HENGYA
恒 雅 集 创

新能源发电机组
产品介绍

Product Introduction of GENSETS



四川恒雅集创科技有限公司

Sichuan Hengya Jichuang Technology Co., Ltd.



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HENGYA 恒雅集创

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1

公司介绍

Company Profile

公司介绍
Company Profile

四川恒雅集成科技有限公司是一家集研发,生产和国内外销售为一体的新兴能源科技型公司。

Sichuan Hengya Jichuang Technology Co., Ltd.is an emerging energy technology company integrating R&D, manufacturing, and domestic and international sales.



公司立足于新能源电力技术，为客户提供新能源电力设备及系统化解决方案，并在相关领域获得多项专利。

The company is rooted in new energy power technology, providing customers with new energy power equipment and systematic solutions, and has obtained multiple patents in related fields.

司产品包括甲醇发电机组、燃气发电机组、热电冷联供机组和钠离子电池的开发与应用。

The company's products include methanol generator sets, gas generator sets, combined cooling, heating and power systems, and the development and application of sodium-ion batteries.

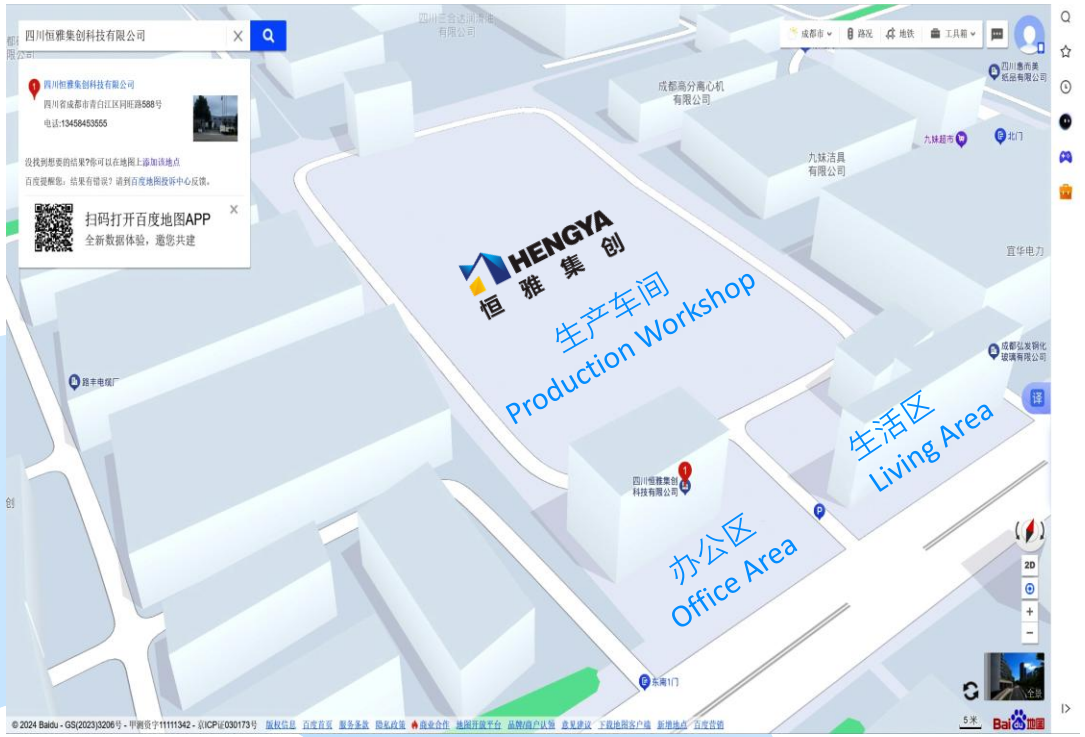
产品应用于甲醇、天然气、沼气、液化石油气、煤层气、油田伴生气、瓦斯气等可燃资源丰富，并有电力、热水、蒸汽、冷水、空调等一种或多种能源需求的场合。

These products are suitable for scenarios rich in combustible resources such as methanol, natural gas, biogas, liquefied petroleum gas, coalbed methane, associated gas from oil fields, and mine gas, where there is demand for one or more types of energy such as electricity, hot water, steam, chilled water, or air conditioning.

公司以坚实的研发能力、严格的生产体系和完善的服务为基础，立足诚信，坚持创新，为国内外客户提供优质的产品和服务，帮助客户实现经济效益和环境效益最大化。

Based on strong R&D capabilities, a rigorous production system, and comprehensive services, the company adheres to integrity and innovation, providing high-quality products and services to domestic and international clients, helping them maximize both economic and environmental benefits.

