



Development of Green Energy in Fengxi New City

沣西新城绿色能源发展报告



刘洪涛 总经理

Liu Hongtao General Manager

西咸新区沣西新城能源发展有限公司

Energy Development Company of Fengxi New City

目录 CONTENTS

01 沔西能源简介 Fengxi Energy Brief

02 绿色能源发展背景及现状 History & Progress of Green Energy Development

03 绿色能源互联网和绿色金融 Green Energy Internet & Green Finance



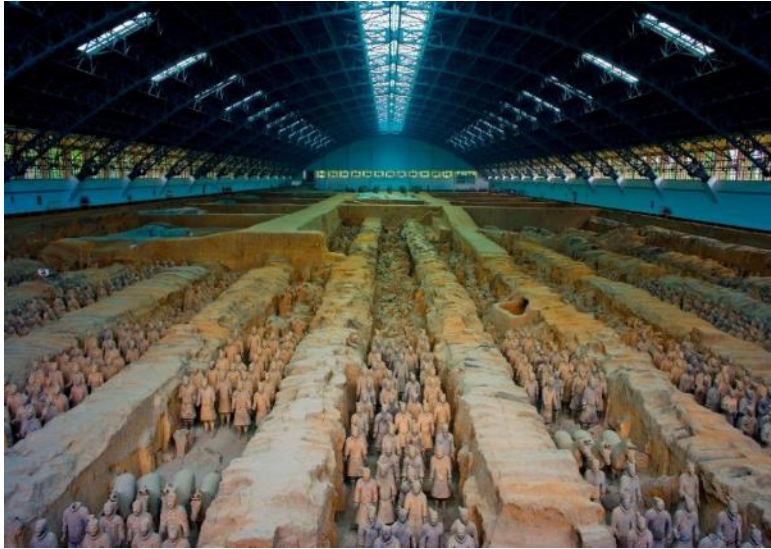


Fengxi Energy Brief

沣西能源简介



西安-丝绸之路起点 Xi'an , Starting Point of Silk Road



能源公司简介 Fengxi Energy Brief



综合供能服务
Integrated energy services



健康建筑环境运营
Healthy building
environment operation



智慧电网建设运营
Smart grid construction and
operation





History & Progress of Green Energy Development

绿色能源发展背景及现状



(一) 中深层无干扰地热能清洁供热技术

Medium-deep Non-Interference Geothermal Energy Cleaning Heating Technology



绿色发展理念
Concept of Green
Development



低碳城市
Low Carbon City



地热资源丰富
Abundant
geothermal resources

- 燃煤燃气集中供热
- Coal gas central heating
- 浅层地源热泵
- Shallow ground source heat pump technology
- 天然气冷热电三联供
- Natural gas cold heat and power triple supply



- 中深层无干扰地热能供热技术
- Medium-deep non-interference Geothermal Energy Cleaning Heating Technology

