadcast any type of audio-video content remotely.



The dimensions of the FAST SHELTER can be customized according to municipal regulations and compatible with modules from 460Wp up to 580Wp.

SMART SHELTER

DESIGN, PERFORMANCE
AND EFFICIENCY

GREEN ENERGY

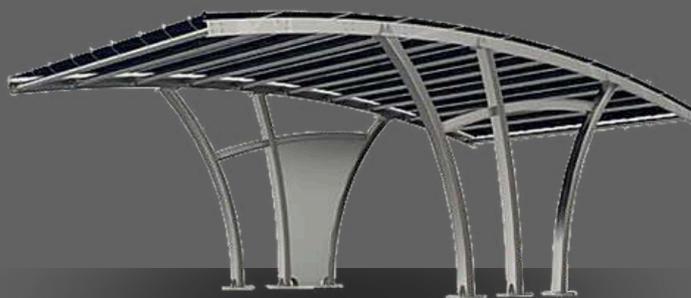
MULTI-SERVICE

INNOVATIVE
INFRASTRUCTURE

CO₂
REDUCTION

A product designed to get the most benefit from double-sided glass photovoltaic panels.

(Custom models available for each type of vehicle).



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 Rapid Charging System

Expofin E.S.Co'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.

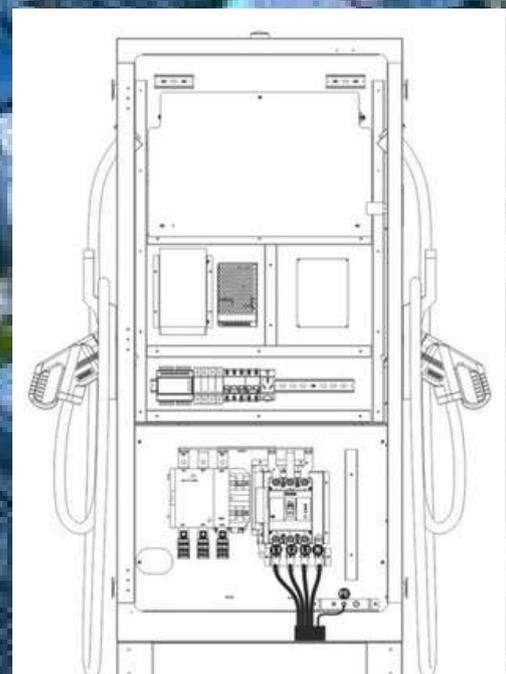
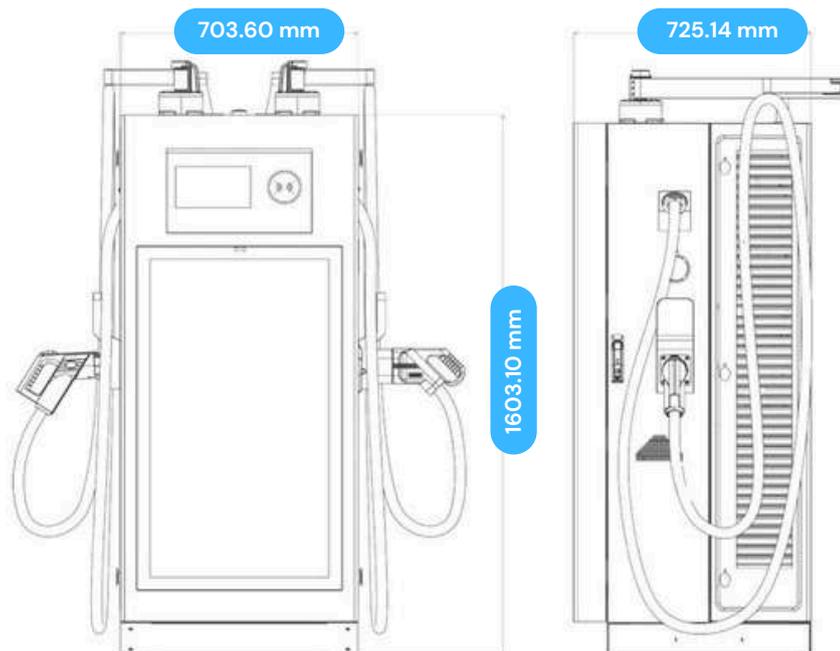


