Telecom Energy Solution

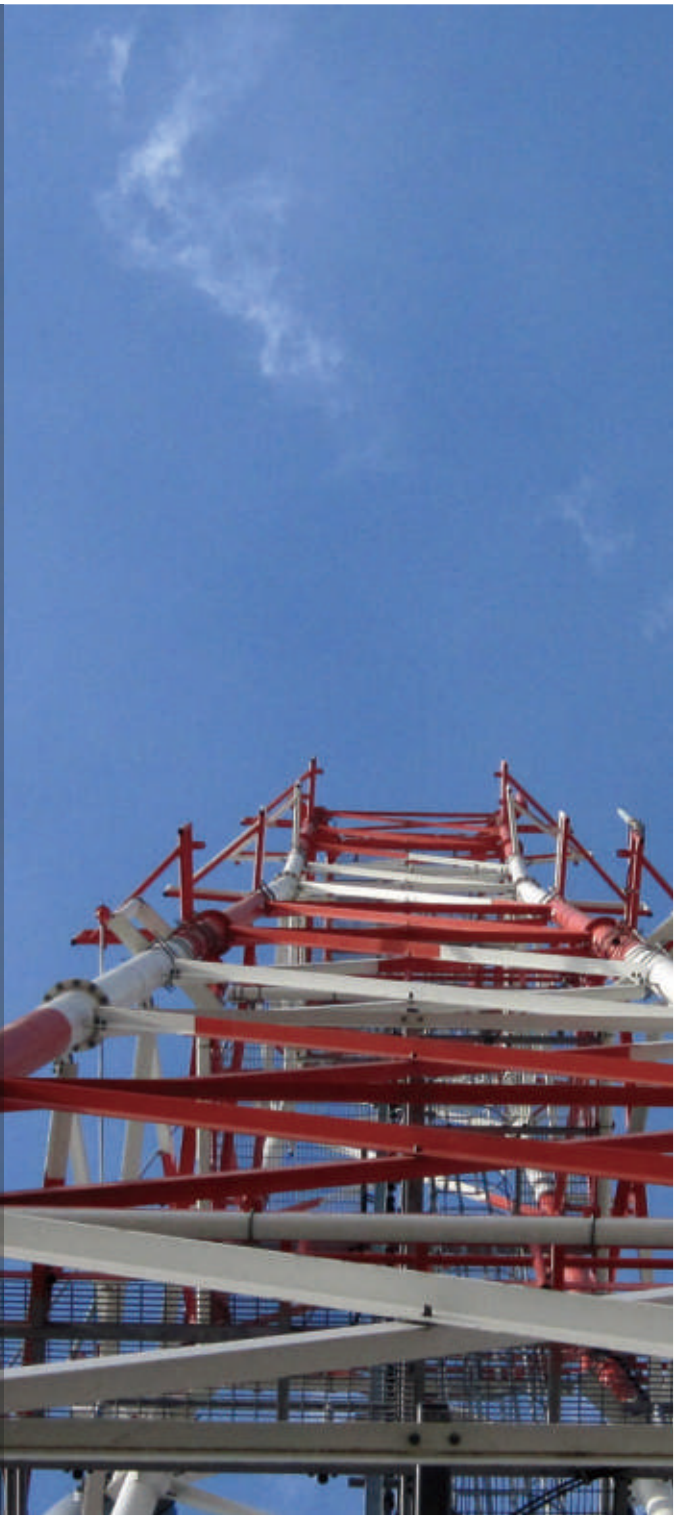
Power Solutions for Telecom

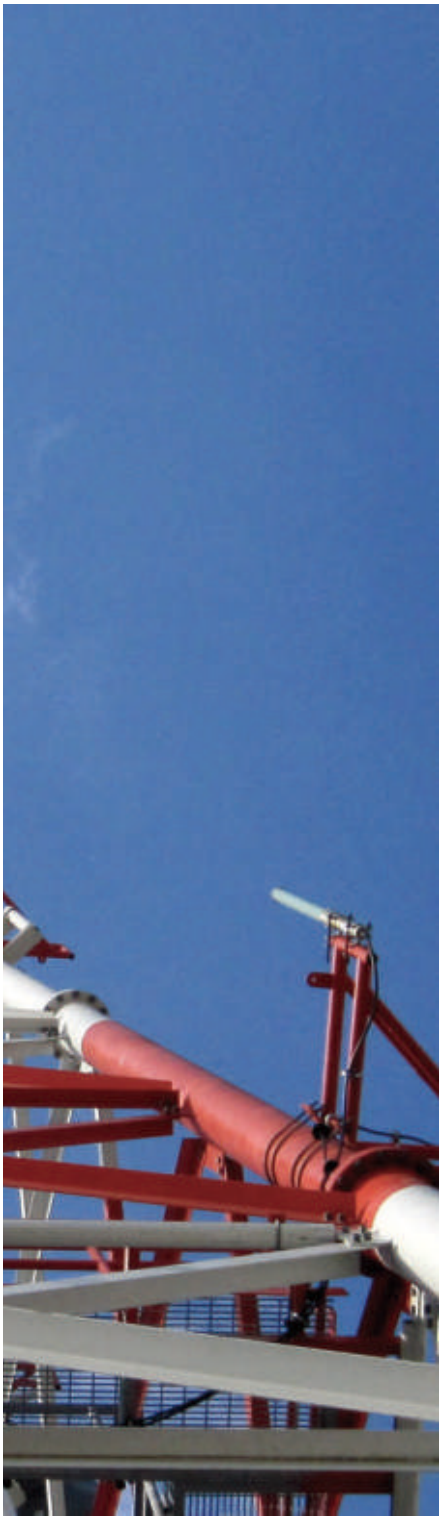
Power • People

3Tech

About 3Tech

3Tech Corporate Limited was established in 2002, formerly known as 3Tech (Hong Kong) Corporate Limited, established in 1998. In the early stage of its establishment, 3Tech mainly engaged in the supply and after-sales service of diesel generator sets in the Greater China region. In 2002, 3Tech began to establish a local electrical and mechanical engineering team in Hong Kong, and participated in electrical and mechanical engineering projects of the Hong Kong SAR Government, public institutions and various major private institutions. Since 2003, 3Tech has actively developed its business in the overseas telecommunications industry. It has its own product brand LionRock and intelligent management platform OwlEye.LionRock's products have developed from diesel generator set products to energy solutions for communication base stations, actively participated in the booming 5G communication infrastructure construction, and extended from energy products to edge computing infrastructure products. OwlEye is the basic platform of the future Internet of Things (IoT), and its products have been widely used by different multinational operators in the world.





Our mission

Digitize energy use for all industries.

Our vision

To become a comprehensive and innovative world-class supplier of Telecom Energy Solution.