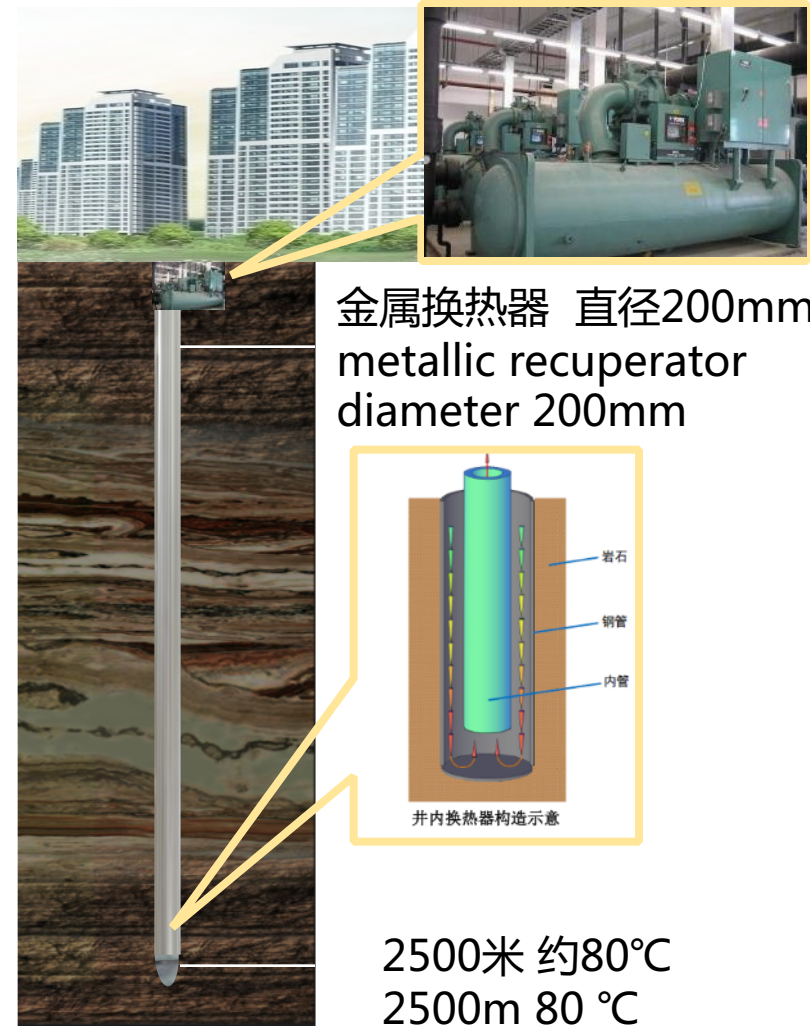


(一) 中深层无干扰地热能清洁供热技术

Medium-deep Non-Interference Geothermal Energy Cleaning Heating Technology

这个技术是用钻机向地下2000-3000m钻孔，孔径大约有200mm，然后在钻孔中安装一种封闭的金属套管换热器，在换热器里充满换热介质，用套管里循环流动的介质把地热能带上来，最后用热泵系统向建筑物供热。

This technique is to drill a 200mm hole with the depth of 2000-3000m down to the earth, install a closed metal double-pipe heat exchanger in the drilling hole which filled with heat transferring medium, explore heating energy through circulated flow medium inside the heat exchanger, then supply heat to the buildings by a heat pump. Transfer heat without taking underground water by which avoid the problems of groundwater drainage, tail water thermal pollution or high pressure recharge.



(一) 中深层无干扰地热能清洁供热技术

Medium-deep non-interference Geothermal Energy Cleaning Heating Technology



分布式--Distributed Characteristic

A heat-transfer hole with 2500 meters depth can meet the heating demand of buildings with 15-18 thousand square meters.



高效--High Energy Efficiency

One degree of electricity transfers 7 to 8 degrees of heat from the ground



无干扰--Non-Interference

Characterize as "taking heat without taking the underground water resource"



零排放--Zero Emission

zero-emission of carbon dioxide, as well as no waste gas, waste liquid or waste residue.



无衰减--Sustainability

long-term operation without attenuation



(一) 中深层无干扰地热能清洁供热技术

Medium-deep non-interference Geothermal Energy Cleaning Heating Technology

服务对象 The service object

商业综合体
Commercial Building



住宅
Residential building



学校
School



目前，用这种技术供热的面积，西安区域已经超过1000万平方米了，今年冬天，还将新增600万平方米投入使用。预计到2020年，仅仅沣西新城使用这种技术供热的面积就将达到1000万平方米。

Currently, there are more than 10 million square meters of heating area adopting this technology.

Another 6 million square meters will be put into use this winter.