CHARGE X FEATURES

- It offers users the convenience of controlling the start/end of charging via an authorized RFID card or mobile app. Based on the latest industry standards for DC charging.
- It is IP55 certified for external use, and is capable of withstanding solid and liquid intrusions, making the unit more stable and highly reliable.
- Provides a high-contrast screen interface with multifunction 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



TECHNICAL CHARACTERISTICS CHARGE X

MAXIMUM POWER	120KW	160KW	180KW	240KW
INPUT/OUTPUT POWER	400VAC±10%-50/60HZ-TRIFASE (CCS2 e GB/T) 480VAC±10%-50/60HZ- TRIFASE (CCS1)			
POWER FACTOR	≥0.98			
EFFICIENCY	>95%			
MEASURING ACCURACY	Livello 0.5			
MEASURING ACCURACY	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	EN/IEC 61851-1: 2019, EN/IEC 61851-23: 2014, UL 2202, UL2594			
SAFETY DESIGN	Overvoltage/undervoltage protection, overload protection, current leakage protection, grounding protection, voltage surge protection			
DC PLUG	Cavo 5m			
ENERGY COUNTER	CE certificate			
RCD	Type A			
LOAD BALANCING	Load Balancing Meter and CT (optional)			
COOLING	Air cooling			
IP LEVEL	IP55 - outdoor			
ACOUSTIC NOISE	<70DB in all directions			
OPERATING TEMPERATURE	-30°C a +50°C			
HUMIDITY	Max. 95% (not adjustable)			
NET SIZE/WEIGHT	L 17500 x P 84 x H 500 mm / 320 kg			

Integrated Electrical Mobility

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

The solutions proposed by Expofin do not stop at simple energy production, but extend to energy storage systems using the latest generation storage (GRAF20 and Expofin Solid Power) that allow the storage of excess energy produced during peak solar hours.

This energy storage is essential to optimize imbalances between energy overproduction and the energy demand required to charge electric vehicles, whether private vehicles, commercial vehicles, or work vehicles, especially for small municipalities.

Thanks to this innovative system, electric vehicles can be charged efficiently, even at times when solar production is reduced, ensuring zero impact on the environment. Additionally, energy management software allows you to monitor and control energy flow in real time, optimizing the charging process based on needs and energy availability. This approach reduces operating costs and increases overall system efficiency, ensuring that the entire process, from power generation to vehicle charging, is sustainable and cost-effective.



Integrated Electrical 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 E.S.Co. 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 SMEs and all market realities, offering them the possibility of adopting innovative technologies to reduce environmental impact, improve efficiency and reduce energy costs.

Through integrated solar energy, storage and electric mobility solutions, Expofin supports its customers on the path to 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 allow municipalities, businesses, and local communities to actively participate in change, helping to build a greener, cleaner, and more sustainable future for all.



Agrivoltaic Vertical 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 power generation with agricultural cultivation, offering both power generation and increased agricultural yield.
- **Increased 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 such as wheat and sugar beet.
- **Climate and Soil Flexibility:** The system is adaptable to different climatic conditions and soil types, supporting different agricultural needs.



These systems are characterized by the vertical positioning of solar panels, allowing the passage of agricultural vehicles with low soil shading.

- **Cost Reduction:** Helps reduce energy costs by integrating solar technology into agricultural processes, leading to long-term savings.
- **Reduced Environmental Impact:** Offers a sustainable agriculture solution with a lower ecological footprint, supporting ecological farming practices.
- **Increased Productivity:** 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 beneath them and saving valuable space.



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 sides of the panels capture the water droplets and direct them downwards.

ALUMINIZED PANELS

The aluminized panels, in addition to helping to collect some of the rain, channel the rain into the collection channel under the panels.

COLLECTION CHANNEL

The canal transports water by exploiting the slope of the rows of the vertical system in underground pipes.

RAINWATER STORAGE

Stormwater is collected in dedicated cisterns and basins, with the aim of optimizing water resources.