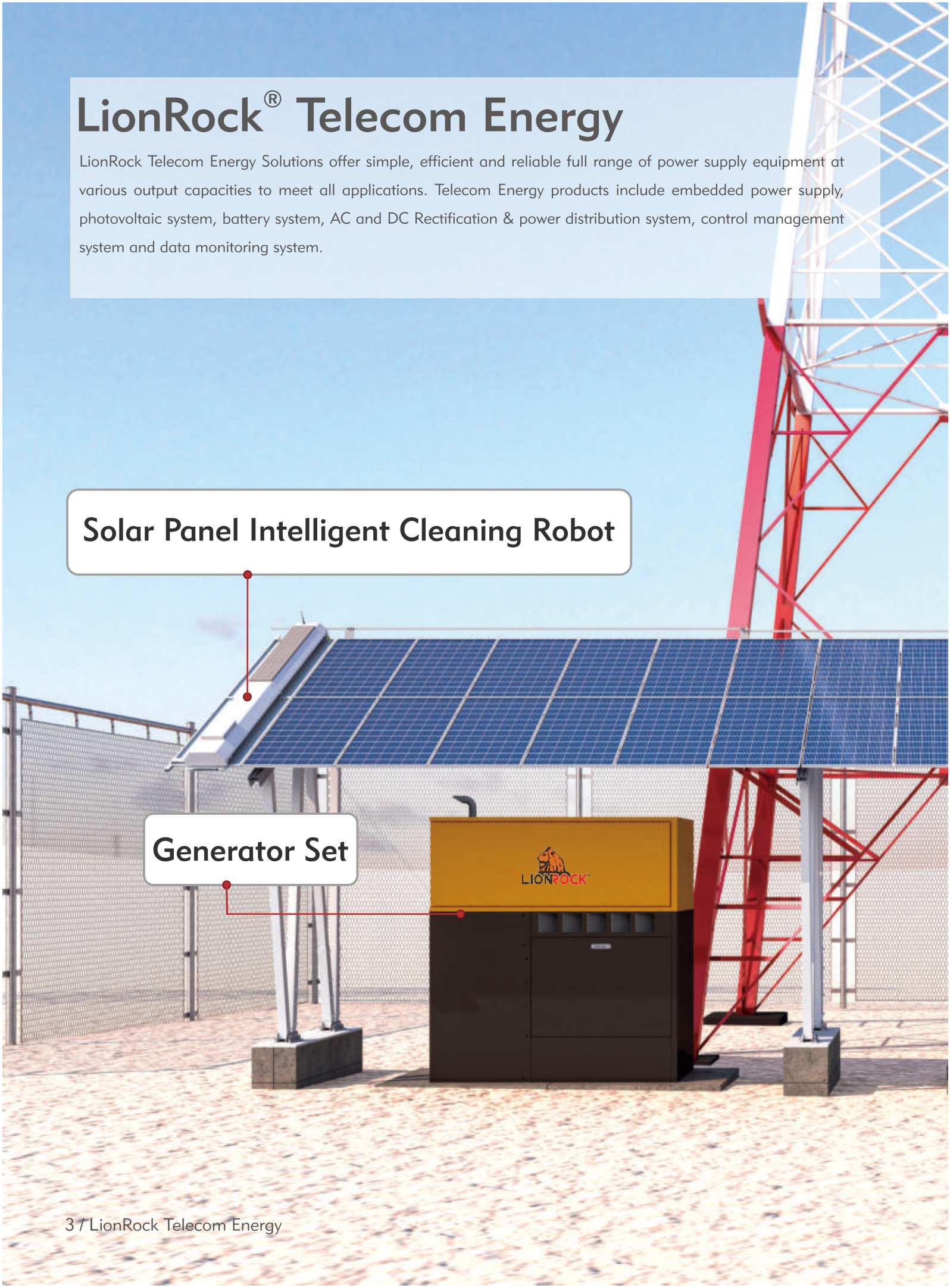
Manufacturing facilities

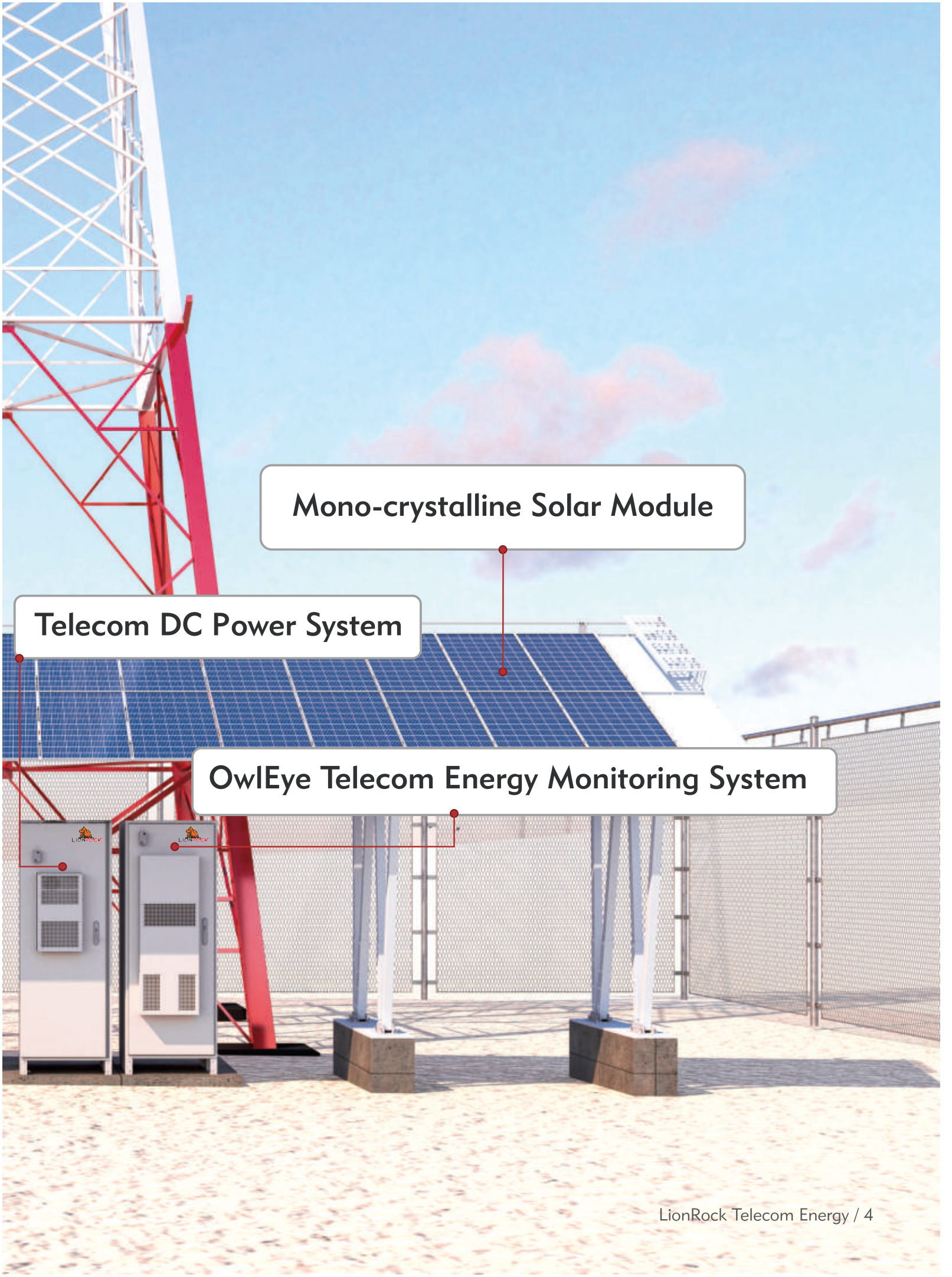
3Tech Power (Dongguan) Corporation Limited

Located in Dongguan, the most developed manufacture and industrial area in China. Certified as High-Tech Enterprise, with a plant area of 12,000m^2, over 150 employees. Annual output over 5000 units.