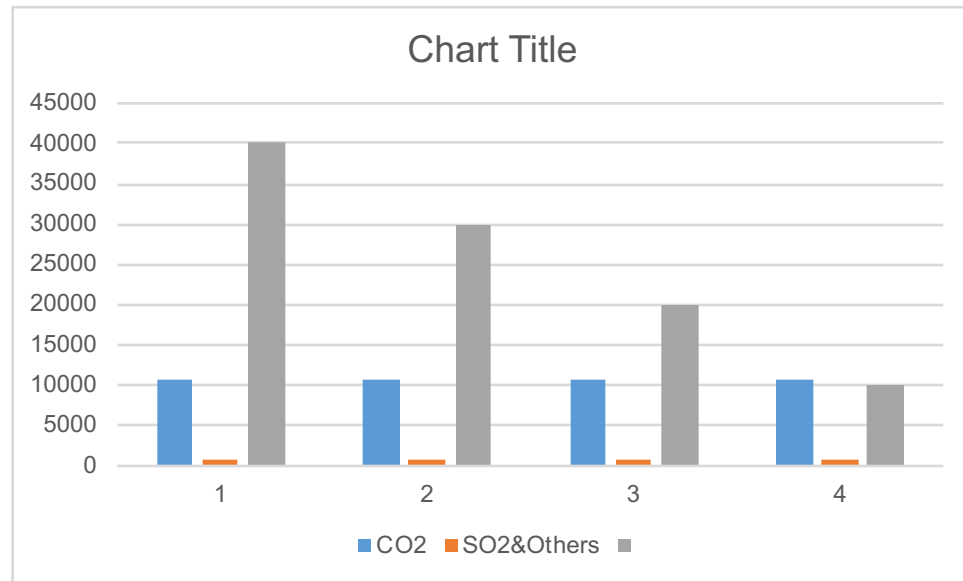
Heating area using this technology is expected to more than 10 million square meters by 2020.

(二) 绿色能源发展成功案例

Successful Program of Green Energy Development

一个采暖季（4个月），以西安市目前以覆盖的1000万平方米建筑采用中深层地热能无干扰供热为例，与燃煤锅炉相比，减少CO₂排放量43万吨，减少SO₂、氮氧化物等大气污染物排放量2544吨，相当于种植356万棵树的全年生态补偿量。

It is estimated that in a 4 months heating season , taking **10 million m² of buildings** using medium-deep non- interference geothermal energy heating technology as an example which will reduce **CO₂ emissions to 430,000 tons, SO₂, nitrogen oxidation and others pollutants to 2,544 tons**, the annual ecological compensation equals to **plan 3.56 million trees**.



1、沔西实验学校

Fengxi Experimental Primary School



西咸新区首个九年一贯制智慧校园，建筑供能面积约4万平方米，采用中深层地热能无干扰清洁供热技术实现建筑供暖。同时在屋顶敷设太阳能光伏板用于学校日常用电，余电上网。

- The first Nine-year compulsory education school in Xixian New Area
- Total area of 40,000 m².
- Solar photovoltaic panels are equipped on the roof facilitates the daily electricity usage in school
- Extra electricity transmits to national grid

2、陕西中医药大学第二附属医院

The Second affiliated Hospital of Shaaxi Traditional Chinese Medicine Unerversity



本项目为陕西中医药大学第二附属医院迁建医院一期项目——供能工程。项目总建筑面积约23万平方米，建筑用能面积约16.6万平方米,供冷、供热，供生活热水、供医用蒸汽。

