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碳中和背景下 农村光储直柔系统

Rural PEDF system in the context of carbon neutrality



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农村能源革命试点：山西省运城市芮城县庄上村

Rural Energy Revolution Pilot: Zhuangshang Village, Ruicheng County,
Yuncheng City, Shanxi Province



脏、乱、差的传统农村旧面貌

Dirty, chaotic, and poor old face of traditional rural areas



浪费的生物质能 Wasted Biomass Energy



随处乱扔的垃圾 Litter everywhere



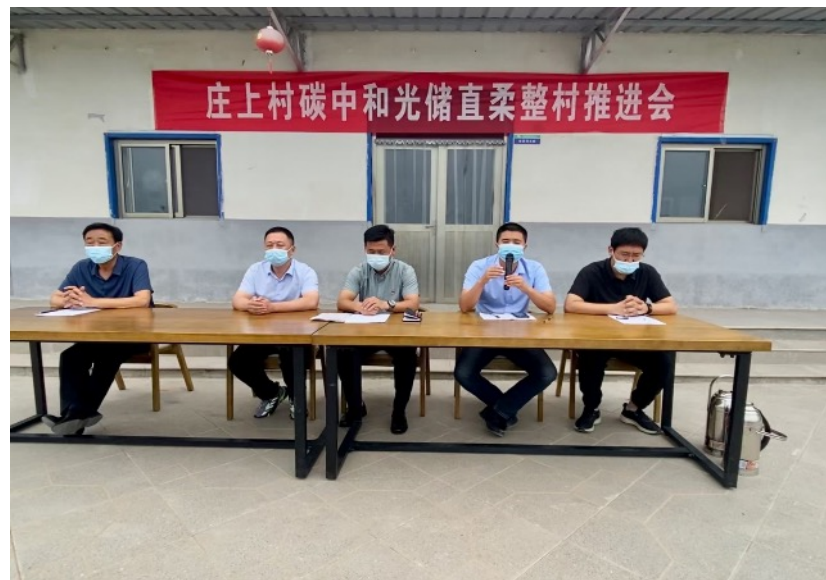
破败的窑洞 Dilapidated cave dwelling



胡乱堆放的煤堆 Random pile of coal

我们在做什么？→推动光储直柔系统走进农村

What are we doing ? Promoting the PEDF system into the rural areas.

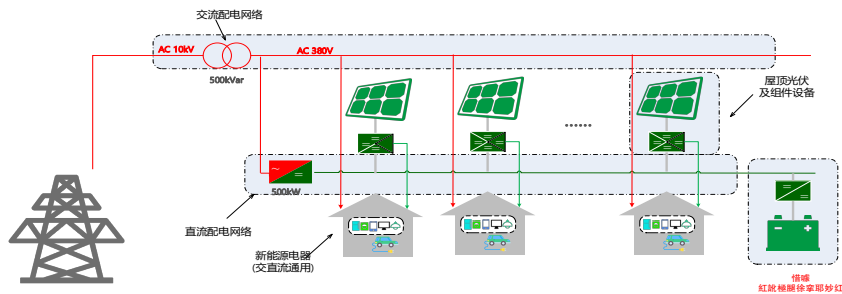


什么是光储直柔？

What is PEDF system?



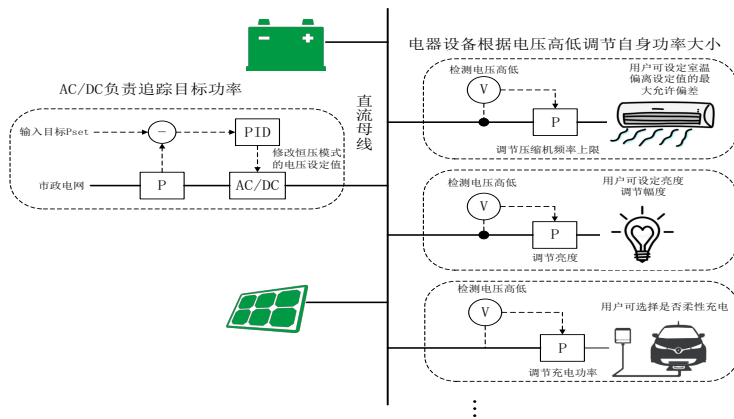
“光”-分布式屋顶光伏 Distributed rooftop **P**hotovoltaic