LionRock® Telecom Energy

LionRock Telecom Energy Solutions offer simple, efficient and reliable full range of power supply equipment at various output capacities to meet all applications. Telecom Energy products include embedded power supply, photovoltaic system, battery system, AC and DC Rectification & power distribution system, control management system and data monitoring system.




Mono-crystalline Solar Module
Telecom DC Power System
OwlEye Telecom Energy Monitoring System

LionRock® Hybrid Power Solutions

The benefits of LionRock hybrid power solutions

With our LionRock Hybrid Power Solution, operators can now partially, or even completely substitute the traditional diesel generators and make use of renewable energy. Our solutions are fully integrated, all energy sources and equipment are managed by our proprietary controller, developed specifically for telecom application. The benefits are realized by numerous operators. LionRock hybrid solutions contribute to saving energy, fossil fuel and money in thousands of installations.

Up to 80% OPEX reduction

By optimized generator, renewable energy and battery storage operation, fossil fuel and related maintenance cost will be reduced substantially. Even if all energy may not be completely replaced fossil fuel by renewable energy, LionRock hybrid power solutions will make sure you get the most out of every drop.

Fully integrated

The fully integrated rectifier system can be used for various power supply applications. Unified configuration, convenient to be operated, helps to reduce the overall maintenance cost.

Reduce carbon footprint

There are a lot of off grid telecom installations powered by generators today. These represent enormous potentials for reduction of carbon footprint. Many generators serving as the main energy source are operated in an inefficient way. By optimizing the control with LionRock hybrid solutions, the emission per kWh drops significantly.

Modularity

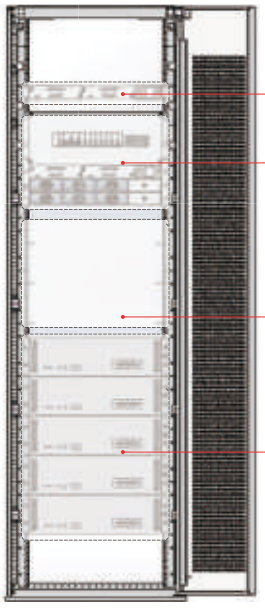
With the modular design, our systems can be easily adapted to various power input sources and scaled to meet higher load requirements.

> 96% efficiency

Whether input power comes from solar panels, generators or mains power, our high efficiency power conversion equipment make sure that power loss is minimized.

Telecom DC Power System

Telecom Indoor Cabinet



Model Interpretation

EC 10 1 0 R 30 - 2 D 6 A 01

- 01 → Serial Number
- A → Cabinet Type
- 6 → Module Specification
- D → Module Brand
- 2 → Voltage Type
- 30 → Current Capacity
- R → Power Type
- 0 → Cooling Type
- 1 → Number of compartments
- 10 → Cabinet series
- EC → Energy Cabinet

Power Type

R	Rectifier
S	Solar
H	Hybrid
V	No power sys

Voltage Type

1	24 V
2	240 V
3	360 V
	48 V leave out

Module Brand

D	Brand D
M	Brand M
Z	Brand Z

Module Specification

3	3kw
6	6kw

Number of compartments

1	1
2	2
3	3
4	4

Current Capacity

6	600A
20	2000A
30	3000A

Cabinet series

10	Indoor
18	Indoor (800mm)

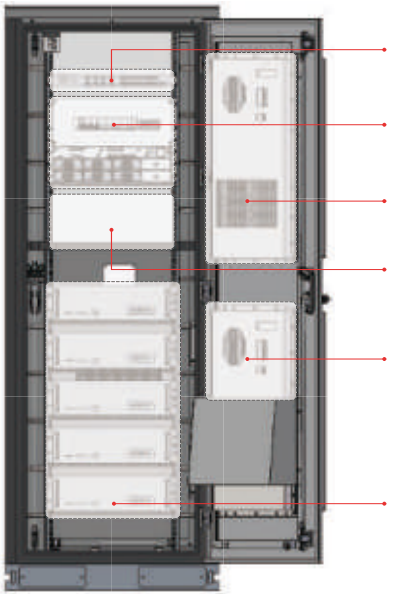
Cooling Type

0	Natural Wind
1	Fan
2	Heat Exchanger
3	Air Conditioner
4	1Type+2Type
5	2Type+3Type
6	1Type+3Type

Cabinet Type

A	400V Integrated cabinet
B	240V Integrated cabinet
C	480V Integrated cabinet
L	400V Independent cabinetr
M	240V Independent cabinetr
N	480V Independent cabinetr

Telecom Outdoor Cabinet



Model Interpretation

EC 50 2 5 H 2 - □ D 3 A 01

- 01 — Serial Number
- A — Cabinet Type
- 3 — Module Specification
- D — Module Brand
- □ — Voltage Type
- 2 — Current Capacity
- H — Power Type
- 5 — Cooling Type
- 2 — Number of compartments
- 50 — Cabinet series
- EC — Energy Cabinet

Cooling Type

0	Natural Wind
1	Fan
2	Heat Exchanger
3	Air Conditioner
4	1Type+2Type
5	2Type+3Type
6	1Type+3Type

Power Type

R	Rectifier
S	Solar
H	Hybrid
V	No power sys

Voltage Type

1	24 V
2	240 V
3	360 V
	48 V leave out

Module Brand

D	Brand D
M	Brand M
Z	Brand Z

Module Specification

3	3kw
6	6kw

Number of compartments

1	1
2	2
3	3
4	4

Current Capacity

2	200A
4	400A
6	600A

Cabinet series

50	Outdoor
60	Outdoor
70	Outdoor

Cabinet Type

A	400V Integrated cabinet
B	240V Integrated cabinet
C	480V Integrated cabinet
L	400V Independent cabinetr
M	240V Independent cabinetr
N	480V Independent cabinetr

Telecom DC Power System

Telecom Indoor Cabinet

The EC1000 series telecom power indoor cabinet is new platform generation designed to fit customer needs, configuration flexibility and supports variety of applications. The equipment cabin reserves 19-inch rack space for other equipments. The cabinet is well suited for power, batteries and telecom equipment.

EC1010H8

EC1010R4

Features

- Small size, easy deployment
- Compact design for installation of equipment
- Intelligent battery management function helps to prolong battery lifespan
- Easy installation & maintenance by front door design
- Wide operating DC input range
- Full galvanic isolation
- Advanced max power point tracking routines
- Support C AN communication
- Open protocol of maintenance inter face
- Anti-theft design

Scenarios

- Indoor
- Solar/diesel/grid hybrid system

General Specification

System	Dimension (W x D x H)	600mm x 600mm x 2000mm
	Cabinet Color	Black: RAL 9004
	Maintenance Mode	From the front
	Cabinet Material	Hull, inside frame & base: steel
	Coble Entry Detail	Cable entry from top of cabinet
Input	AC Voltage	200-277/346-480VAC, Three phase; 50/60Hz
	DC Voltage	-40V ~ -60VDC; max 200A
	Solar Input	100 ~ 430VDC
	Surge Protection	40kA
Output	Voltage	-48VDC
	Surge Protection	15kA

Large Capacity Telecom Indoor Cabinet upto 6000A

EC1030R30 is LionRock's new generation telecom power system for central equipment room with digitalization, multiple racks and large capacity. The system is of great power density, excellent performance, easy maintenance and strong expandability. Single cabinet output is 3000A. It supports 2rectifier cabinets to operate in parallel so that the max output can reach 6000A.

