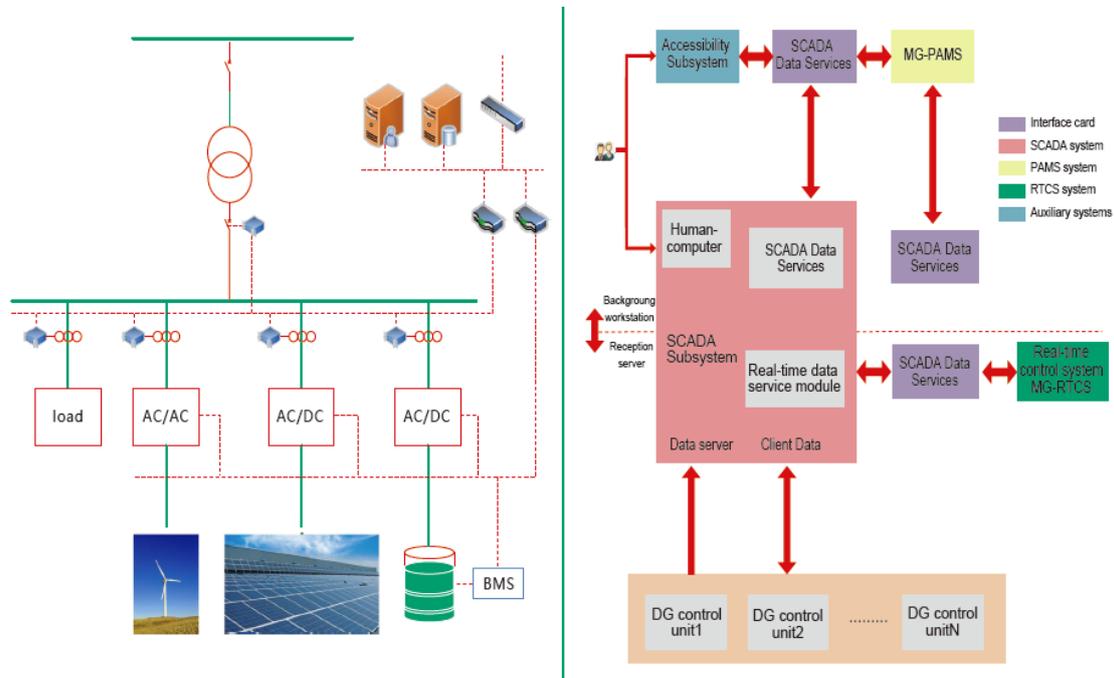


Micro-Grid solutions

As the development direction of future grid, micro-grid plays an important role in improving the energy supply efficiency, reducing losses, providing convenient and efficient renewable energy access control technologies. Rely on the leading superiority in energy storage field, Shoto research and jointly develop micro-grid control technology with the Institute of Electrical Engineering of Chinese Academy of Sciences, and the micro-grid solutions adapt to the needs of domestic and international market development has been developed.

The system supports multiple distributed energy connect to the grid, with new energy forecasting capabilities and fast isolation function which minimizes impact on power grids. It also has grid-connecting/isolated operation function; Plug and Play function; seamless switching function; and equipped with energy storage system to support peak load shifting function to improve power supply reliability; possess efficient energy management system to improve the comprehensive utilization of energy.



The core of Shuangdeng micro-grid solutions is micro-grid control system, which has following functions: quickly separate when mains supply or micro-grid breakdown; relay protection of isolated micro-grid operation; accession and regulations of micro-grid components; optimization of renewable energy access, and application problems of multiple energy storage technologies for different demands.

The key technologies include ark of the micro-grid gateway interface; stability control of micro-grid; Hybrid Active Power Filter; monitoring computer systems of micro-grid; monitoring system software of micro-grid; control strategies and energy management system of micro-grid.

Technical Features and Advantages:

⊙ PCC (Programmable Computer Controller) fast switching system, which fills up a

number of technology gaps. As the gateway of whole micro-grid and mains supply connection point, the current disconnecting time can be achieved in 3ms;

◎ For different application scenarios, micro-grid relay protection devices are designed with grid-connecting/isolated operation and protection models(automatically switched according to system commands), and have instantaneous protection function, Three-phase current protection function, manually open and close function, to keep the micro-grid operate steady;

◎ PCS system ensures efficient energy management systems and controls;

◎ With new energy generation forecasting system, the photovoltaic solar power station output power can be predicted 10 minutes ahead of schedule, which can solve the problem of new energy's instability and bad control of randomness.