

# **NIGUS INTERNATIONAL**

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**Product & Solutions  
Catalogue**





# Welcome

NIGUS International is a high-tech enterprise that integrates Research and Development in the production, sales, and service of sustainable, renewable energy and lithium battery energy storage equipment.

With energy storage applications technology at our core, we provide our customers with products and solutions on the power generation side for utilities, power grid resources for distribution companies, power smoothing equipment for industry, critical infrastructure products for airports, schools hospitals as well as products for residential use.

Our products help to augment intelligent micro-grid systems. We provide mobile energy storage vehicles, intelligent power supplies (household energy storage, base station power supply) and much more. Nevertheless, based on the advances in electrochemical and power electronics technologies, NIGUS has integrated cloud computing, big data, artificial intelligence, and the internet-of-things (IOT) to empower the energy industry. We are committed to building a renewable energy industry ecology and trading platform. This is our product and solutions catalogue.


AC/DC  
Flexible  
Support



Smooth  
Renewable  
Generation



Intelligent A.I  
driven  
scheduling



Active Power  
Loss  
Reduction



On and  
Off grid  
Operation



Stable Line Loss  
Compensation



# 1. Intelligent Micro Grid

This is a high-efficiency and smart micro-grid system. Intelligent micro-grid integrates solar modules with LFP battery energy storage systems.

Intelligent micro grid integrate with LFP battery energy storage system. Bidirectional Inverter . charging pile. this is an high efficiency and smart micro-grid system, it can improve the convenient of charging and provide fast energy storage service, delay and optimisation of city power grids, and effectively solve the problem of land supply tension, long construction period.

It can improve the convenience of charging, provide fast energy storage service, optimise city power grids and effectively solve the problem of land supply tension, as well as long construction periods.

This system can be used for off-grid power requirements or imbedded power for communities and industrial parks. Our Storage system can be primed for hybrid input, which allows for greater flexibility in application.

It is primarily made up of 2 products:







### The Nigus Dome

The Dome is a flexible solution made for many purposes. It serves a multitude of applications like:

- Non-disrupted green energy
- Cold storage
- Office space
- Shop system
- Aquaponic food production
- Water pump and water storage
- Energy management system
- Battery storage



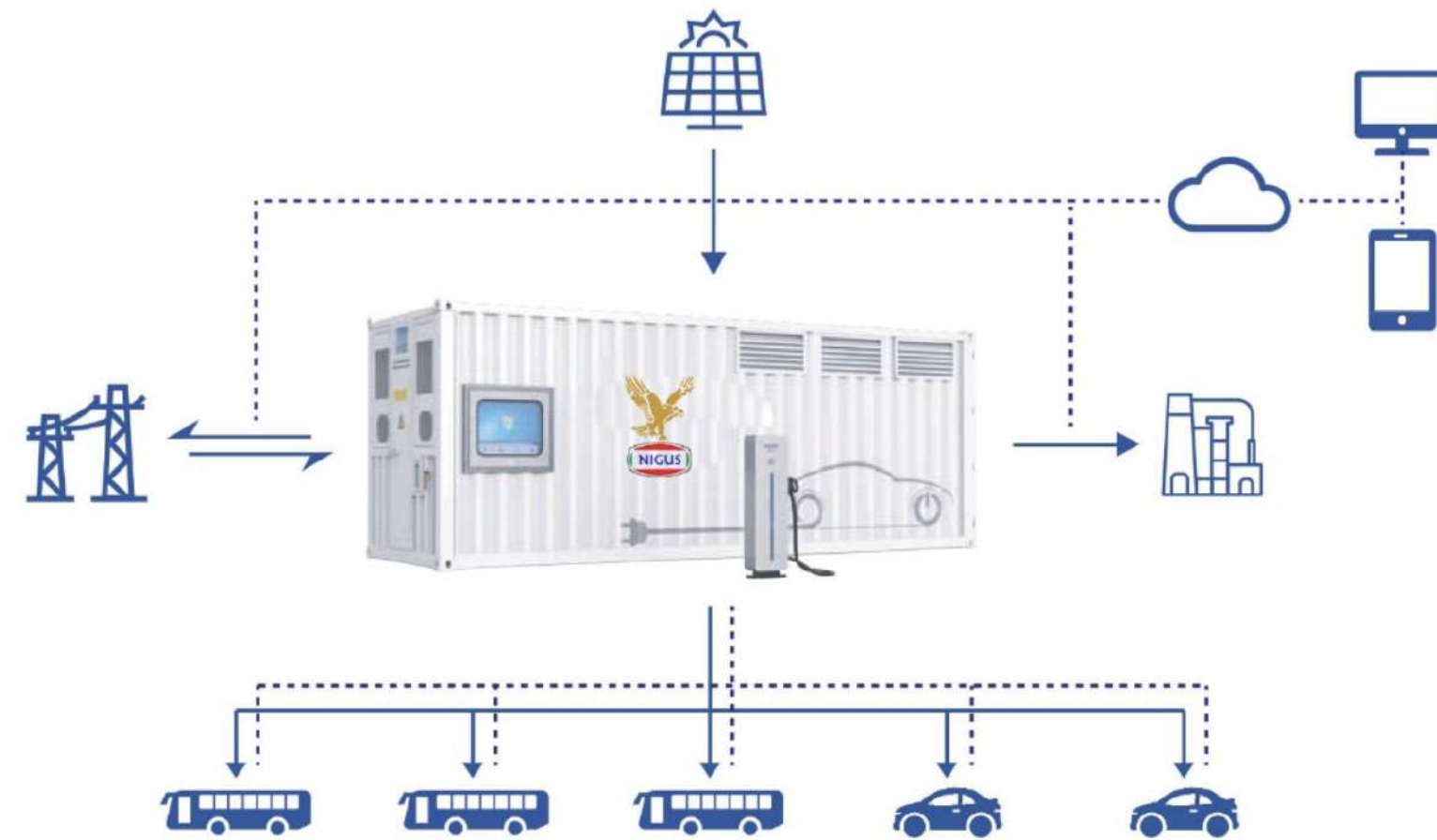
These are portable easy install retail solar products designed by Nigus to be of use because of:

- Compelling cost/benefit ratio
- All products are mobile
- Easy installation requires minimum efforts
- Cube technology provides a all-in solution for energy self-sufficiency and energy on demand
- Cubes can be adapted to specific requirements
- Cubes can be used for individual households, companies, farmers up to independent villages

### The Nigus Cubes (50-250kW/h)



## Application Drawing



- Realise coordinated control of distributed power and distribution network
- Peaking and valley filling by local micro-grid to suppress grid fluctuations caused by electric vehicle charging
- Improve power generation acceptance and reduce light rejection
- Solve the contradiction of capacity expansion and expansion of some power grids
- Realise the detection of low-voltage users in the station area and improve the power quality
- When the power grid collapses, it can be used as a black start power supply to quickly realise system self-recovery
- Realise the function of charging island island operation

