Smart Energy Service System and Application

- NARI Group Corporation

2019/5
Energy Transformation Trend

1. Customized consumption
2. Diversified forms
3. Market-oriented
4. Distributed supply
Smart Energy Service System Platform and Application

It connects the power grid (Large-scale power grid, micro grid), flexible load, distributed power generation, distributed energy storage, other user-side intelligent equipment. It guides and regulates the power generation, power consumption curve through the aggregation of intelligent equipment and the marketization means, so as to meet the grid adjustment demands such as clean energy consumption, peak load shifting, frequency regulation.
System and Platform - Micro-grid

Renewable Energy Systems (RES)

- Solar panels (PV)
- Wind turbines
- Smart meters
- Controllable adjustable loads
- Electric vehicles

Flexible Loads (EV & Energy Storage)

- Wireless communication
- Remote control capacitor
- Distributed operation control
- Remote control switch
- Substation
- Energy storage battery
- Voltage control

Micro-grid Operation

Distributed operation control
Remote control switch
Remote control capacitor
Energy storage battery
D-IoT is composed of cloud, net and terminal. It includes intelligent sensing, edge computing, model protocol, and network information security.
System and Platform - Storage cloud of energy

It uses new information technologies such as cloud, big data, IOT to build an energy storage platform, and realizes energy optimization and deployment such as clean energy consumption, fragmented resource utilization of energy storage and peak load shifting.

- Use efficient electricity, cheap electricity, green electricity
- Boost the development of electric vehicle, distributed photovoltaic, and other industries
- Support peak load shifting, reduce the investment of distribution network and increase flexible load
- clean energy consumption, response to the demand of fragmented and distributed energy
- Better service, more users, more flow
Total Solution of Micro-grid

NMC1000 micro-grid energy management system

NMC8100 micro-grid intelligent operation controller

NMC8608 micro-grid station territory stability controller

Independent micro-grid

Energy management level

Operational control level

Local control level

Diesel generator controller
Energy storage bidirectional converter
PV grid-connected inverter

Fuel generator
Energy storage system
PV system
Dynamic reactive compensation
Important load
Normal load

NMC8661 diversified load controller
NMC system micro-grid control and protection device
Intelligent Terminal

Main Terminal Products

- DTU
- Smart Meter
- Distribution Transformer Terminal
- Fault Indicator
- Stability controller
- Diversified load management and control devices
- Micro-grid connection interface unit
Terminals and Application-Orderly charging

According to the analysis of user's demand for charging operation, in order to meet user's charging application in different scenes and ensure the convenience, efficiency and reliability to orderly charging activities, we summarize the following four business scenes.

- APP real-time charging application (default)
- APP booking charging application
- APP local charging application
- Charging application for abnormal network
Terminals and Application-Green energy trading

- By analyzing the supply situation of green energy and the energy utilization situation of the side (energy storage and charging pile), the electricity purchase plan of green energy has been put forward.

- The trading center manages the trading contracts and plans, and carries out the selling strategy through the green energy supply.

- The trading center shall settle the purchase/sale of electricity on a monthly basis.
1. System and Platform
2. Terminals and Application
3. Typical Cases
4. Profile of NARI
Energy service system

National Key Project "Demand- Supply Friendly Interaction System between Urban Users and Grid"

**Project Type:** intelligent residential district

**Project Features:** Construct distributed PV, energy storage systems and electric vehicle charging facilities in its public areas, make energy saving transformation for street lamps and monitor power supply and distribution facilities to realize integrated energy monitoring and optimal management of public areas.

**Construction mode:** user side intelligent construction + energy management system.
Wind/PV/Storage Micro-grid (Island EMS) in Weichang, Chengde

**Project Features:** PV power capacity of 52kWp; wind power capacity of 60kW; lithium-iron battery capacity of 128kWh; load supply for a 42-household village located at the end of the supply line.

**Technical Features:** on-grid/off-grid seamless switching; microgrid exchange power control; off-grid stability control, etc.
Micro-grid Operation and Control System
EV Charging & Battery Exchange Facilities - Fast Charging Station in Highway Service Area

**Project Capacity:** more than 50 electromobile fast charging stations in service areas along Beijing-Shanghai Expressway.

**Project Features:** complete coverage of Beijing-Shanghai Expressway to ensure EV inter-city travel.
Profile of NARI

- **Employees**: With over 17,000 employees and covering 1,000,000 m² area.
- **Market Value**: Total market value of 11 billion USD and increased 65 times since listed in SSE.
- **Revenue**: FY 2017 revenue 5.53 billion USD.
- **Patents**: 2992 International and National Patents
- **Industry Standards**: Leading 15 International Standards and 112 National Standards
- **Ranking**: Ranked NO.2 in National Enterprise Technology Center Evaluation
Business Scope

- Intelligent Transmission
- Intelligent Dispatch
- Smart Power Devices
- Electric Railway
- Green Ports
- Intelligent Distribution
- Intelligent Transformation
- Intelligent Power Consumption
- Rail Transit Automation
- Hydroelectric Power Automation
- Intelligent Railway Transportation
- Automation
Thank you !