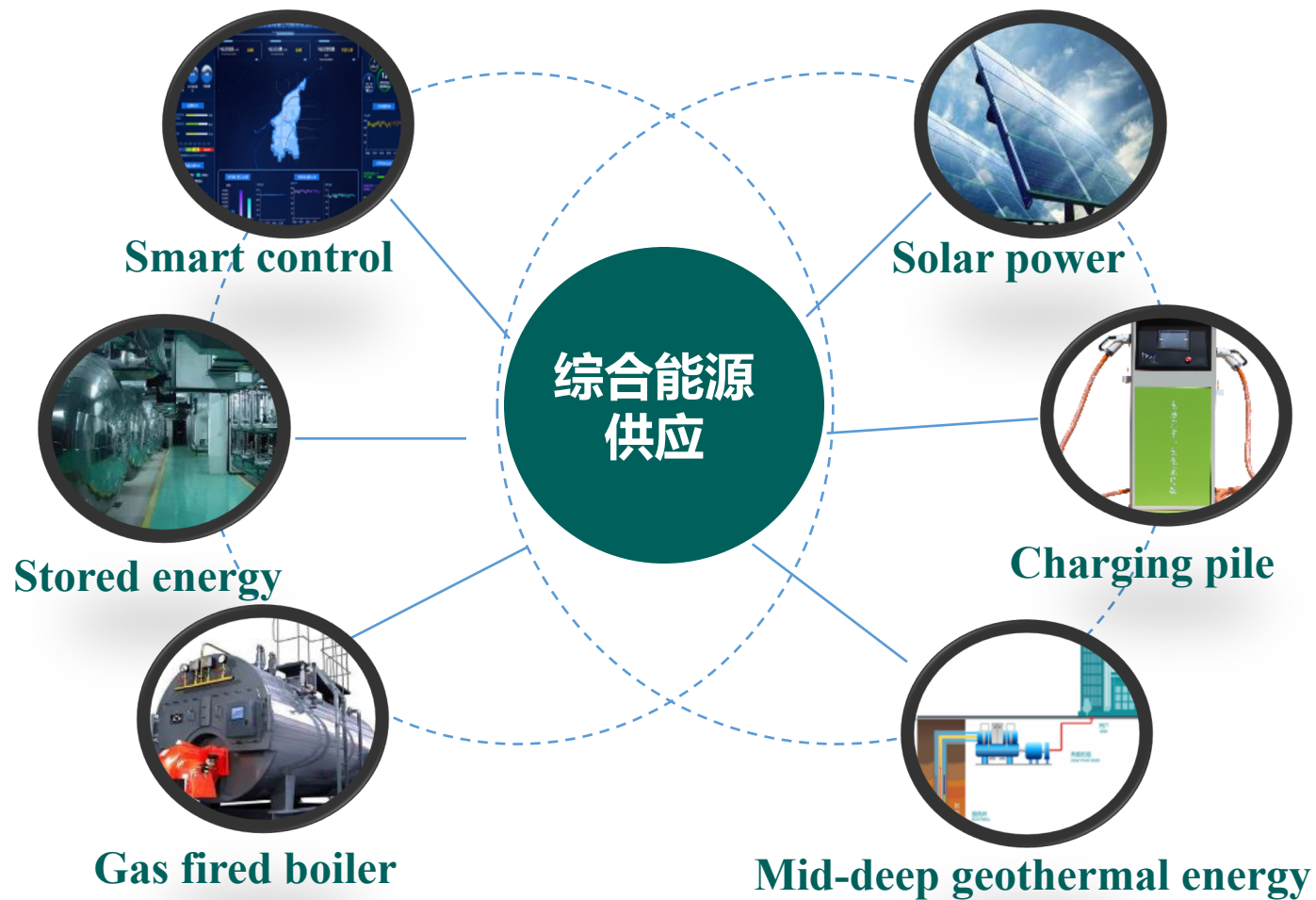


- The total construction area is 230,000 m²
- Providing cooling and heating, domestic hot water and medical steam.