“直”-直流配电系统 **D**C power distribution system



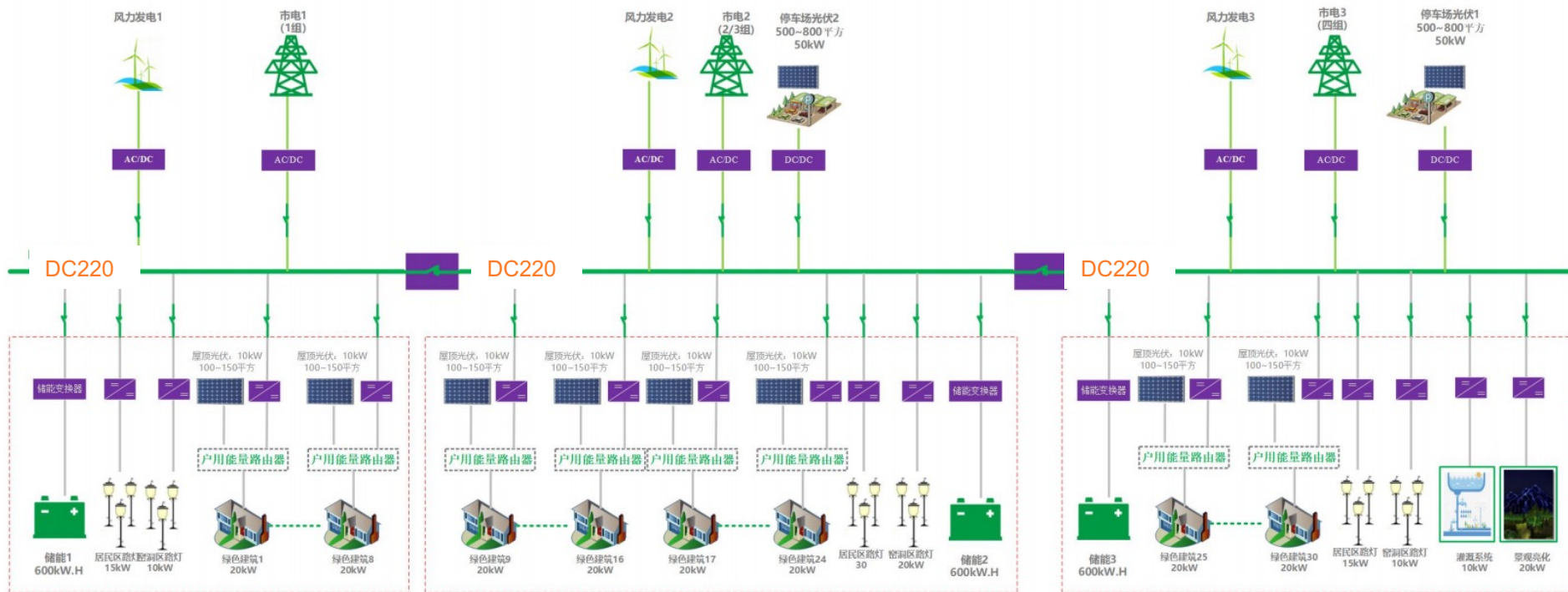
“储”-分布式储能 Distributed **E**nergy storage



