

Cooperation Demands from Dongfang Electric Corporation

1. 电驱动型的陶瓷基透氢膜组件（系统）。参数说明如下：

可用于焦炉煤气制氢，具有较好的硫耐受性。制出的氢纯度达到 PEM 燃料电池用标准（GB T 37244-2018）。单位纯氢的制备成本不高于 4 元/Nm³。

Electrically driven ceramic-based hydrogen permeable membrane module (system). The parameter description is as follows:

It can be used to produce hydrogen from coke oven gas and has good sulfur tolerance. The purity of the produced hydrogen meets the standards for PEM fuel cells (GB T 37244-2018). The production cost of unit pure hydrogen is not higher than 4 yuan/Nm³.

2. 高效率的生物质（生活垃圾）热解气化制氢系统。参数说明如下：

原生垃圾处理量 100-500t/d、所制的氢气纯度不低于 90%、吨物料的总运行费用不高于 400 元 RMB。

High-efficiency biomass (domestic waste) pyrolysis gasification hydrogen production system. The parameter description is as follows:

The primary waste treatment capacity is 100-500t/d, the purity of the hydrogen produced is not less than 90%, and the total operating cost of one ton of materials is not more than RMB 400.

3. 基于固体氧化物燃料电池的分布式发电系统。参数说明如下：

电堆的单位投资成本不高于 3500 元 RMB/kw。启动快速，使用寿命不低于 25000 小时

Distributed power generation system based on solid oxide fuel cell. The parameter description is as follows:

The unit investment cost of the stack is not more than 3500 RMB/kw. Quick start, service life is not less than 25000 hours

4. 高温电解水系统。参数说明如下：

系统效率不低于 76%，每标方氢气耗电不超过 4kwh，使用寿命不低于 25000，投资成本不高于 3500 元 RMB/kw

High temperature water electrolysis system. The parameter description is as follows:

The system efficiency is not less than 76%, the hydrogen power consumption per Standard Square is not more than 4kwh, the service life is not less than 25,000, and the investment cost is not more than 3500 RMB/kw

5. 非高压储运氢系统。参数说明如下：

适用于大规模储运、季节性存储的储运氢技术。如：有机液体储运氢系统、固态储氢系统等。储氢介质安全性高，可逆循环性好，储氢密度不低于 5wt%（有机液体储运氢系统的质量储氢密度不低于 6wt%）。300 公里运输半径内，每公斤氢气的运输不高于 10 元。

Non-high pressure hydrogen storage and transportation system. The parameter description is as follows:

Hydrogen storage and transportation technology suitable for large-scale storage and

transportation and seasonal storage. Such as: organic liquid hydrogen storage and transportation system, solid hydrogen storage system, etc. The hydrogen storage medium has high safety and good reversibility, and the hydrogen storage density is not less than 5wt% (the mass hydrogen storage density of the organic liquid hydrogen storage and transportation system is not less than 6wt%). Within a 300-km transportation radius, the transportation of hydrogen per kilogram is no more than 10 yuan.

6. 加氢站关键设备及零部件。参数说明如下：

适用于 70MPa 加氢站的高压氢气阀门、管道及其零部件，设计压力不低于 90MPa，具备耐高压氢腐蚀特性，年更换率不高于 1%。适用于 70MPa 加氢站的高压氢气增压系统，排气压力不低于 100MPa，排气流量不低于 500Nm³/h，系统易损件寿命不低于 8000h。

Key equipment and parts of hydrogen refueling station. The parameter description is as follows: It is suitable for high-pressure hydrogen valves, pipelines and parts of 70MPa hydrogen refueling stations, with a design pressure of not less than 90MPa, with high-pressure hydrogen corrosion resistance, and an annual replacement rate of not more than 1%. It is suitable for the high-pressure hydrogen pressurization system of 70MPa hydrogen refueling station, the exhaust pressure is not less than 100MPa, the exhaust flow is not less than 500Nm³/h, and the service life of the vulnerable parts of the system is not less than 8000h.

7. 高效大规模 PEM 电解槽技术。制氢电耗 $\leq 4.7\text{kWh/Nm}^3$ ，产氢能力 $\geq 100\text{Nm}^3/\text{h}$ ，寿命大于 15000 小时。开展电解槽核心部件膜电极、双极板的低成本国产化合作，目标膜电极催化剂负载量 $\leq 1.5\text{g/cm}^2$ ，开发低成本长寿命双极板材料。

High-efficiency large-scale PEM electrolyzer technology. The power consumption for hydrogen production is $\leq 4.7\text{kWh/Nm}^3$, the hydrogen production capacity is $\geq 100\text{Nm}^3/\text{h}$, and the life span is more than 15,000 hours. Carry out low-cost localization of membrane electrodes and bipolar plates, the core components of the electrolytic cell, with the target membrane electrode catalyst loading $\leq 1.5\text{g/cm}^2$, and develop low-cost and long-life bipolar plate materials.