3、绿色城市—总部经济园能源站 Green city -- Headquarter Economic Zone

➤ 集成创新——多能互补、集成优化

Integrated Innovation —— Multi-energy Complementary and Integrated Optimization



热+冷+热水+综合电力服务
Heating + Cooling+Hot water
+ Integrated power services

能源利用率高 系统集成度高
High energy efficiency and
high system integration

4、综合能源供应示范项目-中国西部创新港能源站

Western China Science & Technology Innovation Harbour Integrated Energy Supply Project

作为西安交通大学新的校区，它是国家使命担当、服务陕西引擎、创新驱动平台、科研教学高地，是一座没有高墙束缚的智慧学镇。

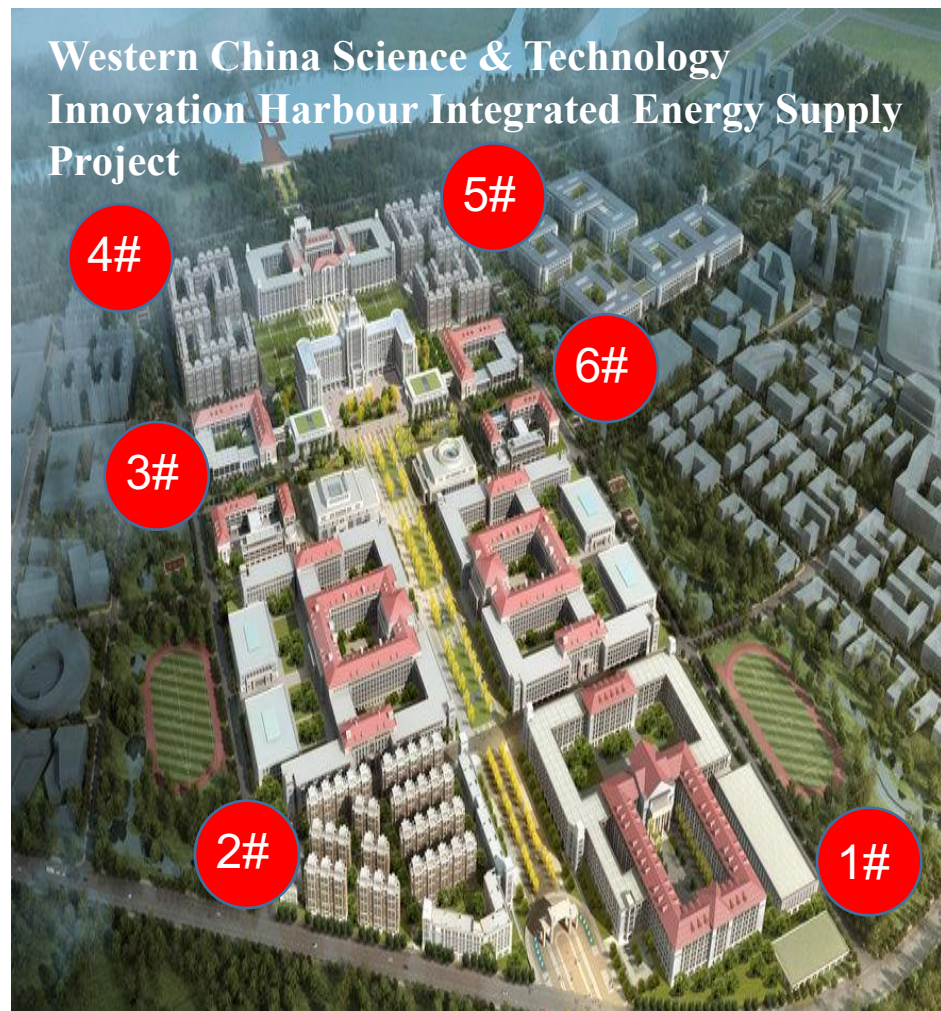
It is the new campus of Xi'an Jiaotong University with no bound of walls , serves as innovation-driven platform, R&D highland, and wisdom harbor of Shaanxi , undertakes the mission of strengthening our nation.