EC1030R30

Features

- Efficient and energy-saving design
- Digital design, stable performance
- Strong capacity expandability
- Excellent battery health management

Scenarios

- Core equipment room
- Large aggregation site
- Data center

General Specification

System	Dimension (W x D x H)	600mm x 600mm x 2000mm
	Weight	250kg
	Rectifier	2-60
Input	AC Input	200-277/346-480VAC, Three phase; 50/60Hz, 600A max
	Surge Protection	15kA
Output	Voltage	-48VDC
	Capacity	3000A max
DC Distribution EC1010DD (Optional)	Dimension (W x D x H)	600mm x 600mm x 2000mm
	Battery Distribution	4 x 1000A Fuse
	Output Distribution	18 x 630A Fuse
	Weight	180kg
	Surge Protection	15kA
AC Distribution EC1010AD (Optional)	Dimension (W x D x H)	600mm x 600mm x 2000mm
	Input	1000A MCCB
	Output Distribution	3 x 250A MCCB
	Weight	85kg
	Surge Protection	40kA

Telecom DC Power System

Telecom Outdoor Cabinet

EC6025R4

EC5012H1

3Tech also offers outdoor cabinet solutions that enable simple deployment, high system efficiency, versatility and energy saving. The energy cabinet integrates various monitoring system functions to provide a safe and reliable operating environment for the main equipment.

Scenarios

- Outdoor
- Solar/diesel/grid hybrid system

Optional Accessories

	50 series	60 series
Lighting	LED	
Sensor	Smoke and water, detectors, door switch, temperature & humidity sensor available	Smoke and water, door switch, temperature & humidity etc

Operating Environment

Operating Temperature	-10°C ~ 45°C (Including solar radiation)
Storage Temperature	-40°C ~ 70°C
Operating Relative Humidity	5% ~ 95% (w/o condensation)
Altitude	0 ~ 2000m (1°C temperature derating per 200m over 2000m ~ 4000m)
Protection Level	IP55
Noise	≤65dBA@1.5m

Outdoor Cabinet

General Specification

		50 series	60 series
System	Dimension (WxDxH)	650mm x 650mm x 1600mm	800mm x 1200mm x 2050mm (including base 800x950x100mm)
	Weight	157kg	425kg (Excluding battery)
	Installation	Ground-mounted	
	Maintenance	From the front	From the front and back
	Cable Routing	From the bottom	Entry bottom
	Cabinet Color	Light grey: RAL 7035	
Input	AC Input	200-277/346-480VAC, Three phase; 50/60Hz, 35A max	
	DC Input	-40V ~ -60VDC; max 200A	
	Solar Input	100 ~ 430VDC; max 15A x 2	/
Output	Voltage	-48VDC	
	Rectifier	Max 400A	
	Solar	Max 100A	/
Output Distribution	LLVD	16A x 1, 32A x 2, 63A x 2, 100A x 1	63A x 2, 32A x 2, 16A x 2
	BLVD	32A x 2, 63A x 2, 100A x 1	100A x 2, 32A x 2, 16A x 1
Space	Spare Space	10U height, 19-inch width rack	17U height, 19-inch width rack
	Battery Space	/	Max 44U height, 19-inch width rack

Remark: LLVD: Load Low Voltage Distribution; BLVD: Battery Low Voltage Distribution

Cooling System (Optional)

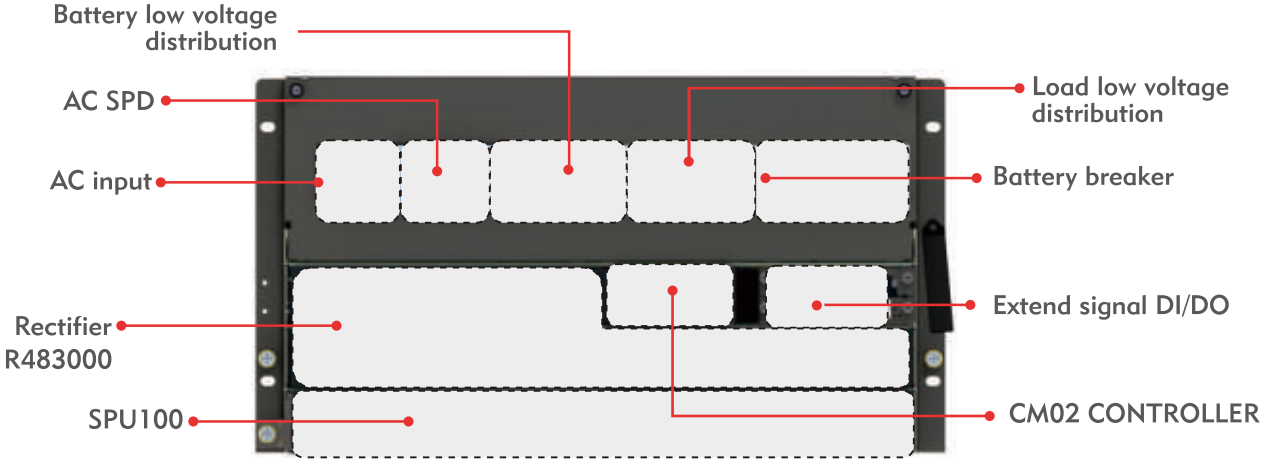
	50 series	60 series
Equipment Cabinet	120/150/180W/K heat exchanger cooling capacity	120/150W/K heat exchanger cooling capacity
Battery Cabinet	600/1000/1500W air-conditioner	600/1000W air-conditioner

Telecom DC Power System

DC Power System

TEP System is a compact and intelligent power system containing SP48/3000 rectifiers, SC501 controller module, AC connection and DC connection.

It supports remote monitoring and management with SNMP. It is easy to install and of compact size.



Features

- 19'' sub-rack, easy to be embedded into all standard telecom equipment, with structures design, strong commonality and easy installation
- Compact structure, high power density
- Sub-rack installed, facilitate customer configuration
- Hot-swappable modules without damage
- On-line maintenance, quick and easy
- Wide range of input rectifier module, possible strong adaptability for the grid
- Perfect battery management, improve the battery life, keep the battery in good working condition
- With variety of alarms and protective functions (eg. over current, over voltage, over temperature, etc.)
- Management priority: grid over battery over generator

TEP300/600R-N4AH

TEP600R/48

General Specification

		TEP300/600R-N4AH	TEP400/600R/48
System	Dimension (W x D x H)	483mm x 400mm x 177.5/222mm	483mm x 400mm x 222/266.5mm
	Weight	30kg	29/34kg
	Installation Mode	19-inch width rack	
	Cabling Mode	From the top, right & left	
	Maintenance Mode	From the front	
Input	AC Input	200-277/346-480Vac, three phase, 50/60Hz, Max. 35A	
Output	Voltage	-42Vdc to -58Vdc (typical: -48Vdc)	
	Capacity	Rectifier Max. 300/600	Rectifier Max. 400/600A
Output Distribution	Battery	4x125A MCB	
	LLVD	LLVD1: 6x32A MCB LLVD2:9x32A MCB	2x100A MCB, 2x63A MCB
	BLVD	2x50A MCB,2x40A MCB,5x16A MCB	2x63A MCB,2x32A MCB
Surge Protection	AC Input	40kA (8/20μs)	20/40kA (8/20μs)
	DC Output	20kA (8/20μs)	15/40kA (8/20μs)
Environment	Operating Temperature	-40°C to +65°C (load needs deratingto 80% at +45°C to +65°C, system can start at -40°C to -33°C without damage)	
	Storage Temperature	-40 °C to +70 °C	
	Operating Relative Humidity	5% to 95% (without condensation)	
	Altitude	0 to 2000m (1°C per 200m temperature derating from 2000 to 4000m)	

Remark: TEP200R is available.