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

RAINWATER COLLECTION
GREEN ENERGY PRODUCTION
SOIL SAVING

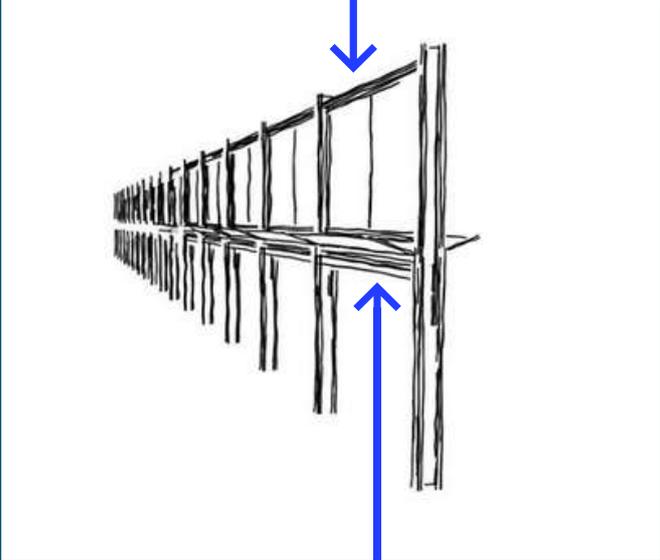
The irrigation system offers two main configurations: Solar Bloom - Radiant and Solar Bloom - Precision.

Solar Bloom - Radiant uses 1-2 inch PE/HDPE tubing with 360 degree sector sprinklers to maximize water efficiency and can be

Solar Bloom - Precision, on the other hand, offers a double PE/HDPE hose system and 180-degree sector sprinklers or a drip system, ensuring localized and highly efficient irrigation.

This solution allows you to reduce water waste and adapt to the specific needs of crops, increasing resilience to climate variations and improving agricultural yields.

SOLAR BLOOM - RADIANT



SOLAR BLOOM - PRECISION

Solar Bloom is the ideal choice for sustainable agriculture, reducing dependence on external sources and optimizing the use of natural resources. Solar Bloom is versatile: it applies to any type of soil and is useful for all types of activities: both agricultural and artisanal and industrial.



50%

TRADITIONAL SYSTEM

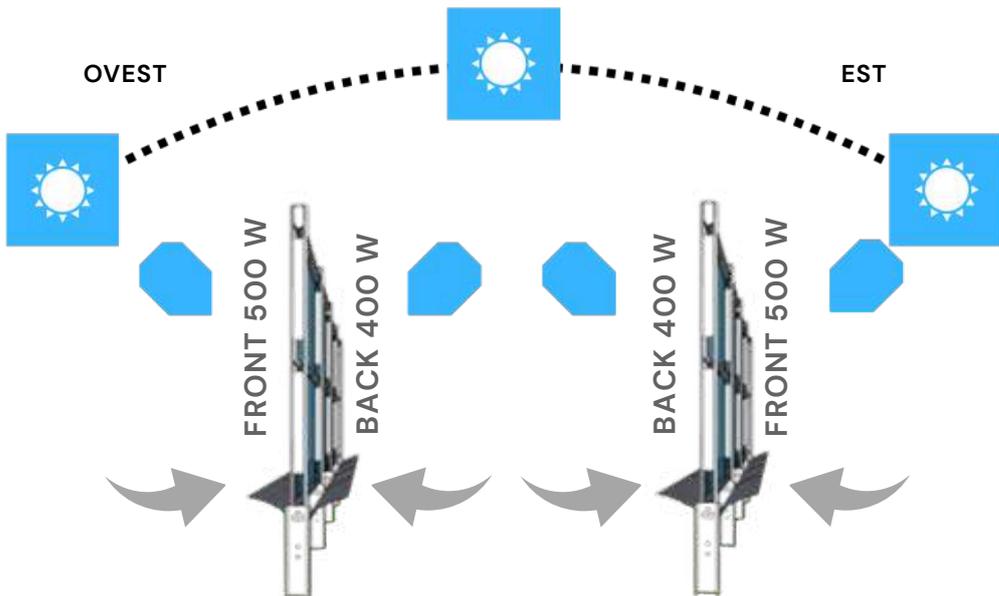
50 % OF THE USED LAND



5%

EXPOFIN SYSTEM

5% OF THE USED LAND



DIRECT LIGHT

ALBEDO

Green Sentinel GeoLens System

Expofin E.S.Co. offers innovative Green Sentinel technology, a patented technology for land control and monitoring, with a particular focus on application areas for verifying, tracking, and developing crops in agricultural fields that host, or do not host, agri-voltaic solar power plants.