- ◆ 占地面积约**334万**平方米
It covers an area of **3.34 million** square meters
- ◆ **23个**国家级实验室
23 national laboratories
- ◆ **25000名**科研人员
25,000 researchers
- ◆ **10000名**教职工
10,000 faculty members
- ◆ **6个**综合能源供应站
6 comprehensive energy supply stations
- ◆ 供能面积为**159万**平方米
Energy service area is **1.59 million** square meters
- ◆ 供能服务有热、冷、生活热水
Energy services include Heating , Cooling, Hot water

4、综合能源供应示范项目-中国西部创新港能源站

Western China Science & Technology Innovation Harbour Integrated Energy Supply Project



供热: 中深层无干扰地热供热系统

Heating : Mid-deep non-interference geothermal heating system



供冷: 冷水机组+双工况热泵机组

Cooling: Water chiller+ Dual operating heat pump unit



生活热水:燃气锅炉+中深层无干扰地热供热系统

Hot Water: Gas boiler+ Mid-Deep Non-Interference Geothermal Heating System



Green Energy Internet & Green Finance

绿色能源互联网和绿色金融





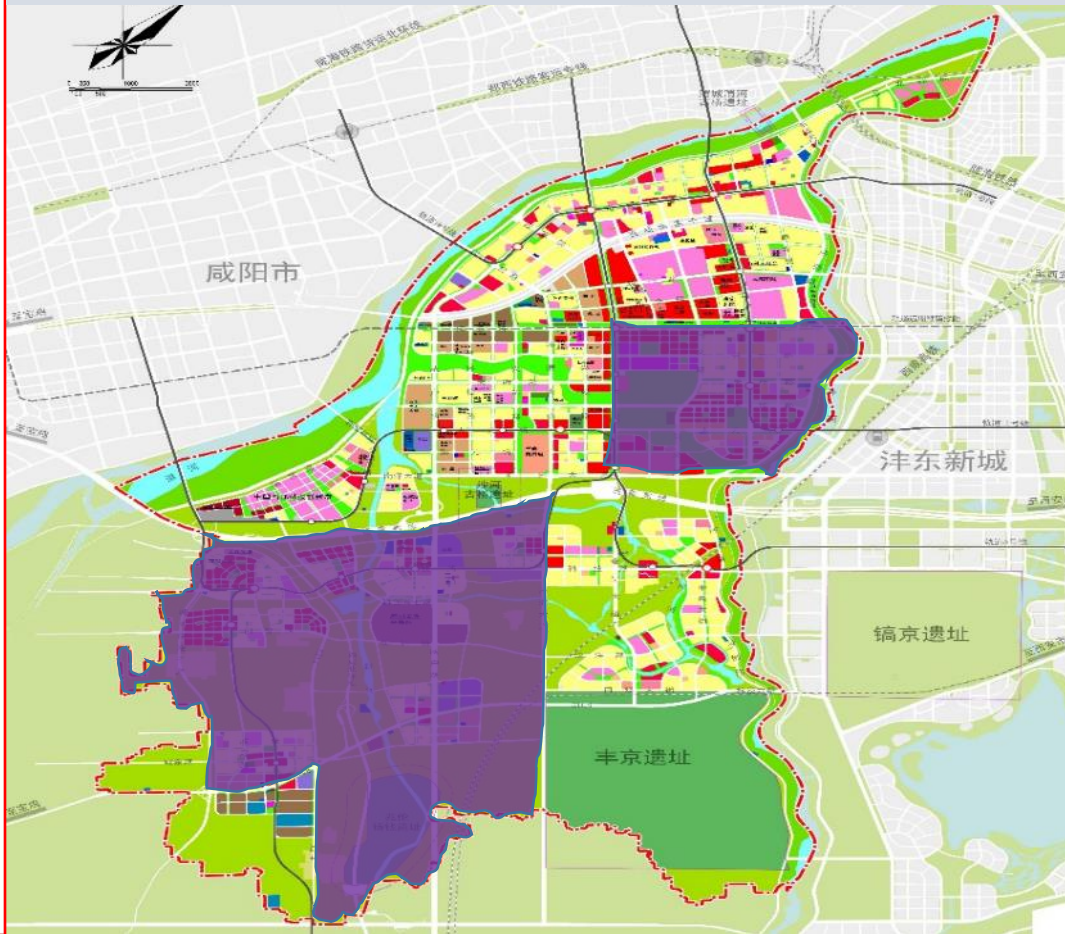
- 大量的弃风弃光电量浪费。

Massive wasted electricity generated by abandoned wind power

- 我们发展区域能源项目，旨在降低碳排放，提高可再生能源利用率

Developing district energy projects aim at reducing carbon emissions and increasing renewable energy utilization