## Interface Display: IEMS Intelligent Operation Cloud Platform for Microgrid



### Core technical innovation points:

- Group control and group adjustment strategy based on 104 protocol (AI algorithm)
- Intelligent bidirectional switch system (equipment) based on grid connection protocol
- Intelligent Operation Management Cloud Platform (Big Data)
- Intelligent power station container (equipment)

### 1. Power Intelligent Dispatching System:

- Algorithm model based on power generation battery capacity
- Algorithm model of peak and valley elimination based on grid electricity price difference
- AGC/AVC intelligent adjustment strategy

### 2. Power Grid Connection Distribution Management

#### System:

- Intelligent switch based on grid connection protocol
- Flow metering and billing model

### 3. Battery Energy Storage System (BESS):

- Charge/discharge intelligent control switch
- Battery BMS system



## Interface Display : IEMS Intelligent Operation Cloud Platform for Microgrid



### Core technical innovation points:

- Development of new intelligent charging pile (device intelligence)
- Intelligent Operation Management Cloud Platform (Big Data)
- New destination charge/discharge pile development V2G (device intelligence)
- Intelligent self-decision closed-loop algorithm (AI) based on user travel planning for intelligent charging and discharging)

### 1. Customer Order Management System:

- User registration, membership management, recharge
- Reservation, charging service, settlement, billing
- Value-added services

### 2. Billing System:

- Billing model algorithm
- Metering and billing data interface

### 3. Sales Management System:

- Sales event planning
- Rebates, points, coupons

### 3. Charging Station Equipment Management System:

- Equipment management
- Asset management

## Interface Display : IEMS Intelligent Operation Cloud Platform for Microgrid



### Core technical innovation points:

- Trend analysis of vehicle battery pack aging curve (algorithm model)
- Data analysis of vehicle battery pack characteristic index (big data)
- Optimisation of vehicle BMS input and output algorithms (device intelligence)
- Integrated pile with cell core balance repair function (device intelligence)

### 1. Testing Business Management:

- User registration, vehicle management
- Check appointment, check order, settlement, billing
- Value-added services

### 2. Vehicle Health Files:

- Analysis of aging curve of vehicle battery pack
- Vehicle inspection history, inspection report
- Repair records, evaluation reports


### 3. Testing Standard Management

- Definition of detection standard
- Test report template definition
- Model adaptation list



### Interface Display


**Cloud Platform.**  
**Operational Application Test Data**



**Battery Nanny:**

- During the charging process, through the detection of battery capacity, DC internal resistance, insulation, BMS, voltage, current sampling accuracy, SOC accuracy, etc.
- Provide battery health checkup reports and diagnosis suggestions to vehicle owners to ensure the safe driving of vehicle owners


**Mobile App.**  
**Owner Controlled Test Data**



**Battery Doctor:**

- According to the battery diagnostic report, when the battery needs further inspection, it enters the strong inspection link to conduct a comprehensive and in-depth inspection of the battery
- Perform battery maintenance according to battery detection

**MEMS.**  
**Local Maintenance Test Data**



**Battery Big Data:**

- Assessment of residual value of used car transactions
- The basis for insurance loss
- Data support for battery maintenance
- Basis of battery cascade utilisation



**Product Specifications**

| <b>System Type</b>          | <b>ESC-0250K - 0600H-120K</b>                       | <b>ESC-0500K - 0600H-120K</b>  |                               |                               |
|-----------------------------|---|--------------------------------|-------------------------------|-------------------------------|
| <b>General Data</b>         |   |                                |                               |                               |
| Rated AC power              | 250kW   | 500kW                          |                               |                               |
| Max AC power                | 275kW   | 500kW                          |                               |                               |
| Normal Grid Voltage         | 380Vac/50Hz(3 phase)                                |                                |                               |                               |
| Battery Type                | LEP   |                                |                               |                               |
| Dimensions (W*D*H)          | 6058*2438*2896mm                                    |                                |                               |                               |
| Weight                      | 13T   |                                |                               |                               |
| Cooling Off System          | Air Conditioning + Forced air cooling               |                                |                               |                               |
| Fire suppression system     | FM-200 extinguishment system                        |                                |                               |                               |
| Communication Interfaces    | Ethernet  |                                |                               |                               |
| Degree Of Protection        | IP54  |                                |                               |                               |
| Operating Temperature Range | 20°C~55°C   |                                |                               |                               |
| <b>Charger</b>              |   | <b>Battery</b>                 |                               |                               |
| Input & Output Channels     | 4-8 (optional)                                      |                                | <b>ESC-0250K - 0600H-120K</b> | <b>ESC-0500K - 0600H-120K</b> |
| Output Voltage Range        | 250V~750V   | Battery Life Capacity (BOL)    | 600kWh                        |                               |
| Max. output Current         | 250A (one channel)                                  | Max. Charge/ Discharge Current | 0.5C                          | 1C                            |
| Max Output Power            | 120kW (one channel)                                 | Cycle Life                     | >7000                         | >6000                         |
| System Login                | App   |                                |                               |                               |
| Payment Method              | Automatic billing, Electronic Invoice               |                                |                               |                               |
| Other Functions             | Remote control, Data management, Charging detection |                                |                               |                               |



## 2. On-Grid Solar (PV) Power Generation

These are on-grid solar power plants, ranging from 5MW to 500MW, represent a sustainable and scalable solution designed to meet the diverse energy requirements of different locations within a region. By harnessing the abundant sunlight, these solar facilities contribute to a cleaner and more environmentally friendly energy landscape.

The versatility of this approach allows for customisation based on the specific energy demands of each country. Whether it's addressing urban power needs, supporting industrial growth, or powering rural communities, the modular design of these power plants ensures adaptability to varying scales of demand. Additionally, the implementation of multiple power plants allows for a strategic distribution of energy resources, optimising efficiency and minimising transmission losses.

Furthermore, the integration of advanced technologies, such as smart grids and energy storage systems, enhances the reliability and stability of the overall power supply. This not only addresses the intermittency of solar energy but also enables better management of peak demand periods, ensuring a consistent and dependable power output.





**A Nigus Solar PV Farm (500MW+)**

## Hybrid Embedded Power

Coupled with the on-grid solar PV power generation farms, this is a hybrid utility power system for real estate development companies, communities and industries.

It provides a 24hr, sustainable power system that is cost effective and revenue generating in the long run, for the developer.





## 3. Off-Grid Hybrid Power

Introducing our revolutionary 100% off-grid solution platform tailored specifically for industrial-scale projects. With a robust design and cutting-edge technology, these projects offer self-sufficiency in power generation and storage, boasting capacities ranging from 5MWH to 12MWH. This innovative platform is engineered to cater to the unique energy demands of industrial market segments, ensuring a constant and reliable 24-hour peak power supply.