柔-柔性用电负荷 **F**lexible load

光储直柔系统架构

PEDF system architecture



室内直流家电

Indoor DC appliances



■ 交直流通用型家电

AC and DC general home appliances



云米电饭煲
Yunmi rice cooker



手机充电器
mobile phone charger



笔记本电脑
laptop



电脑主机
Computer host



电磁炉
induction cooker



冰箱
refrigerator

■ 纯电阻加热类家电

Pure resistance heating appliances

改造方案：增加主动灭弧模块

Modification plan: add active arc extinguishing module



热水壶
Kettle



热水器
Water heater



饮水机
Drinking fountain



石墨烯取暖器
Graphene heater



茶台
Tea table

户外直流电器

Outdoor DC appliances



电动三轮车
Electric tricycle

超低压直流离网系统 Ultra-low voltage DC off-grid system



电动农药喷雾器
Electric pesticide sprayer



电动撒料机
Electric spreader



户外照明
outdoor lighting



电动脱粒机
Electric thresher



电动除草机
Electric weeder



直流水泵
DC water pump



电动打药机
Electric sprayer

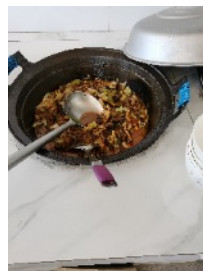
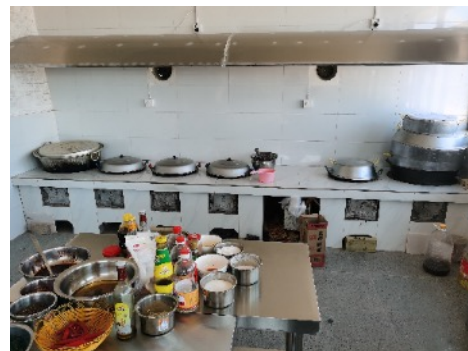
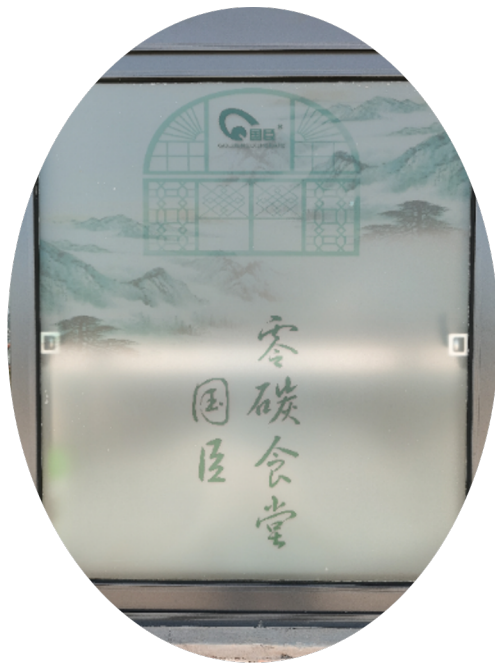


直流家电

DC appliances



■ 零碳食堂 Zero Carbon Canteen



光伏直流灌溉

Photovoltaic DC irrigation



Monitoring and control of PEDF system



监控系统界面

Monitoring system interface



微信小程序

WeChat Mini Program

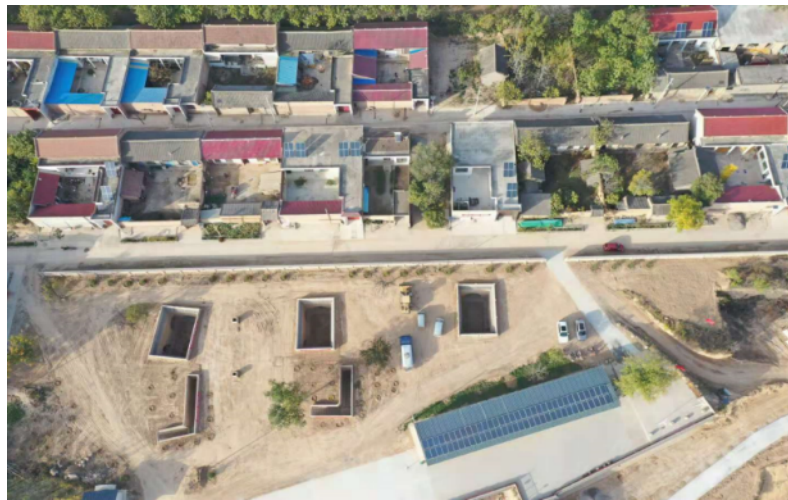
当前进展

Current progress



项目简介：目前已建成**30户**。将30户的屋顶光伏连接成**直流配电网**，接入储能/负荷，余电汇总在配变端并网。直流母线电压等级为**220VDC**，直流**单极IT系统**。

Project introduction: At present, 30 households have been built. The rooftop photovoltaics of 30 households are connected to the DC distribution network, connected to energy storage/load, and the remaining power is collected and connected to the grid at the distribution transformer end. The DC power distribution system adopts unipolar wiring, IT grounding, and the bus voltage level is 220VDC.



离网独立系统

Off-grid independent system



观景台

Observation Deck



公共厕所

Public toilet

项目简介：利用光储直柔技术搭建独立系统，保障基本设施用电要求，解决无法接入大电网的问题，拓展了光储直柔的应用。

Project introduction: Use PEDF technology to build an independent system, guarantee the power requirements of basic facilities, solve the problem of not being able to connect to the large power grid, and expand the application of the PEDF system.

