Huadian Hangzhou National Distributed Energy Experimental Center Micro - Grid Solution

SIEMENS
Ingenuity for life

Project challenge

The project integrates a variety of distributed energy sources such as electricity, gas and heat. It is the most complicated microgrid laboratory project in China. The technical standard is complicated, the operation control is difficult and the electrical performance index is high.

Contains:

PV：300kW ,Combustion engine:700kW

Lead-acid PCS: Pn:50kW ， Capacity： 100kW/h

Lithium PCS: Pn:50kW ， Capacity： 100kW/h

Siemens DES solution

SpectrumPower MGMS Distributed Microgrid Management System: Solar, Energy Storage, Natural Gas Coordination and Microgrid Energy Management..
Key Technologies:
1) Micro-grid automatic operation control logic development
2) Equipment health and controllable status monitoring
3) Power generation forecasting, load forecasting

Project outcome
Technical indicators:
1) with the ability to automatically switch off and off the grid and black start.
2) In the off-grid state can be self-regulating micro-grid state.
3) According to the factory power consumption in real time to adjust the distributed energy output ratio, to achieve the best economic system, the most stable operation.
4) Develop power generation plans based on local weather forecast information.
5) Smoothing filter function, because the photovoltaic power generation affected by the weather, so through the energy storage and gas turbine to the impact of photovoltaic fluctuations to the minimum micro-grid.

Economic indicators:
1) The entire micro-grid can be remote start / control, and automatic adjustment mode, micro-grid only 1 person can solve all the problems on duty.
2) According to the user's electricity consumption and different distributed energy price indicators, the development of the optimal price of micro-grid operation plan.

The operating state of microgrid after the intervention of DES
1) Micro-grid automatic logic operation, you can operate from the manual operation, the system will automatically according to the power state and the battery state to automatically adjust the current charge or discharge.
2) The normal operation of the system for the grid running state, the system is stable operation is guaranteed, while smoothing the filter function will also minimize the impact of micro-grid fluctuations.
3) Equipment health monitoring so that micro-grid into a smart micro-grid, to keep abreast of all network equipment status, to ensure adequate storage capacity of the discharge width.
4) Power generation forecast Regular calculation of photovoltaic, energy storage and gas turbine, arrange the next generation of power generation plan, so that the operator timely decision, whether to manually adjust to reduce unnecessary load.