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, it 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

DIMENSIONS	1200 mm
MAXIMUM DIAMETER	18 cm
MATERIAL	galvanized steel
RATED POWER IMP. FV	120 Wp
TYPE OF FV MODULES	cell efficiency 120 Wp 22%
BATTERIES	LiFePo04 72Ah 12V
REGULATOR OF LOAD MPPT	2 Charge regulators 10A automatic operation 12V/24V
INSTALLATION	OFFGRID
MAIN FEATURES	<ul style="list-style-type: none"> • 3G, 4G, LTE CAT 4 • Central control • Antifreeze houses
CERTIFICATIONS	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

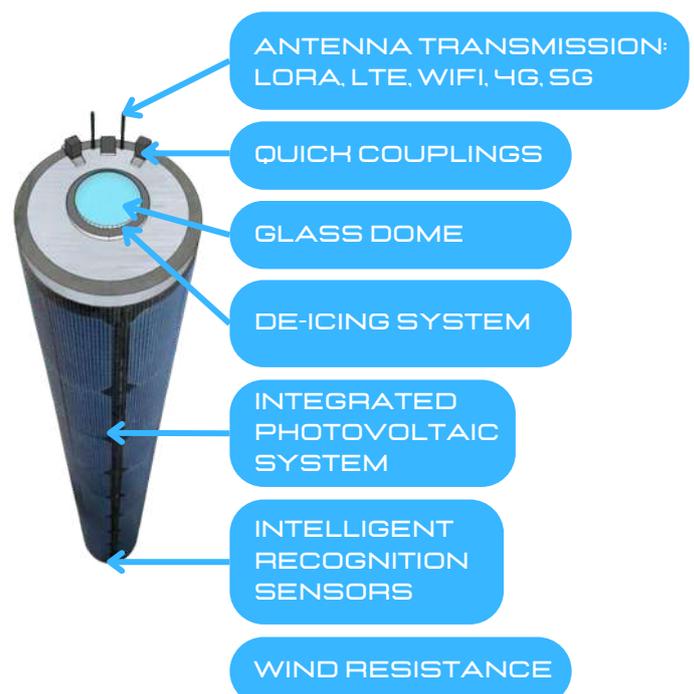
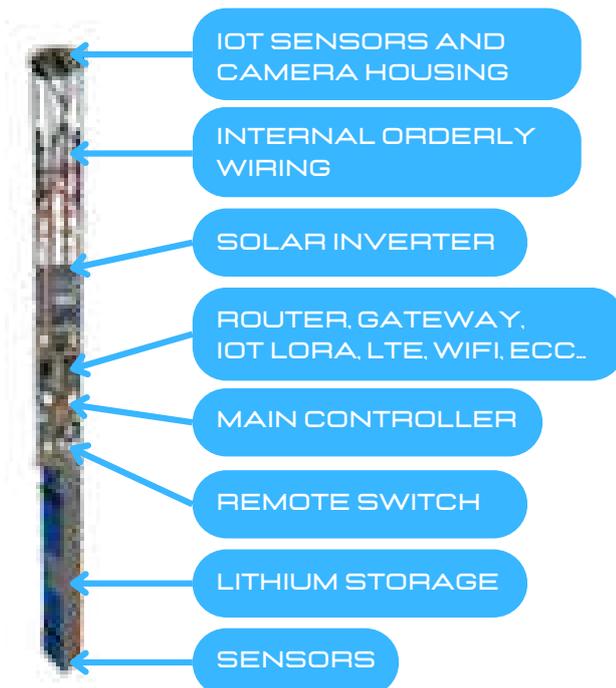


BASIC CONFIGURATION

integrated photovoltaic system structure;
electrical part management;
glass dome;
connectivity;
antifreeze warmer;
remote management platform

EXTRA CONFIGURATION

stazione di qualità dell'aria (ENEA)
analisi del video
Sistema IOT - GeoLens
prese 24-12-48vdc video
Lora, WiFi,
Zigbee, GPS, sensori RF



Innovative Agriculture

Expofin E.S.Co., 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 agrifotovoltaics enables field energy production, eliminating processing costs, reducing CO2 emissions, increasing soil organic content, improving harvests, combating drought, and growing 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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