The adaptability of our off-grid platform allows for seamless integration into various industrial settings, supporting diverse manufacturing processes, heavy machinery, and continuous operations. This not only enhances energy efficiency but also mitigates the risks associated with grid dependence, providing a resilient energy solution for industries operating in remote or challenging locations.

Furthermore, our platform's intelligent energy management system optimises power usage, ensuring efficient allocation of resources and minimising waste. The integration of smart technologies enables real-time monitoring and control, allowing for proactive maintenance and troubleshooting, ultimately maximising the lifespan and performance of the entire energy system.



**Off-Grid Power (5-12MWH)**



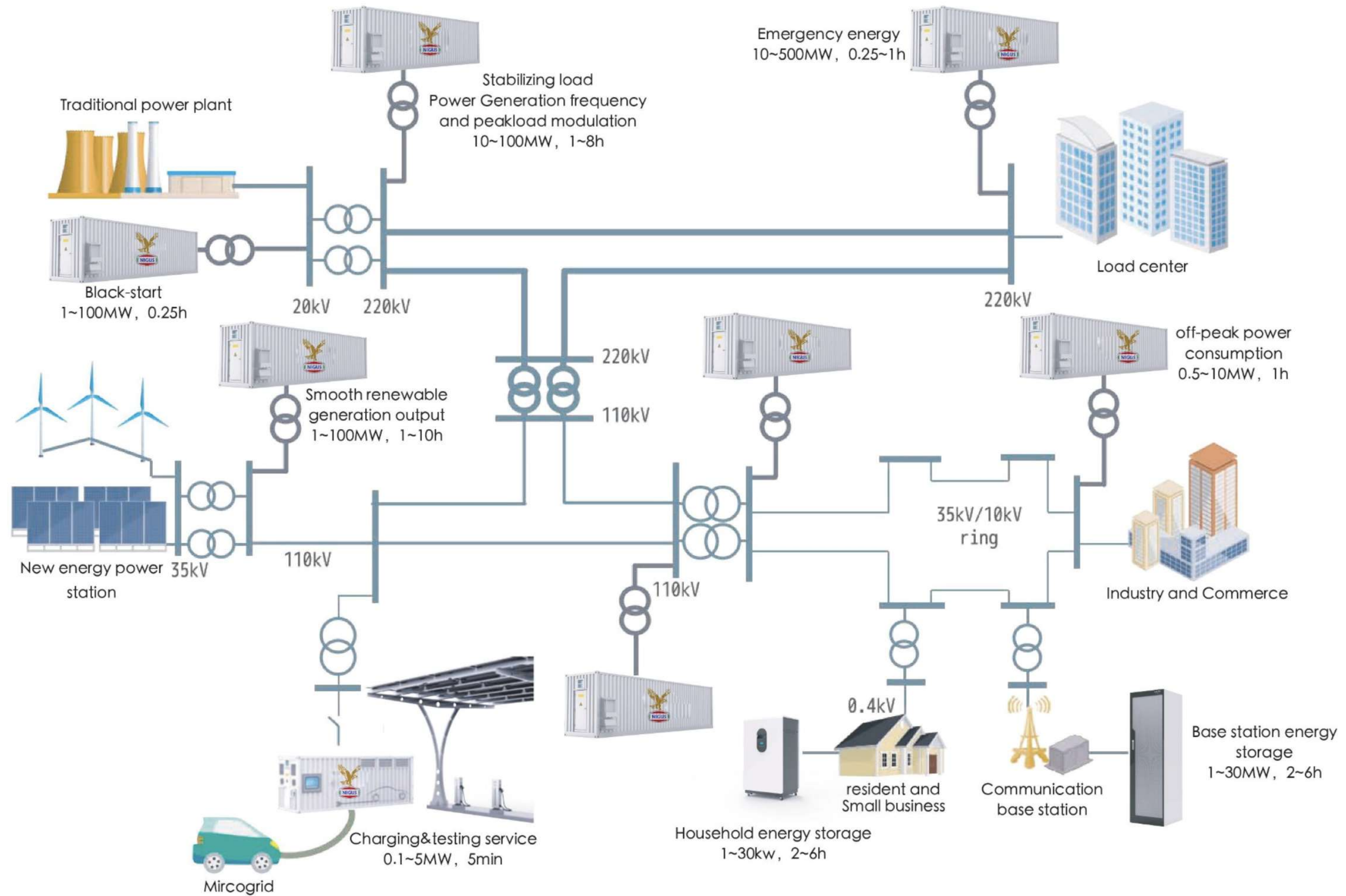
## 4. Battery Energy Storage System (BESS)

Introducing our cutting-edge containerised battery storage systems, each boasting a capacity of up to 5MW within a compact 40ft container. These state-of-the-art energy storage solutions are seamlessly integrated with our solar energy generation offerings, unlocking the full potential of renewable energy in a transformative way. Our commitment is to provide more reliable and cost-effective electricity, particularly in isolated grid and off-grid communities that would otherwise be dependent on expensive imported diesel for their electricity generation.

By storing excess energy generated by our solar installations, we guarantee a continuous and stable power supply, even during periods of low sunlight or high energy demand. This not only mitigates the need for costly and environmentally detrimental diesel generators but also contributes significantly to reducing carbon emissions and fostering energy independence.

