

《把分散资源聚沙成塔 虚拟电厂受到业内热捧》

目前，虚拟电厂已在我国落地生根，《“十四五”现代能源体系规划》中强调了虚拟电厂在电力辅助服务中的重要作用。能源专家们认为，该模式还有助于减少电力行业对化石能源的依赖。



视觉中国 A member introduces the concept of the virtual power plant to visitors at an AI conference in Shanghai, Aug 28, 2019. [Photo/VCG]

Construction of virtual power plants is on the rise in China as the country continues to move toward a more sustainable energy mix, with renewables taking up an increasing share.

随着中国继续朝着更可持续的能源结构发展，可再生能源所占比例日益增大，虚拟电厂的建设正在中国兴起。

A virtual power plant uses advanced technologies and software systems to collect data of electricity generated from distributed sources, such as rooftop solar power facilities, power storage systems and electric vehicles. Different from conventional power plants, virtual power plants do not generate electricity; instead, they manage the energy flow and optimize the supply of electricity.

虚拟电厂使用先进的技术和软件系统来收集来自分布式来源的电力数据，例如屋顶太阳能发电设施、电力存储系统和电动汽车。与传统发电厂不同，虚拟电厂不发电，而是调度能量流并优化电力供应。

Fifteen virtual power plants in Shanxi province have completed construction. Their combined daily electricity output of 1.568 million kilowatt-hours could supply power to about 224,000 households a day during peak time, said State Grid Shanxi Electric Power Co, a major builder of the plants.

山西省已建成15座虚拟电厂。国网山西省电力公司是虚拟电厂最主要、最重要的建设和参与方。该公司表示，在电力供应紧张时期，虚拟电厂每天可释放出156.8万千瓦时电量，可满足22.4万户家庭的日用电需要。

The company said construction of virtual power plants is crucial for optimizing energy systems and ensuring the growing demand for clean, reliable and affordable power is met.

该公司表示，虚拟电厂的建设对于优化能源系统和确保满足对清洁、可靠和负担得起的电力日益增长的需求至关重要。

The construction followed Shanxi's launch of an action plan in June last year to regulate the building and operation of virtual power plants in case of power shortages after a large number of renewables connect to the grid.

去年6月，山西省出台《虚拟电厂建设与运营管理实施方案》，以防大量可再生能源并网后出现电力短缺。

Recently, China's first project on the research of industrial standards in the area of virtual power plants received approvals from the government, which will provide technical standards on the resource allocation and assessment of virtual power plants.

近日，中国首个虚拟电厂领域行业标准研究项目获得政府批文，将为虚拟电厂资源配置和评估提供技术标准。

Last year, Shenzhen had established a regulation center for virtual power plants, the first of its kind in China. At present, Jiangsu province, Zhejiang province, Shanghai and other regions have implemented the practice of virtual power plants. They collect power mainly from energy storage facilities, charging piles and residential buildings, said a recent report from Sealand Securities.

去年，深圳成立了中国首个虚拟电厂监管中心。目前，江苏、浙江、上海等省市陆续开展虚拟电厂试点工作。国海证券近日发布的报告称，虚拟电厂主要从储能设施、充电桩和住宅建筑中收集电力。

"The virtual power plants have become increasingly important as a supplement to conventional power plants to ensure the reliability and stability of energy supply, especially in renewable energy systems," said Lin Boqiang, head of the China Institute for Studies in Energy Policy at Xiamen University in Fujian province.

厦门大学中国能源政策研究院院长林伯强表示：“虚拟电厂作为传统发电厂的补充，在确保能源供应的可靠性和稳定性方面变得越来越重要，尤其是在可再生能源系统中。”

"Virtual power plants, together with power storage systems, collect energy available from the user end, such as rooftop solar power facilities and supply them to other users in need, which makes them an important part in promoting low-carbon and energy-efficient development," Lin said.

林伯强说：“虚拟电厂与电力存储系统一起，收集来自用户端的能量，如屋顶太阳能设施，并将其供应给其他有需要的用户，这使其成为促进低碳和节能发展的重要组成部分。”

In the past, fossil fuels like coal were often the only source of electricity. Power supply management was realized through grid operators' dispatch centers to meet demand. During peak hours, the centers would send signals to power generators, and the latter would burn additional coal to ramp up power generation.

在过去，煤炭等化石燃料通常是电力的唯一来源。通过电网运营商调度中心实现供电管理，满足用电需求。在高峰时段，这些中心将向发电机发送信号，后者将燃烧更多煤炭来提高发电量。

However, as the focus of power generation gradually shifted toward renewable energy resources, such as solar and wind, problems emerged as these modalities are intermittent and not always available when needed, making it extremely difficult to manage power supply.

然而，随着发电的重点逐渐转向光伏和风电等可再生能源，问题出现了，这些供电方式是间歇性的，并不是在需要时总是可用，这使得管理电力供应极其困难。

Under such circumstances, virtual power plants emerged as a supplement to conventional power plants in the task of allocating power generated from distributed sources in case demand surpasses supply.

在这种情况下，虚拟电厂作为传统发电厂的补充，在需求大于供应的情况下，分配分布式的电源产生的电力。

Estimates from Huaxi Securities showed that by 2025, the market scale of investment and

construction of virtual power plants will exceed 30 billion yuan.

据华西证券预计，到2025年，虚拟电厂投资建设市场规模将超过300亿元。

重点词汇

regulation center 【体】调节中枢

At present 目前，现在

power plants 同 power station；发电厂；发电站；power plant的复数

energy storage 储能

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