LLVD: Load Low Voltage Distribution; BLVD: Battery Low Voltage Distribution

Telecom DC Power System

Controller Module

Features

- The standard 1U*2U structure reduces space
- RS485 and Ethernet interface for computer connection locally or remote
- Front panel LCD display and four buttons for on-site operation without computer
- Easily configuration file upload/download via USB or computer
- Easy update software for controller via USB or computer
- GPRS or 3G/4G function in optional
- Advanced battery management, both Lead-acid battery and Lithium-battery
- Support up to 86 digital outputs
- Support up to 46 digital inputs
- Multiple LVDs control
- Battery mid-point monitoring
- Multi-level access authority management
- Event log (up to 90,000 records)
- Alarm log (up to 10,000 records)
- More user-selectable languages
- Programmable Logic Control (PLC) function, more flexible requirements can be supported
- Low-interference and excellent susceptibility enhance reliability

General Specification

Analog Inputs	1 bus voltage	Additional 2 EM02D boards
	1 load current	Additional 8 EM02D boards
	2 battery voltages	Additional 6 EM02D boards
	2 battery currents	Additional 6 EM02D boards
	2 load fuse alarms	Additional100 EM03S boards and 6 EM02D boards
	2 battery mid-points	Additional 6 EM02D boards
	2 temperatures	Additional 15 EM03S boards
Digital Inputs	6	Additional 50 EM03S boards
Digital Outputs	6	Additional 40 EM03S boards
LVDs	2	Additional 6 EM02D boards

Rectifier Modules

R483000

SP48/6000

Features

- High efficiency and high power density
- Digital control
- High reliability design
- Automatic disconnect during hazardous input
- Excellent EMC performance
- Low-interference and excellent susceptibility enhance reliability
- Global Approvals

General Specification

		SP48/3000	SP48/6000
Inputs	AC Supply	Nominal: 220/230Vac 1 ph; Tolerances: 85-300Vac 1 ph	208~530VAC (3phY) (Nominal 380VAC)
	Frequency	45 - 65Hz	45 - 65Hz
	Power Factor	>0.99	>0.99
	Input Current	≤15A rms at nominal input; ≤18A rms at 187Vdc input	<12A rms at 305VAC input
	THD	<5% at 100% load; <10% at 50% load	<5%
	Input Protection	Varistors for surge protection (5kA 8/20us Surge protection)	
DC Outputs	Output Capacity	3000W at nominal input	6000W at nominal input
	Output Current	56.6A±0.5A with normal input	125A at 48VDC
	Voltage Regulation	±0. 6% from 5% to 50% load or from 50% to 100% load	±0.5%
	Current Sharing	<±5%	
	Holdup Time	>10ms (56,07A constant current when output voltage from 53,5V to 43,2V)	>10ms
	Efficiency	Max: 96%	
	Output Protection	Overvoltage shutdown; Short circuit protection; High temperature protection; Output fuse	
	Ripple and Noise	<200mV peak to peak, 20MHz bandwidth <2mV RMS psophometric	

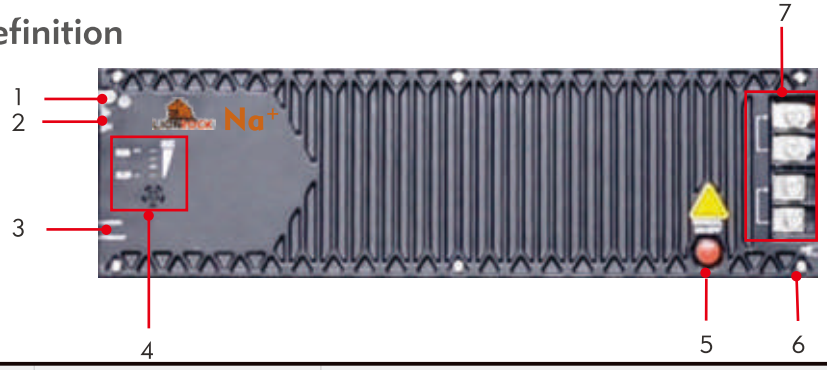
Telecom DC Power System

Sodium-ion Battery

Features

- Standard 19-inch rack-mounted design, high energy density (3U height)
- Integrated BMS and high-efficiency bidirectional boost module with autonomous charge/discharge control
- Supports constant voltage remote power supply
- Supports remote monitoring and O&M (operation and maintenance)
- Supports parallel hybrid use with lead-acid batteries and aging tolerant parallel use of new/old sodium-ion batteries
- Supports high-current charge/discharge
- Supports multiple operation modes (peak shaving mode, load shifting mode, constant voltage output mode, etc.)
- Long cycle life

Interface Definition



No.	Silk Screen	Item	Description
1	PE	Ground protection	M4 screw
2	DO1 DO2	Dry contact output	Alarm output dry contact (disconnect alarm by default)
3	COM_IN	Communication port	CAN / RS485 port
	COM_OUT	Communication port	
4	RUN	Run indicator	
	ALM	Alarm indicator	
	SOC	SOC indicator	
5	Manual ON / OFF	Button for manual power on / off	The external voltage of 43.2V-58V of the PWR terminal can activate the interspace digital energy BS series lithium battery
6	PWR	Port for connecting to an external power source	The BS series Li-ion battery anode and cathode interface
7	+	Positive terminal	Positive and negative ports are secured by M6 screws. The suitable OT terminals should be used
	-	Negative terminal	

LiFe Battery

Features

- Support parallel connection with monitor function
- Wide operating temperatures
- Build-in battery control system for efficient operation
- Less weight for pole mounted sites
- Option: anti-theft/dry contact

General Specification

Performance Parameter	Product Model	LF48100S1
	Cathode Material	LiFePO4
	Nominal Voltage	48Vdc
	Nominal Charging Voltage	54Vdc
	Rated Capacity	100Ah (0.3C constant current discharging, 40.5V cut off)
	Energy	4800Wh
	Max Charge / Discharging Current	50A
	Life Cycle Character	≥3500 cycle (25°C, 0.2C constant current discharge to 80%DOD, then go for next cycle)
	Dimension (W x D x H)	442mm x 420mm x 133mm (excluding mounting ear)
	Weight	About 42kg±1kg
	Floating Charge Life	≥12 year
	Certification	UN38.8
	Installation Method	Rack mounted / Wall mounted
	Communication Interface	RS232/RS485
	Indicator State	ALM / RUN / SOC
	Parallel Communication	Maximum support for 16 sets of parallel
	Terminal Stud	M8, torque 4 N·m
	Alarm and Protection	Over voltage, under voltage, short circuit, overload, over current, over temperature, low temperature protection