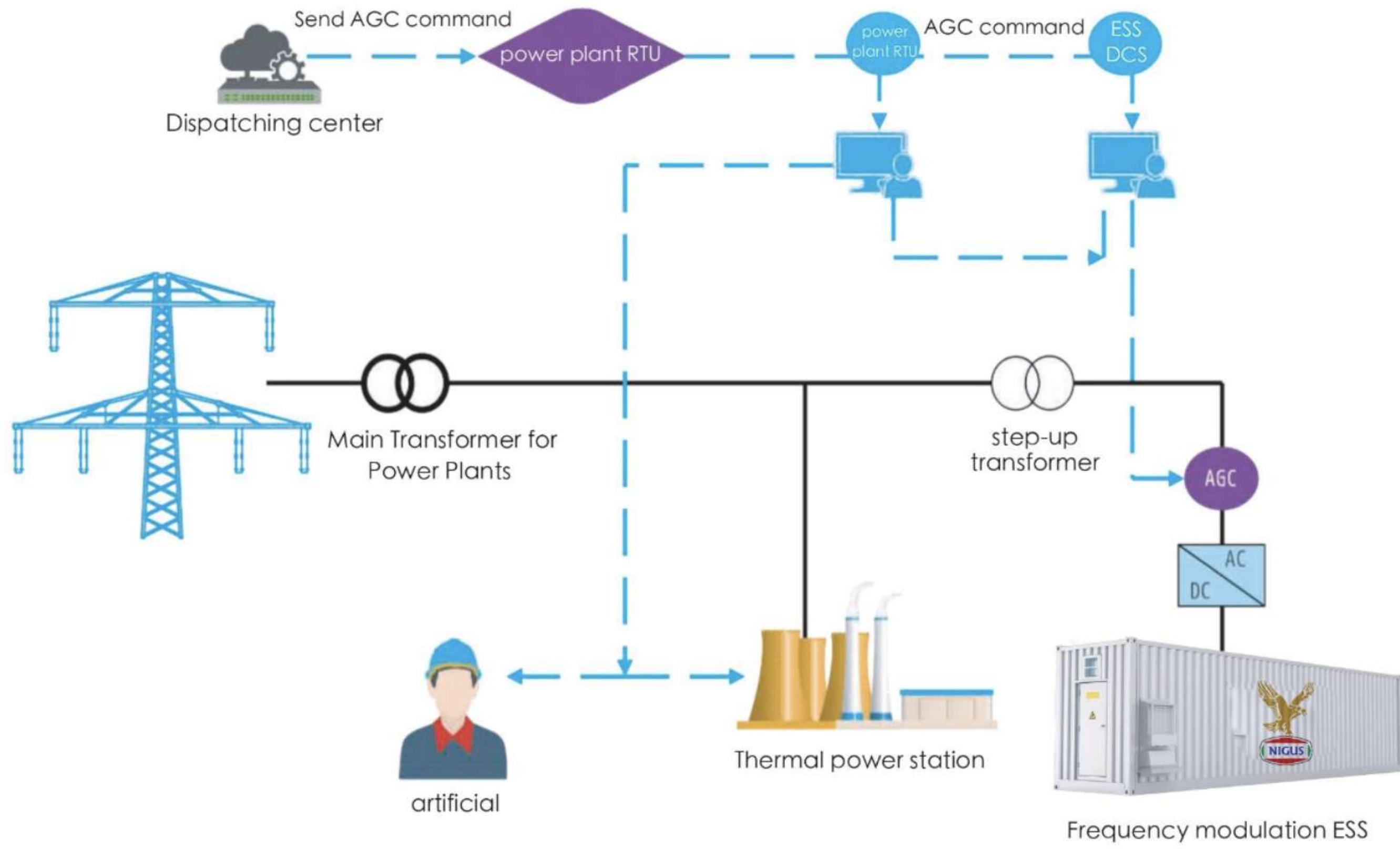
By efficiently managing power distribution and load shedding, these systems empower businesses and industries to maintain a consistent and reliable power supply, ensuring uninterrupted operations even in the face of fluctuations in demand or unexpected outages.

### Panoramic Solution





Generation Side: AGC Dispatching



Features

- High power lithium ion battery can realise fast charge and discharge
- The ESS has high response speed and high precision
- It adopts the standardised design of container and can be installed and put into operation quickly

Advantage

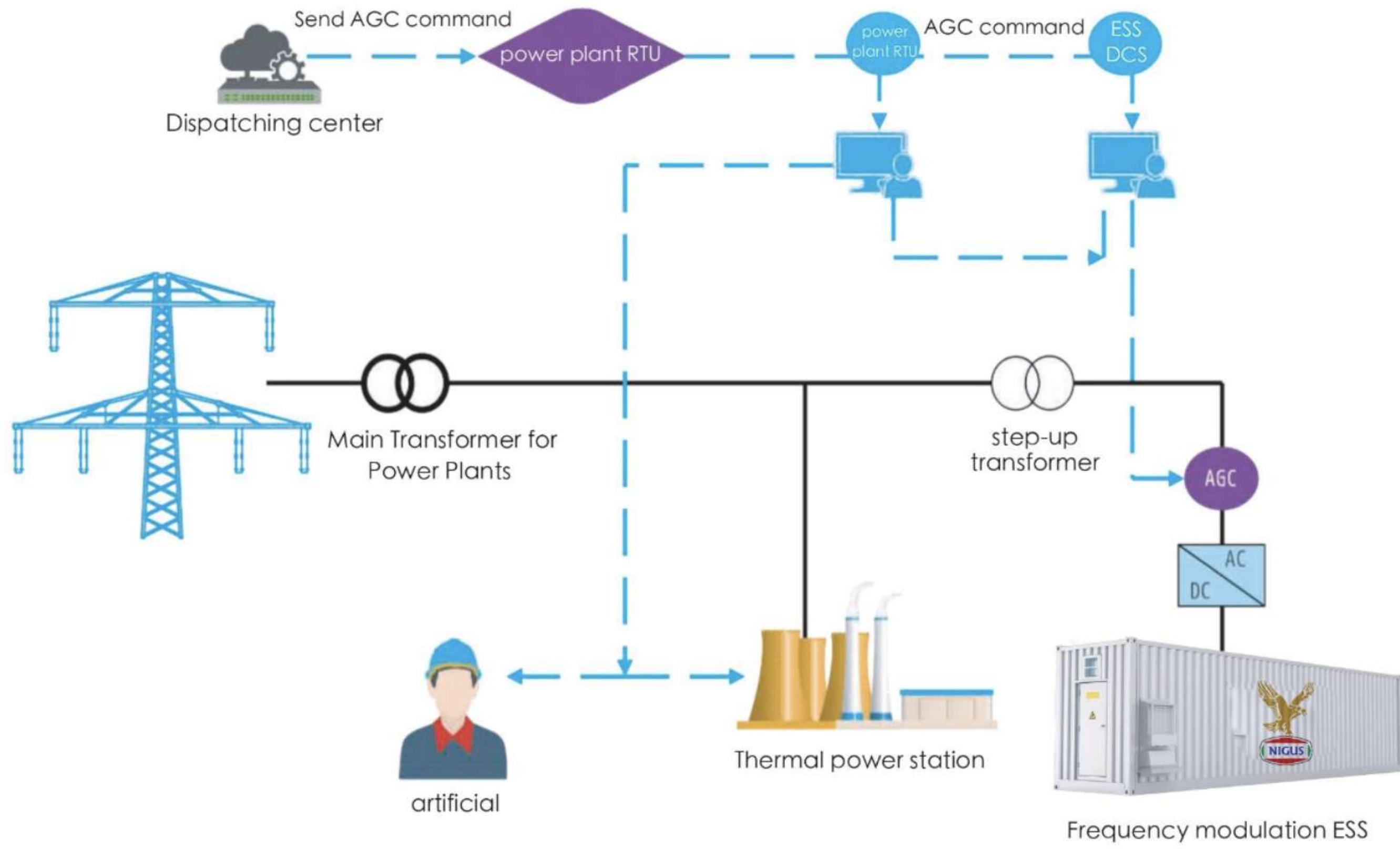
- The frequency modulation effect of energy storage is 1.7 times of that of hydropower units, 2.5 times of gas-fired units and 20 times of that of coal-fired units

