

Research Report on Chinese Smart Grid Industry, 2010-2011

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Abstracts

Smart grid, also called “electric grid 2.0”, refers to intelligentized electric grid. Based on the integrated high-speed bidirectional communication network, it realizes reliability, safety, economical effectiveness, high efficiency and environmental protection by applying advanced sensing and measuring technologies, equipment technologies, control measures and decision support system technologies. It is featured with natural repair, resistance to attack, permission of the access of various generation forms and participation of users, etc.

The smart grid industry mainly has the following characteristics: firstly, a wide range of participants. Besides original manufacturers of traditional electric grid and electric equipment and technical service providers, there are also a large number of enterprises for the manufacture of IC, communications equipment, software and electric appliances and the development of distributed power. Secondly, great emphasis on the R&D. Technology R&D occupies a large proportion in the products and services of enterprises. The volume of R&D employees (scientists, engineers and technicians) takes up a large proportion in the total employee number. Thirdly, related products have high technology content. They belong to high-tech products closely integrated with modern communications technology, semiconductor technology, information technology and electric technology.

The smart grid industry usually refers to the aggregation of enterprises and organizations engaged in the equipment manufacture, product R&D, technical services, project construction, power operation and value added services centering on smart grid construction as well as the interrelation of these enterprises and organizations. The smart grid industry reflects the integration of the power industry and information industry under the background of industrial and informationization integration. The smart grid

industry covers the R&D and manufacture of intelligent electric facilities, electric system automation and the R&D of control technology, R&D of electric information technology, R&D of electric communications technology, operation of smart grid, development of value-added services and R&D and manufacture of smart electric appliance terminals, etc.

Chinese smart grid has its own features. It is regarded as the strong smart grid based on ultra-high voltage network by the State Grid Corporation. Thus, it is forecast that the investment in Chinese smart grid will mostly concentrate in the power transmission side, in contrast to the investment of USA which concentrates in the power distribution side. Moreover, China will probably enlarge the storage and access of the power generated from renewable energy.

Based on technology, the smart grid industry can be divided into power generation, transmission, transformation, distribution, consumption and dispatch. Every segment of the smart grid has some changes and technical innovations upon the traditional electric grid.

In China, the State Grid Corporation with resource and technology advantages will lead the development of Chinese smart grid. The standards and plans formulated by the company are expected to be subsumed in the national standard and plan. In June 2010, the State Grid Corporation issued the Smart Grid Technology Standard System and the Research and Development Planning of Critical Equipment for Smart Grid. The sub-plans of provincial subsidiaries under the State Grid Corporation will also be released successively.

Presently, the intelligentization investment in China occupies 5%-7% of the total investment in electric grid. According to the planning of the State Grid Corporation, the intelligentization investment will occupy 12.5% of the total in the coming one decade. It is estimated that this proportion will rise gradually and reach 14%-15% by 2020.

The major regions receiving investment for smart grid construction include densely populated and economically developed East China, Central China and North China. The aggregate investment in these regions will account for over 85% of the total.

In China, a large proportion (over 80%) of the investment is input into the segments of power consumption, distribution, transformation and communications. In the segment of power consumption, the funds are mainly for the construction of consumers' information collection systems, automatic meter reading systems, electric quality

monitoring systems and charging stations. As electric grid terminal users cover a wide area, they will demand a huge investment. In the segments of power distribution and transformation, the investment is mainly used in the construction of power distribution automation systems and smart substations.

The ultra-high voltage and DC power transmission is the guarantee of the strong grid. It will acquire stable and sustainable development instead of explosive growth. As the future development direction, the DC power transmission shows high promise. The technology and fund barriers of ultra-high voltage and DC power transmission and transformation are relatively high, so the competition in this sector is not so intense.

Flexible power transmission technology has a broad application scope. It will cover the segments of power generation, transmission, transformation, distribution and consumption (for energy-consuming industries like metallurgy and coal). Presently, flexible power transmission equipment has low penetration rate in the electric grid, but it assumes bright prospects.

With high technology content, new energy converters and pumped storage power stations have great development potential.

In the coming 5-10 years, the smart substation and distribution network automation will usher in the peak construction period. Tens of thousands of substations remain to be reconstructed. Moreover, the distribution network automation construction will also be initiated in major cities. It is forecast that the total market scale in the two fields will exceed CNY 10 billion annually. Besides, monitoring equipment and electronic transducers will also benefit from that. However, the competition on the market will be quite intense.

In terms of power distribution, energy-economic transformers and amorphous alloy transformers of S11 and above grades will be adopted as the major means for energy saving of the electric grid. As to power consumption, the smart meter and charging pole industries are booming. The competition on the smart meter market is relatively intense. It is predicted that the construction of charging poles will sustain for a long period. Furthermore, the electric power optical fiber may encounter development opportunities.

Through this report, readers can acquire more information:

Development status of smart grid in China

Development prospect of smart grid in China

Structure of smart grid industry chain

Major enterprises in segments along the smart grid industry chain

Prediction on investment opportunities in smart grid in China

Following persons are recommended to buy this report:

Power generation equipment manufacturers

Power transmission and distribution equipment manufacturers

Other electric equipment manufacturers

Power operation enterprises

Investors concerning Chinese smart grid industry

Research institutes concerning Chinese smart grid industry

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