Operating Conditions

Operating Temperature	Charging: 0°C ~ 55°C / Discharging: -20°C ~ 50°C
Storage Temperature	-20°C ~ 60°C
Operating Relative Humidity	5% ~ 95%
Altitude	≤4000m

Telecom DC Power System

Distributed Blade Battery

Features

- Small size, light weight
- Wide operating temperature -40°C ~ 55°C (without sun radiation)
- IP65 high degree of protection for harsh environment applications
- Support pole, wall, tower installation

General Specification

Voltage	48VDC
Rated Charging Voltage	Boost charging: 55.5VDC
Capacity	25Ah (C5, 25°C)
Max Charge/Discharge Current	10A/30A (0°C ~ 45°C)
Weight	≤22kg
Dimension (W x D x H)	135mm x 330mm x 450mm
Natural Discharge Rate @ 25°C	<5% (90 days)
Communication Interface	CAN / RS485
Protection	Over charging, over discharging, short circuit, over current, over temperature protection
Certification	CE, UN38.3
Life	10 years @ 25°C
Operating Temperature	-40°C ~ 55°C
Transportation Temperature	-40°C ~ 60°C
Storage Temperature	0°C ~ 40°C
Relative Humidity	5% ~ 95% (without condensation)
Altitude	≤4000m
Max Parallel Number	8

Distributed Blade Power

Features

- Rapid Deployment, blade structure, Modular design
- Flexible design, Power Unit and Battery Power Support Modular Expansion
- Simple operation and maintenance, natural heat dissipation, free from daily maintenance

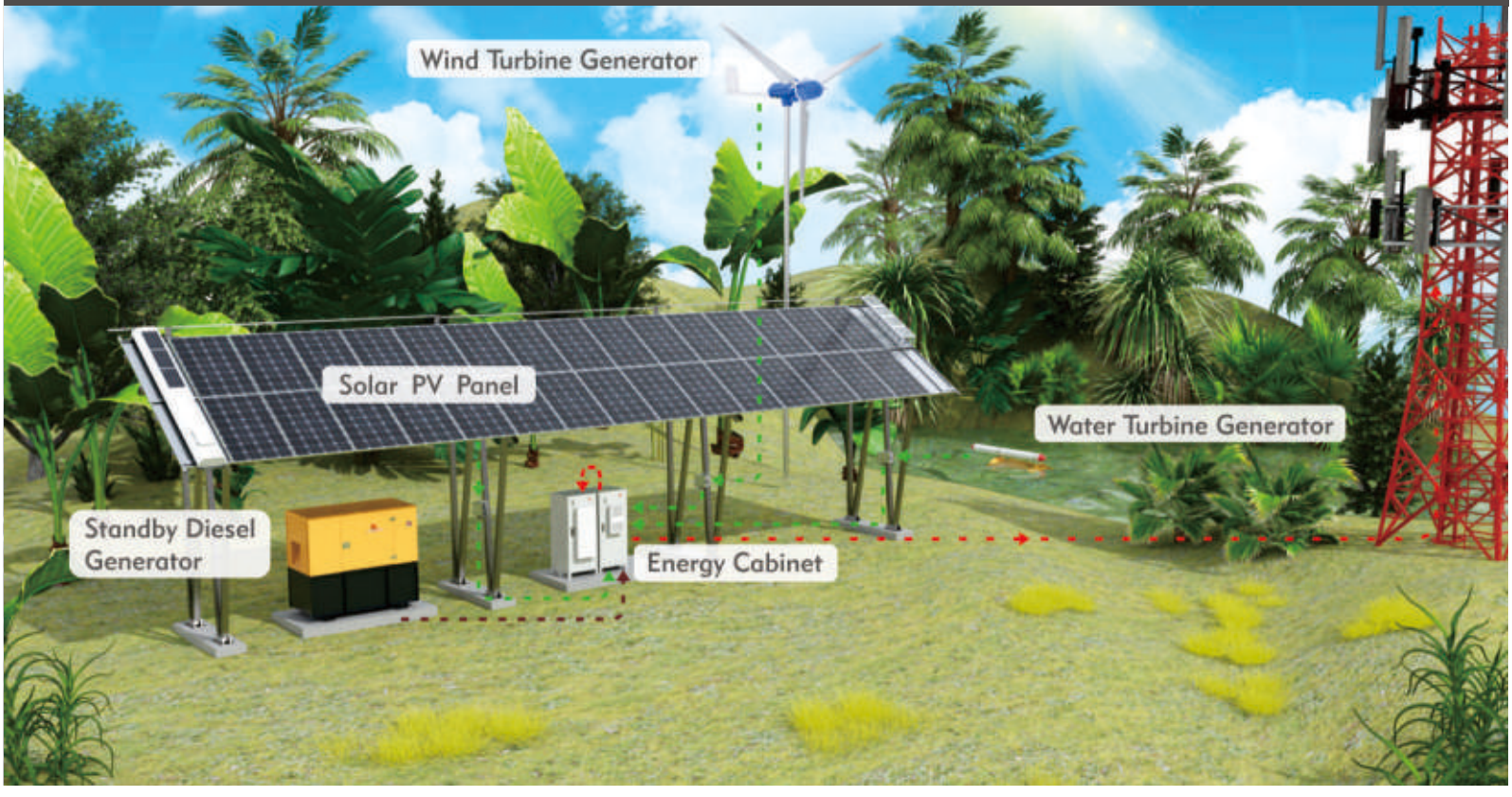
Scenarios

- Indoor / outdoor distributed site
- RRU site
- Easy Macro site

General Specification

Voltage Range	110/220VAC (80VAC - 300VAC); 240/336VDC (130VDC - 400VDC)
Frequency Range	50/60Hz (45Hz - 66Hz)
AC SPD	20kA (8/20μs)
Input Power Factor	≥0.99 (100% load)
Rated Output Power	3000W at 200VAC
Rated Output Voltage	54.5VDC
Efficiency at 220VAC	≥96% (peak) ; ≥95.5% (load)
DC SPD	10kA (8/20μs)
Load Output Branch	4 channels (1 channels high-power quick-plug terminals, 60A per channel, 3 channels quick connect terminal output interface, 40A per channel)
Operating Temperature Range	-40 ~ +55°C (Non-solar radiation)
Storage Temperature Range	-45 ~ +70°C
Relative Humidity	5% ~ 95%RH
Dimensions (W x D x H)	98mm x 309mm x 415mm
Weight	9.2kg
Alarm	Input undervoltage, input overvoltage, overtemperature, output overvoltage, etc.
Heat Dissipation	Natural heat dissipation
MTBF	5×10^5 hours
IP Level	IP65
Installation Mode	Poles or wall-mounted
Wiring Method	From the bottom
Communication	RS485/CAN/Bluetooth/4G

Renewable Energy



In order to reduce the carbon footprint to protect the environment, 3Tech telecom power system has been designed to work with various type of renewable energy such as solar PV panels, wind turbine and even water turbine if there is a nearby stream. Ability to work with different type of renewable energy is important as each of them suits different installation environment. Combined with LionRock renowned DC generator and energy storage solution, reliable and durable energy source is always available to support the Telecommunication equipment power demand.

Solar Power

Among various renewable energy, solar PV panels is the most popular. Mono-crystalline solar panels have the highest efficiency since they are made out of the highest-grade silicon. The efficiency of mono-crystalline solar panels are typically up to 20%. The solar panel performance will be affected if it is covered with dust, dirt and snow. Regular maintenance is important to ensure the best performance and output from the solar panels.