Customer value

- Achieve the power regulatory assessment indicators and avoid fines
- Respond to scheduling instructions and get reward income
- Reduce unit loss and prolong generator life



### Generation Side: AGC Dispatching



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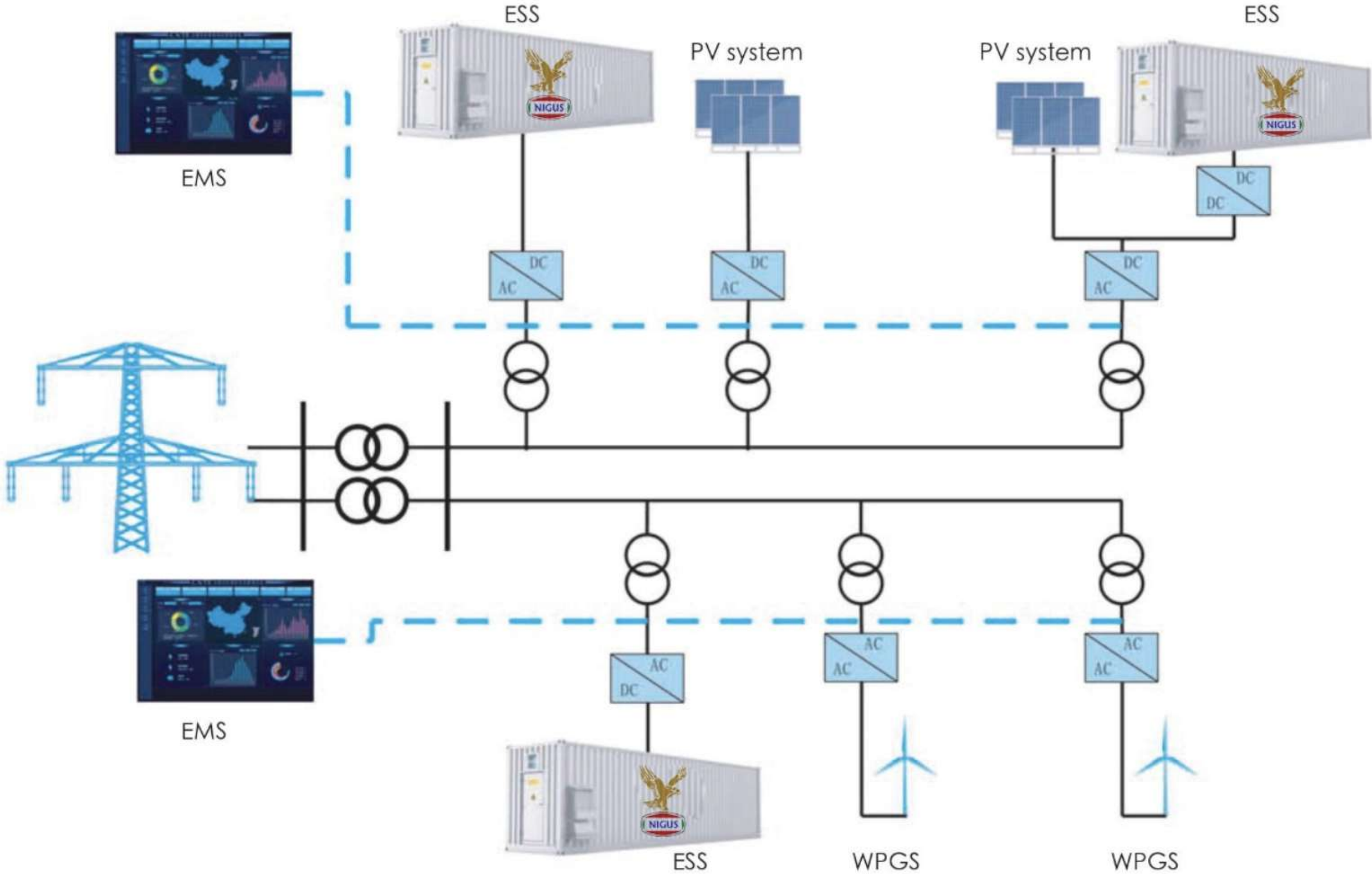
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**Customer value**

- Achieve the power regulatory assessment indicators and avoid fines
- Respond to scheduling instructions and get reward income
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### Generation Side: Frequency Peak-Load Modulation



**Feature**

- Wind and solar energy storage joint monitoring, real-time monitoring system status
- Follow up the plan and schedule, improve the good degree of users