增量配电业务规划
pilot project of incremental power distribution
network

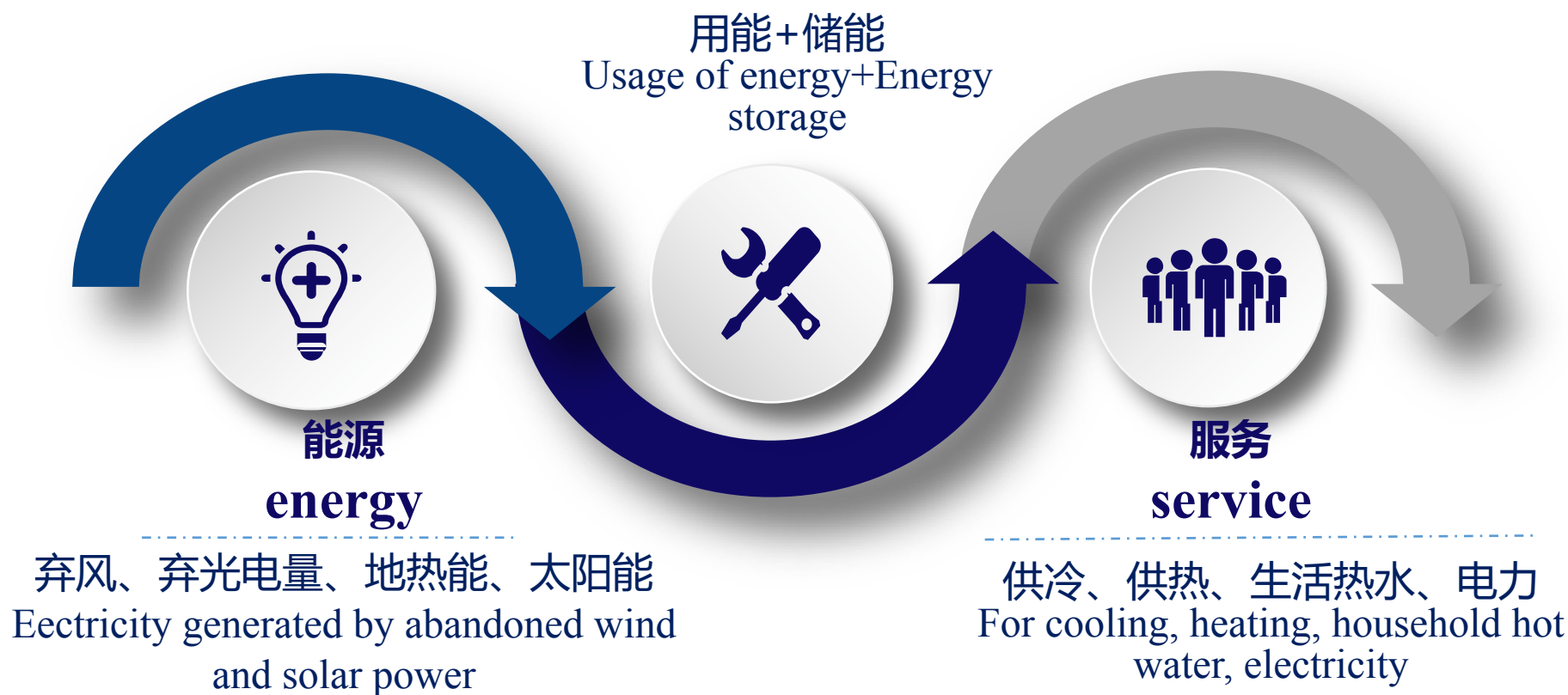


In 2018, Fengxi New City entitled as a pilot zone of the national power system reform, which allows us to build district transmission and distribution power network, authorizes electricity transactions and sales in this zone.