Features

- Solar modules certified to IEC61215 & IEC61730:2016
- 25 year warranty
- Upto 21% efficiency
- Manufacturing certified to ISO9001 and ISO14001
- Pass TUV salt Mist Corrosion Test, sand test, EMC and LVD Test etc.
- Good weak light performance to maximise output
- Guarantee from 0 to +3% power tolerance
- 100% EL test before and after lamination

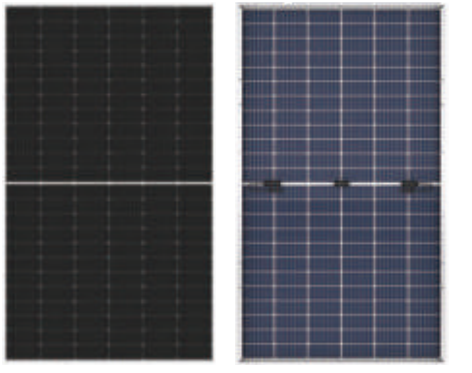
Solar Panel

(Front) (Back)

High Efficiency
PERC Mono-Crystalline Solar Module
(158.75×158.75 mm,
60 Cell (6×10) - 5BB PERC)

(Front) (Back)

High Efficiency
PERC Mono-Crystalline Solar Module
(158.75×158.75mm,
72 Cell (6×12) - 5BB PERC)



(Front) (Back)

High Efficiency
PERC Mono-Crystalline Solar Module
(144 Cell (6×24))

Typical Electrical Characteristics

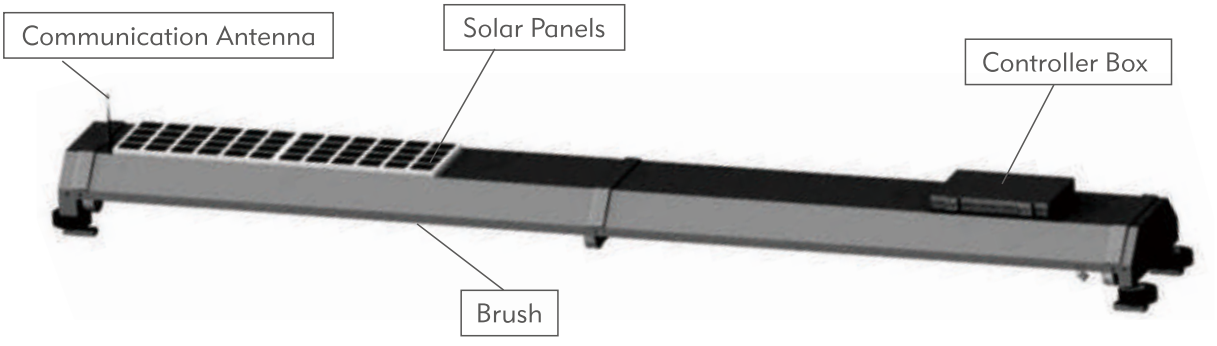
Dimension	1670×1000×40/35mm		1980×1000×40mm		2256×1133×35mm	
Max - power	320W	330W	385W	395W	530W	540W
Power Tolerance	0 to +3%				0 to +5W	
Voltage at Pmax (Vmp)	33.4V	33.8V	40.2V	40.6V	41.4V	41.7V
Current at Pmax (Imp)	9.58A	9.77A	9.58A	9.73A	12.82A	12.97A
Open-Circuit Voltage (Voc)	40.8V	41.2V	49.0V	49.4V	49.2V	49.5V
Short-Circuit Current (Isc)	10.07A	10.26A	10.08A	10.22A	13.71A	13.85A
Max - System Voltage (VDC)	1000				1500	
Module Efficiency	19.2%	19.8%	19.4%	19.9%	20.7%	21.1%
No.of Bypass Diodes (pcs.)	3				3	
Maximin.Series Fuse (A)	15A				30A	
Temperature Coefficient of Pmax	-0.37%/°C				-0.35%/°C	
Temperature Coefficient of Voc	-0.27%/°C				-0.28%/°C	
Temperature Coefficient of Isc	0.04%/°C				0.05%/°C	
Nominal Operating Cell Temperature	45±2°C				45±2°C	

*STC Conditions (1000W/m^2, 1.5AM and 25 °C Cell temperature)
*Poly-Crystalline Solar Module is available as option.

Renewable Energy

Solar Panel Intelligent Cleaning Robot

In practical applications of solar, the dust on the surface can block the solar radiation reach the solar cell, and reduce the output of each panel. It also affect the cooling of the solar panel during operation and hence reduce the performance. So timely clean up the dust on the surface of solar panels is particularly important.



Features

- The solar panel on the cleaning robot automatically generate electricity for the cleaning robot
- The cleaning system employs the soft spiral brush to clean the panel up to 95% efficient
- The status of multiple cleaning robots can be deleted and controlled by computer in real time
- The product can analyze mechanical and electrical faults by itself, and upload data to the management department to mobile phones and computers
- Suitable for dry weather like desert

Applications

23/ Solar Panel Intelligent Cleaning Robot

Maximum Power Point Tracking (MPPT)

Features

- Max 98% efficiency, energy saving
- Modular design, compatible with Huawei 50A module system
- CAN communication
- Support hot-swap
- Wide temperature range
- Support voltage and current regulation
- Built-in fan cooling

Telecom DC Power System - MPPT

Power	3000W
Input Voltage	187~430Vdc (full power range), 100~430Vdc (voltage range)
Input Current	≤18A rms at nominal input, ≤21A rms at 185Vdc input
Total Harmonic Distortion(THD)	<5% (full load); <10% (half load)
Output Voltage	53.5Vdc (rated); 42~58Vdc (adjustable)
Ripple and Noise	<200mVpp, 20MHz bandwidth
Maximum Output Current	56.6±0.5A
Efficiency	≥95.5%@normal; ≥96.2% max efficiency, MPPT efficiency≥99%
Environment	−40 to +75°C (operating temp), +50 to +75°C (derating apply)
Dimension (W x D x H)	108mm x 327.8mm x 41.6mm
Weight	2.5kg

AC Generator Sets

Typical Features

- Set mount radiator with engine driven fan
- Cooling system standard for 40°C ambient
- Anti-vibration mounts between engine/alternator and baseframe
- Baseframe fuel tank
- Protective grille for fan and rotating parts
- Low noise-exhaust silencer with bellow
- Standard manual output breaker
- Coolant and oil drains with value
- Easy operation - integrated control design reduces breakdowns and foolproof operation
- Easy maintenance - large and fully open doors an both sides for easy service
- Optional enclosure

Applications

- Telecommunications
- Power station
- Data centre
- Mine sites
- Backup power of factory, hospital, bank, shopping mall etc. to meet these applications, capacity to 4000 kVA
- Electric and diesel fire jacket water heater for low temperature environment.
- Diesel fire jacket water heater suitable for off grid system

Engine & Alternator

Perkins · Cummins · mtu · Mitsubishi · Yanmar | Leroy-Somer · Stamford · Energis

Owleye Telecom Energy Monitoring System

3Tech's OwlEye designed for Power and Environment, Security in the sites can drive down the Operating Expense and cost, improve the site energy efficiency and lower the possibility of power failure by means of leveraging and analyzing the data captured. The overall solution allows users to monitor from overall network level, to site level and then to equipment component level so that users know well from top to bottom the site operation status. It provides better user interface and user experience, and functions like energy proportion analysis, reporting, site energy efficiency monitoring and analysis, equipment real-time monitoring, equipment centralized management, alarms and trouble ticket to name a few, so as to enable personnel to better manage the sites.