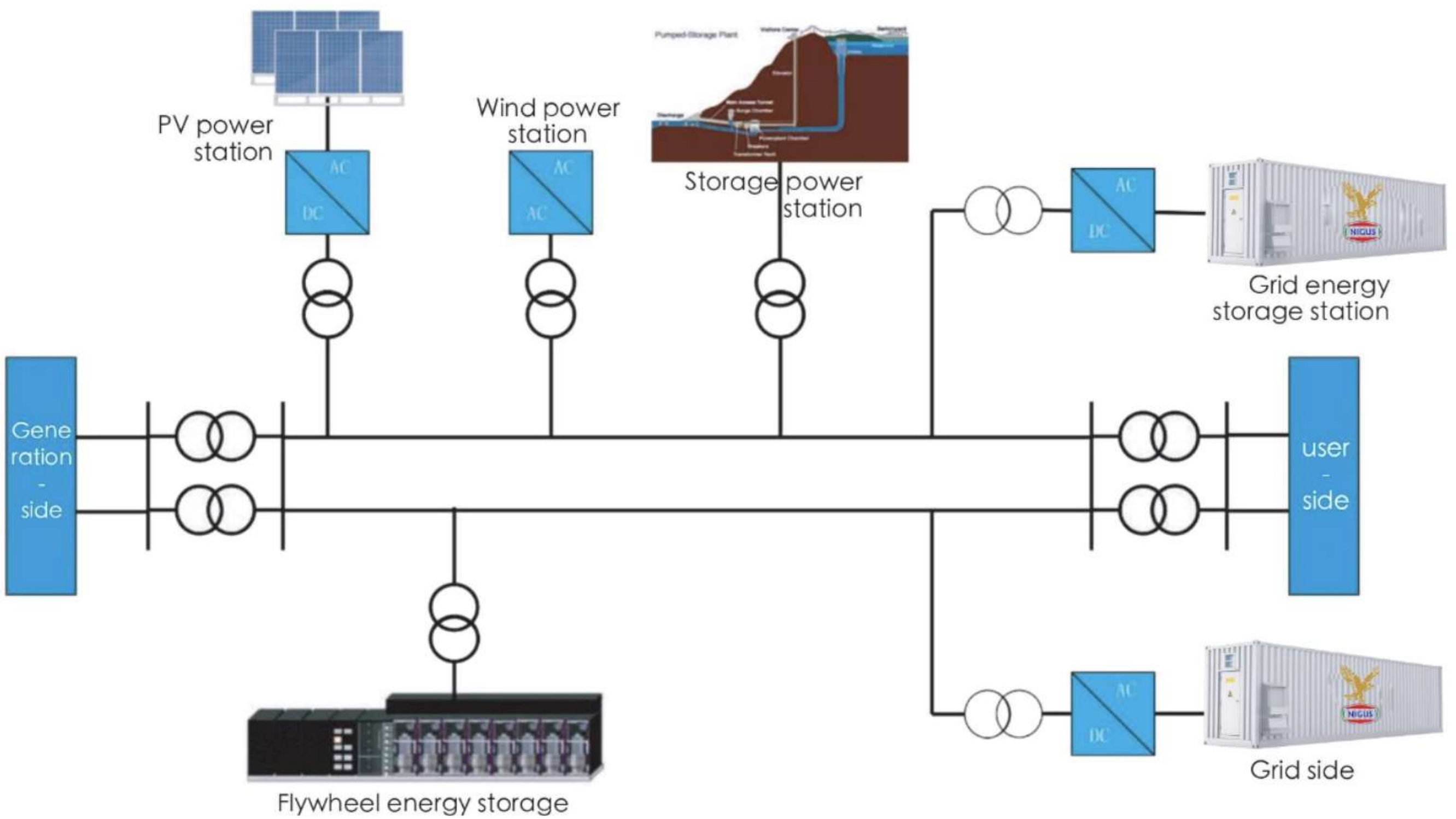
**Advantages**

- Comprehensive solution
- High response speed and high precision
- Intelligent control and remote monitoring

**Customer value**

- Achieve the power regulatory assessment indicators and avoid fines
- Respond to scheduling instructions and get reward income
- Provide system operation stability
- Improving the utilisation of renewable energy

### Generation Side: Frequency Peak-Load Modulation



**Feature**

- The charging and discharging period is preset by the main control unit of energy storage
- Discharge in peak period and charge in valley and normal period

**Advantages**

- Lithium battery has high energy density and high site utilisation
- Long battery life, high conversion efficiency
- Modular design, fast installation and operation

**Customer value**

- Peak load shifting, Saving electricity
- Reduce power consumption capacity, delay power expansion
- It can be used as emergency backup power supply to improve the reliability of energy consumption



Product Specifications

| Type   | ESS-0250K - 0600H-120K    | ESS-0500K - 0600H-120K         |                               |                               |
|--|---------------------------|--------------------------------|-------------------------------|-------------------------------|
| <b>System Parameter</b>  |                           |                                |                               |                               |
| Capacity   | 2.4MWh                    | 2.6MWh                         |                               |                               |
| Rated Charge Discharge Power   | 1.25MW                    |                                |                               |                               |
| Working Temperature  | -20 ~55 °C                |                                |                               |                               |
| Energy Management System   | All-In-One                |                                |                               |                               |
| Humidity   | ~95% (no condensation)    |                                |                               |                               |
| Cooling Mode   | Air Cooling               | Water Cooling                  |                               |                               |
| Altitude   | ≤ 4000m                   |                                |                               |                               |
| Noise  | <75dB                     |                                |                               |                               |
| Communication Interfaces   | CAN / Ethernet            |                                |                               |                               |
| Fire Fighting System   | All-In-One                |                                |                               |                               |
| Container Dimensions (W*D*H)   | 12192*2438*2896mm         |                                |                               |                               |
| Weight   | ~32T                      | ~34T                           |                               |                               |
| <b>DC Parameter</b>  |                           |                                |                               |                               |
| Rated On-grind Voltage   | 80V+-10%                  | 550V+-10%                      |                               |                               |
| Frequency Range  | 50 / 60Hz                 | <b>Battery</b>                 |                               |                               |
| Power Factor Range   | 1 (speed up) ~1 (lagging) |                                | <b>ESS-0250K - 0600H-120K</b> | <b>ESS-0500K - 0600H-120K</b> |
| Power Factor   | >0.99 (Rated Voltage)     | Voltage Range                  | 600 ~ 900Vdc                  | 900 ~ 1300Vdc                 |
| Overload Capacity  | 110%                      | Max. Charge/ Discharge Current | 0.5C                          | 1C                            |
|  |                           | Cycle Life                     | >7000                         | >6000                         |
| <b>*Customised solutions are provided according to customer requirements</b> |                           | Battery Type                   | LEP                           |                               |
|  |                           | Battery Management System      | All -In - One                 |                               |
|  |                           | Charging / Discharging Rate    | 0.5C                          |                               |





**Nigus BESS Container (2-12MW)**



## 5. Household Energy Storage

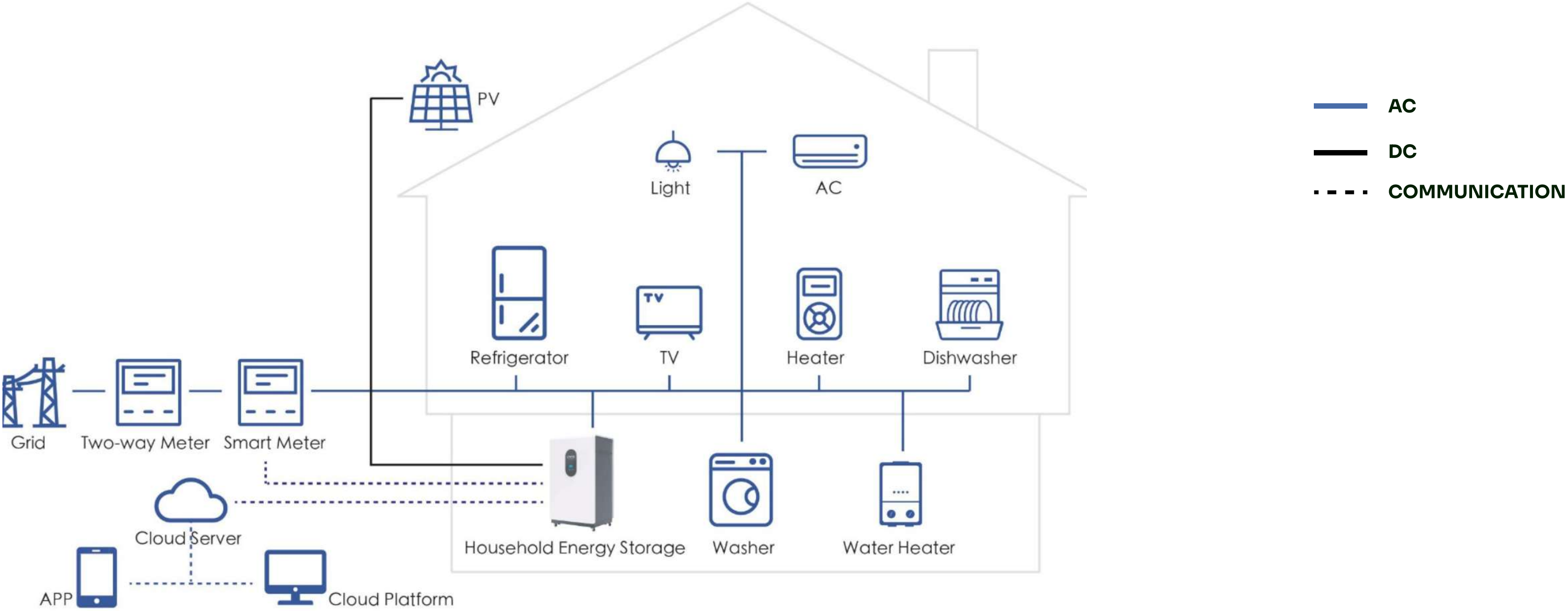
Introducing our portable fully self-sustaining home power solutions, a breakthrough in intelligent backup power products designed to redefine the concept of energy autonomy. Powered by advanced lithium batteries, these innovative solutions integrate hybrid inverters, sophisticated battery management systems driven by intelligent software, and augmented with photovoltaic modules.