国家电力体制改革的一项试点资格，它允许我们在规定区域内，自主建设输配电网络，自由开展配售电交易。

绿色能源互联网和绿色金融 Green Energy Internet& Green Finance

- 在陕西及其临近省份，通过供冷供热对电网主动调峰，消纳弃风、弃光电量，最大程度提高区域供能的可再生能源利用率
- By supplying cooling and heating we take the initiative to adjust the peak and vally of the power grid, absorb the abandoned wind and solar power to optimize renewable energy utilization in Shaaxi province and its neighboring provinces



绿色能源互联网和绿色金融 Green Energy Internet& Green Finance

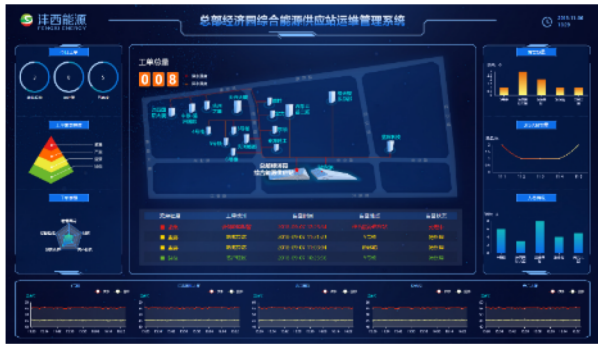
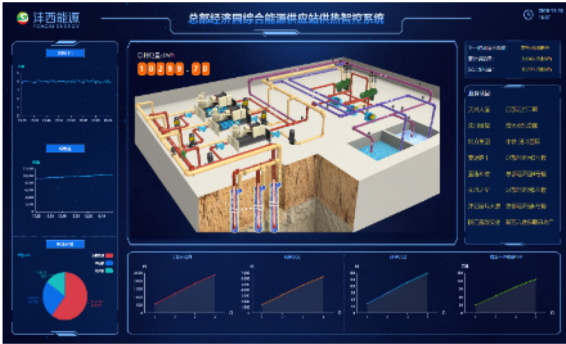


系统状态监测及数据可视化呈现
System status monitoring and data visualization

智能数据分析实现设备预测性维护
Intelligent data analysis to achieve predictive maintenance on equipment

智慧调控实现供给需求精准匹配
Smart control accurately matches with supply and demand

开放平台满足供需各方便捷交易
Open platform facilities supply and demand in transaction





亚洲开发银行
Asian Development Bank



世界银行
World Bank



中国建设银行
China Construction Bank



HUAXIA BANK
华夏银行

- 发行境外债券1.2亿美元
Issued 120 million US dollars bonds overseas
- 发行第一批城投类平台的绿色债券16.7亿元
- **Issuance of the first batch of green municipal platform Bonds of 1.67 billion yuan**
- 落地总规模达到102亿元的城市发展建设基金
- **Urban Development and Construction Fund with a total scale of 10.2 billion yuan**
- 60亿元全国建行系统最大的城镇化基金
- **The largest urbanization fund of National Construction Bank's scales to 6 billion yuan**
- 发行我国首笔5亿元城市地下综合管廊建设专项债券
- **Issued the China's first special bond for the construction of underground pipe gallery with 500 million yuan**

结语 Conclusion

未来，我们将进一步开放技术、商务、金融合作。

愿与优秀企业一道，携手推动区域能源革命，共建青山绿水美丽中国！

In the future, we will share technologies, establish businesses & financial cooperations to work together with outstanding enterprises in promoting green energy revolution as well as build a beautiful China with lucid waters and lush mountains by joint hands of the globe !

谢谢!
Thanks !