Benefits

Energy Statistics
To analyze energy proportion and usage, optimize the energy usage by adjusting the ratio and reduce carbon emission.

Highly Efficient Operation and Maintenance
Able to conduct o&m with trouble ticket, proactive maintenance to improve efficiency.

Prolong asset lifespan
Extend assets lifespan and reduce the possibility of site down by corrective actions.

Improve Site Power Reliability
Real-time monitoring power source operation status with proactive maintenance, remote control, PAV and so forth to minimize the downtime.

Lower Operating Expense
Less site visits and patrolling by remote control and modification in the platform, shorten maintenance time.

Key Features

Rapid deployment:
Support both on premises and on cloud solutions. Able to support batch sites copy and site location quick modification in the platform, device configuration data modification.

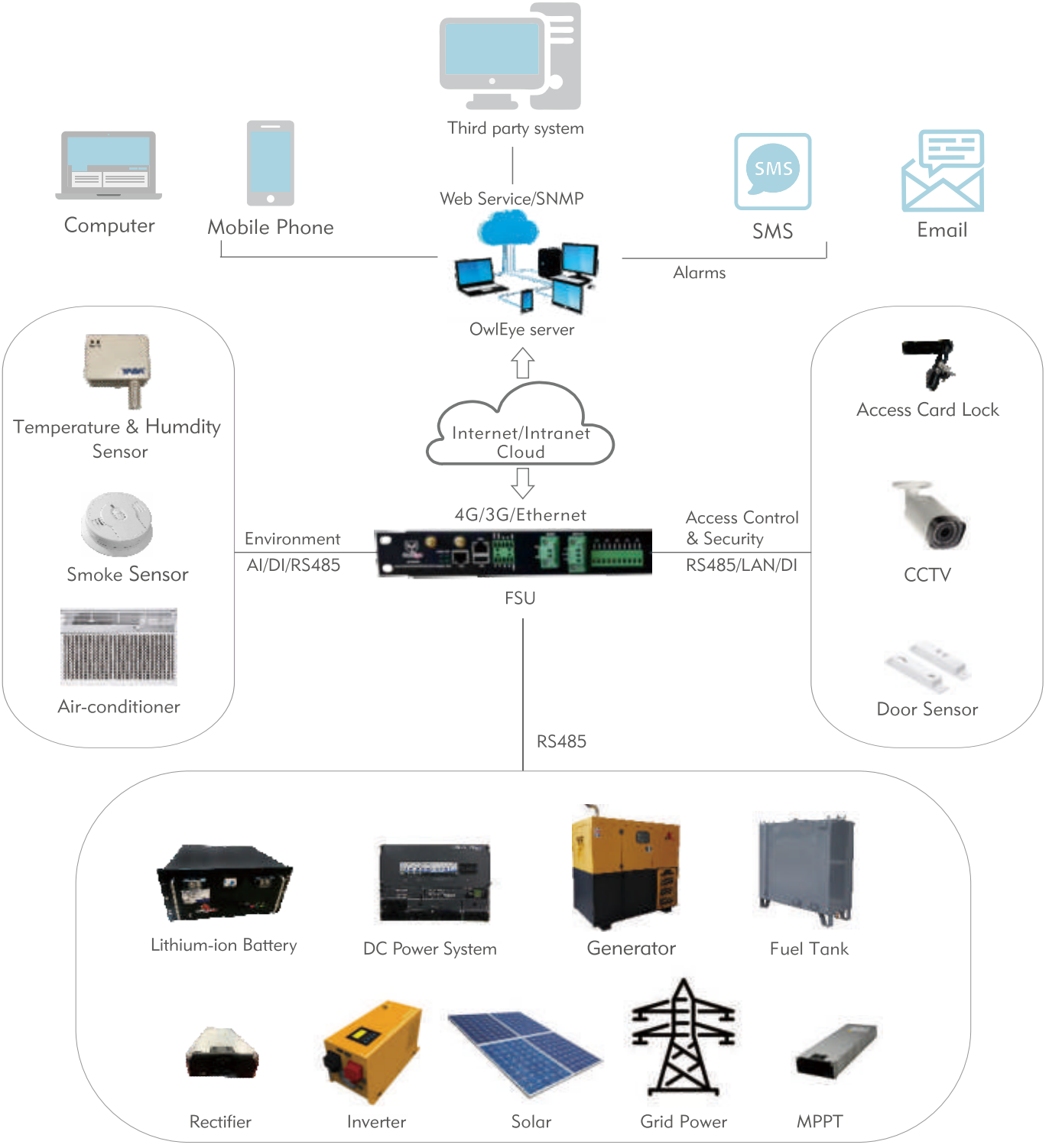
Better User Interface:
With updated user interface that incorporates data visualization, it provides users with better data interpretation with charts, dashboards, tables and so forth.

Compatibility:
Compatible with devices from multiple manufacturers to shorten the time on device integration in the platform.

Proactive Maintenance:
The proactive maintenance can increase asset reliability, extend asset lifetime and reduce the risk of downtime by functions in the platform like generator filter maintenance alarm, abnormal fuel level alarm, battery remaining backup time, lithium-ion remaining cycles, generator remaining runtime and next refuel date.

Report Management:
The platform offers types of reports including Energy Reports, Component Level Reports and Comprehensive Reports with the form of table, bar chart and line chart. By drilling down from root, to region and to sites, users can be aware of the KPI status. Meanwhile, custom reports can be generated to cater to users' demands.

Owleye Telecom Energy Monitoring System



Our OwlEye FSU supports multiple interfaces like RS232, RS485, AI, DI as well as DO.

Our Projects

Zain (Middle Eastern countries)

- 32 sites Hybrid Cabinet
- Outdoor Cabinet IP55, 42U equipped with 2000W DC Aircon

Algérie Télécom (Algeria)

- LRP45 LionRock diesel genset
- 1500 hours maintenance free system
- PV panel 300Wp total 42kW with cleaning robot

ENTEL (Chile)

- LR9D LionRock DC genset
- 2kW inverter for site AC load
- 2000L bunded integrated base fuel tank

Large capacity DC power systems (Philippine)

- 3 x 5000A Large capacity DC power systems
- 14 x 6000A Large capacity DC power systems
- 48VDC rectifier system

Telefonica (South America Country)

- 724 x EC5025 LionRock outdoor energy cabinets
- 48VDC rectifier system
- VRLA battery 8 x 12V 200Ah each site

Tonghu Data Centre (Huizhou, China)

- 12+1 x 2750kVA DCP rated at 11kV
- Dual hot standby PLC parallel master control system
- Dual fuel pumps in each of the four 40000L bulk tank

Ethio Telecom (Ethiopia)

- 2 x 2000kVA LionRock genset with enclosure
- Double container design, noise level of 80dBA@1m
- 200Ah/DC24V Dual starter battery system

Maldives - DataCage

- A fully integrated mobile data centre meeting tier II standard
- ICT server cabinets with dual power supplies

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