The intelligence embedded in our battery management systems ensures optimal performance by monitoring and adjusting various parameters in real time. This level of sophistication enables adaptive charging and discharging cycles, extending the lifespan of the batteries and maximising overall system efficiency.

The intelligent backup power supply uses advanced lithium battery, combined with hybrid inverter, software management system and photovoltaic module system to form an intelligent small energy storage system.

Whether deployed as a reliable backup for households or as a self-sustaining power solution for remote base stations, our portable home power systems offer unparalleled versatility. They are both for home and commercial use.

### Application Drawing



- Realise the complete consumption of photovoltaic power generation
- Use as home emergency power supply/backup power supply/uninterruptible power supply
- Effectively protect the household's instantaneous high-power electricity requirements
- Provide home DC power application interface
- Realise the complete consumption of photovoltaic power generation
- Achieve the goal of photovoltaic self-use
- Conditional family peaking and valley filing application



**Product Specifications**

| <b>System Type</b>                     | <b>HES-03K-010H</b> | <b>HES-05K-015H</b> | <b>HES-10K-53H</b> |
|--|---------------------|---------------------|--------------------|
| <b>General Data</b>                    |                     |                     |                    |
| Nominal output power                   | 3kW                 | 5kW                 | 10kW               |
| System Capacity                        | 10.24kWh            | 15.36kWh            | 53.76kWh           |
| Max. Charge / Discharge Power          | 3kW                 | 5kW                 | 10kW               |
| Nominal Voltage                        | 220Vac              | 220Vac              | 220Vac / 380Vac    |
| Nominal Current                        | 13.6A               | 22.7A               | 45.4A              |
| THDi (@ nominal power)                 | <3%                 |                     |                    |
| Power Factor                           | -0.8 ~ 0.8          |                     |                    |
| Nominal Grid Frequency                 | 50Hz/60H            |                     |                    |
| Max Photovoltaic Conversion Efficiency | 97.6%               | 97.6%               | 98.5%              |
| Operating Temperature Range            | -20°C-50°C          |                     |                    |
| Dimensions (W*D*H)                     | 800*600*1000mm      | 800*600*1300mm      | 800*800*1900mm     |
| Weight                                 | ~200KG              | ~250KG              | ~750KG             |
| <b>DC Side</b>                         |                     |                     |                    |
| Max. Input Power                       | 4.6kW               | 5.6kW               | 13kW               |
| MPPT Voltage Range                     | 120 ~ 550V          | 120 ~ 550V          | 150 ~ 550V         |
| Max. Input Power                       | 550V                | 550V                | 550V               |
| Max. Input Power                       | 14A/S               |                     |                    |
| Input Channels / MPPT Channels         | 2/1                 | 2/1                 | 2/1                |

\*Customised solutions are provided according  
to customer requirements

**Product Specifications**

| System Type                     | HES-03K-010H                                | HES-05K-015H | HES-10K-53H     |
|---------------------------------|---|--------------|-----------------|
| <b>AC Output (Backup Power)</b> |   |              |                 |
| Nominal output power            | 3kW   | 5kW          | 10kW            |
| Nominal Output Voltage          | 220Vac                                      | 220Vac       | 220Vac / 380Vac |
| Automatic Switching Time        |   | <15ms        |                 |
| <b>Battery</b>                  |   |              |                 |
| Battery Type                    |   | LEP          |                 |
| Nominal Voltage                 | 51.2Vdc                                     | 51.2Vdc      | 224Vdc          |
| Voltage Range                   | 54~58V                                      | 42~58V       | 100~336Vdc      |
| Cycle Range                     |   | >5000        |                 |
| Charge / Discharge Current      | >0.3C (Nominal) / 0.5C (Forced Air Cooling) |              |                 |



**Nigus Household Energy Storage**





# Configurations

All power needs are flexible and subject to a Nigus power audit.

These are some recommended configurations for various applications and needs.



### Residencies / Homes

- Off grid solar power (small)
- Household Battery Storage System
- Smart Management System
- Off site remote monitoring System



### Small Businesses / Office

- Off grid solar power (medium)
- Household Battery Storage System
- Smart Management System
- Off site remote monitoring System



### Agricultural Farm

- On-grid solar power / Hybrid
- Solar irrigation system
- Containerised Battery Storage System
- Smart Management System
- Off site remote monitoring System



# Configurations

All power needs are flexible and subject to a Nigus power audit.

These are some recommended configurations for various applications and needs.



### Schools / Institutions

- Off grid solar power (medium)
- Medium Battery Storage System
- Smart Management System
- Off site remote monitoring System



### Hospitals / Health Centres

- On-grid hybrid solar power (Medium-Large)
- Large Battery Storage System
- Smart Management System
- Off site remote monitoring System



### Agricultural Farm

- On-grid solar power / Hybrid
- Solar irrigation system
- Containerised Battery Storage System
- Smart Management System
- Off site remote monitoring System



# Configurations

All power needs are flexible and subject to a Nigus power audit.

These are some recommended configurations for various applications and needs.



**Telecoms Towers**

- Off grid solar power (Medium - Large)
- Medium - Large Battery Storage System
- Remote monitoring & Management



**Mining Centres**

- Off-grid solar power (Large)
- Large Battery Storage System
- Smart Management System
- Off site remote monitoring System



**Water treatment / Processing Facilities**

- On-grid hybrid solar power (Large)
- Large Battery Storage System
- Smart Management System
- Off site remote monitoring System



# Configurations

All power needs are flexible and subject to a Nigus power audit.