当前进展

Current progress



当前进展

Current progress



干净、整齐、舒适的社会主义农村新面貌

A clean, tidy and comfortable new socialist rural areas



生物质能+分布式光伏能源结构

Energy structure based on biomass energy and distributed photovoltaic



绿水青山

Green water and green mountains



焕然一新的窑洞

refurbished cave dwellings

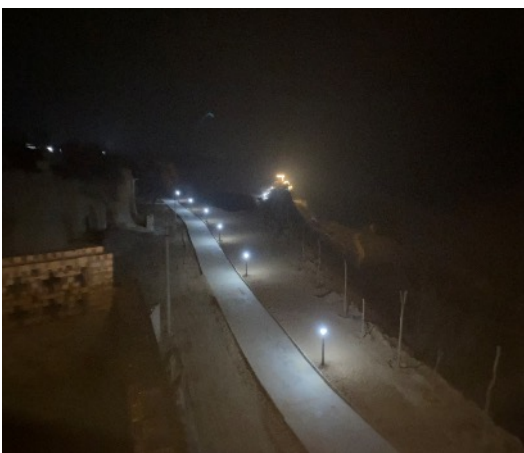
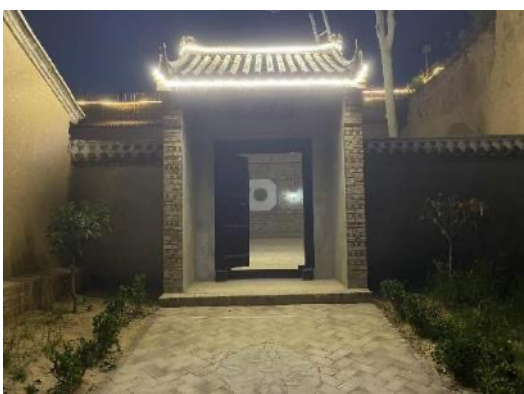


舒适的居住环境

Comfortable living environment

干净、整齐、舒适的社会主义农村新面貌

A clean, tidy and comfortable new socialist rural areas



持续上升的关注热度！

The rising attention !



碳中和，芮城在探路

农村光储直柔配电系统迈出关键一步

日期： 芮城县率先创建“中国零碳村”

关键词 2020-11-10 12:38:32 来源：山西日报

【本文来源】
记者 宋秋



城况 (项
处重

数万芮城部
在应对气候
碳中和等
以能源“绿
芮城国家
芮城开始策

从村组出发

一个村庄的“碳中和”探索 ——芮城县上庄村以“光储直柔”技术打造全国首批零碳村

全方位推进高质量发展

“家家屋顶上安装的光伏板和庭院里的充电桩，点绿成荫的生态和绿色小村庄，呈现美丽画卷。”
这个被称为“光储直柔”的发电系统，点亮了乡村振兴之路，助力了乡村振兴的发展。光伏、储能、充电桩、微电网等技术，为乡村振兴注入了新的活力。在乡村振兴的道路上，芮城县上庄村以“光储直柔”技术打造全国首批零碳村，为乡村振兴注入了新的活力。

解锁无限能量的“阳光宝盒”

上庄村村民王民家，屋顶安装光伏板，通过光伏板发电，为家庭提供电力。光伏板发电系统，为乡村振兴注入了新的活力。



运城新闻网
YUNCHENXINWEN



山西日报等官方传媒
Shanxi Daily and other official media

网络视频
Web video

络绎不绝的参观队伍
An endless stream of visitors

未来展望

Future outlook

- 开发**生物质能**等新型能源形式，实现多能互补，打造农村综合能源示范点。

Develop new forms of energy such as biomass energy, realize multi-energy complementarity, and create a comprehensive rural energy demonstration site .

- 建立健全**电力市场交易机制**，在市场效应的推动和政策的引导下，配合分布式光伏整县推广政策，在芮城县全域推广光储直柔系统，率先在芮城县实现碳中和。

Establish and improve the electricity market trading mechanism, and under the promotion of market effect and policy guidance, cooperate with the distributed photovoltaic county promotion policy, promote the solar storage direct-flex system in Ruicheng County, and take the lead in achieving carbon neutrality in Ruicheng County.

- 光储直柔系统中的**关键技术产业化**，有效拉动区域经济发展，创造更多的就业岗位，增加当地税收。

The industrialization of key technologies in the optical storage direct-flexible system can effectively promote regional economic development, create more jobs, and increase local taxes.

谢谢，敬请批评指正！

--让“光储直柔”助力碳中和



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