These are some recommended configurations for various applications and needs.



### 12 Story Building

- Integrated hybrid solar power (Large)
- Medium - Large Battery Storage System
- Remote monitoring & Management



### Industrial Manufacturing Plant

- Off-grid / On-grid hybrid solar power (Large)
- Large Battery Storage System
- Smart Management System
- Off site remote monitoring System



### Hotel / Resort / Hospitality Center

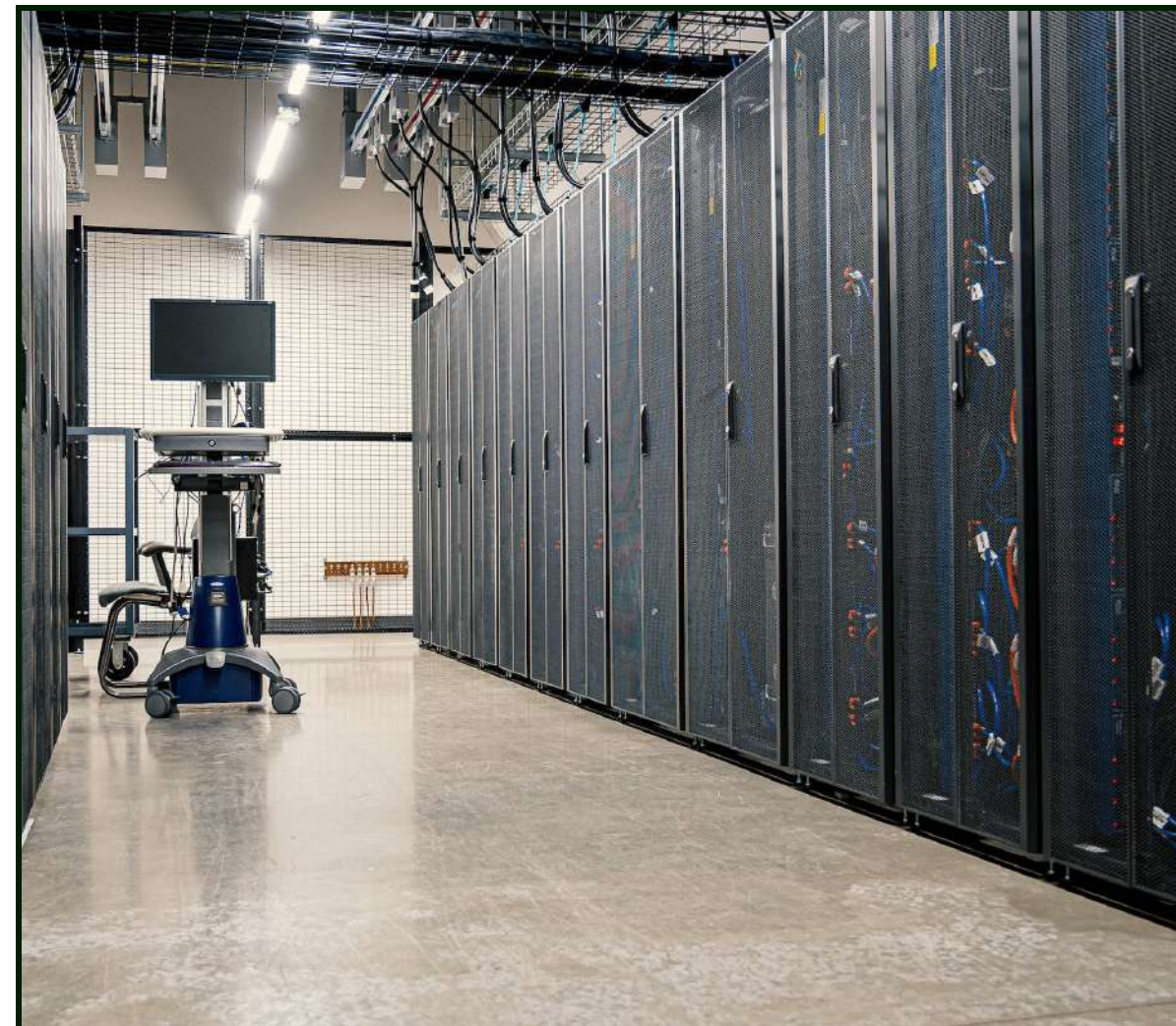
- On-grid hybrid solar power (Medium - Large)
- Medium - Large Battery Storage System
- Smart Management System
- Off site remote monitoring System



## Configurations

**All power needs are flexible and subject to a Nigus power audit.**

These are some recommended configurations for various applications and needs.



### **Data Centres**

- Integrated hybrid solar power (Large)
- Medium - Large Battery Storage System
- Remote monitoring & Management



## Solutions Footprint



### Ningde CATL Technology Building Intelligent Micro grid Station 250kW/500kWh

- Solve the problems of clean energy supply and cost reduction through PV power generation
- Solve the problem of expensive charging and power expansion through energy storage system
- Solve the anxiety problem of electric vehicle mileage through DC fast charging
- Solve electric vehicle safety concerns through battery testing



### JinJiang 30MW / 108MWh

- The Jinjiang project is the largest grid-side lithium-ion battery energy storage power station in China. The energy storage system integration (battery system + PCS + EMS) is completed by Ningde era and Fujian era nebula. Up to 12,000 times.

On January 15, 2020, the Jinjiang project passed the power grid test and was verified to be successfully connected to the grid at 9:24. The smooth integration of the project marked the national "Thirteenth Five-Year" Smart Grid Technology and Equipment Project undertaken by Times Nebula and Ningde Times. 108MWh-level new lithium battery energy storage technology development and application" was successfully demonstrated.



## Solutions Footprint



### IoT Center Demonstration Station (Mawei)

- This project uses a 25-foot custom container integration, 2 energy storage converter PCS equipment, 2 4 channel bidirectional DC converters, 2 AC power distribution cabinets (including isolation transformers), 3 battery cabinets, and 8 150KW/ 200A single gun charging pile and other major equipment and related supporting devices.



### Hospital Quirónsalud Córdoba - Spain

- Photovoltaic solar power infrastructure and battery storage system installation for the whole facility.



## Solutions Footprint



### 250kW/500kWh Shanghai Intelligent Charging Station

- 50KW AC-DC Converter + 6 Channel 120KW DC/DC Converter (Connected to Charging Pile) + 500KWh Lithium Battery System



### Mawei Bus Charging Station

- This project uses a 20-foot standard high-cabinet container, integrates 2 energy storage converter PCS equipment, 2 4 channel bidirectional DC converters, 2 AC power distribution cabinets (including isolation transformers), 2 battery cabinets, 8 units 150KW/200A single gun charging pile and other major equipment and related supporting devices





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