公司介绍
Company Profile



公司地址 Company Address

成都市青白江区同旺路588号

No. 588 Tongwang Road, Qingbaijiang District, Chengdu City

场地配置 Facility Layout

总占地40亩，车间占地12000m²，辅助生产区8000m²，办公区2000m²，生活区3000m²

Total area: 40 mu (approx. 26,667 m²); workshop area: 12,000 m²; auxiliary production area: 8,000 m²; office area: 2,000 m²; living area: 3,000 m²

公司设立有：燃气发电机组、电气成套、钣金等产品生产线车间，并配套有机械加工、喷砂、喷漆等辅助生产区域。

The company has established production lines for gas generator sets, electrical integration systems, and sheet metal products, supported by auxiliary areas for machining, sandblasting, and painting.

人员配备 Staff Allocation

总人数85人，其中技术人员8人，生产人员60人销售人员6人，售后人员11人

Total staff: 85 people, including 8 technical personnel, 60 production staff, 6 sales staff, and 11 after-sales service personnel

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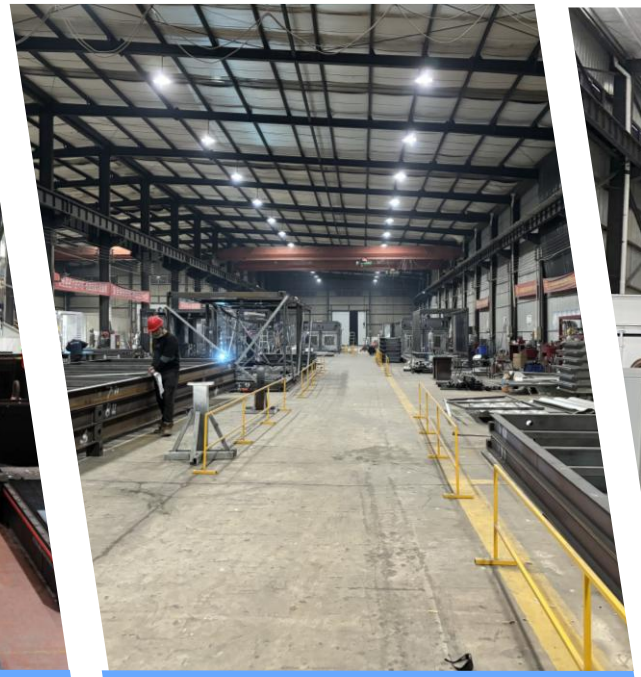
规范的标准化生产车间
Standardized and regulated production workshop



The sheet metal workshop is equipped with professional digital cutting, bending, and other processing equipment and tools

钣金车间配备有专业数字化切割、折弯等加工设备和工具



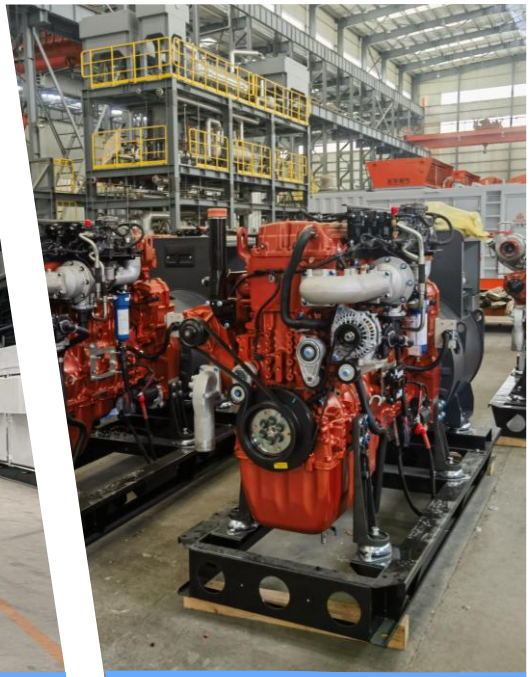
The riveting and welding assembly workshop is equipped with laser welding machines, cutting equipment, and other specialized devices

铆焊组装车间配备有激光焊接机、切割设备等专业设备



The assembly and inspection workshop is equipped with dedicated tools and equipment for hardware locks and sealing rubber components

装配检验车间配有五金锁具、密封橡胶件的专用设备及工具



The electrical assembly workshop is equipped with professional production equipment and testing instruments

电气成套车间配备有专业的生产设备和检测仪器等

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数字化生产设备 Digital production equipment



车间配备各种数字化控制生产设备及激光焊接设备，是生产力

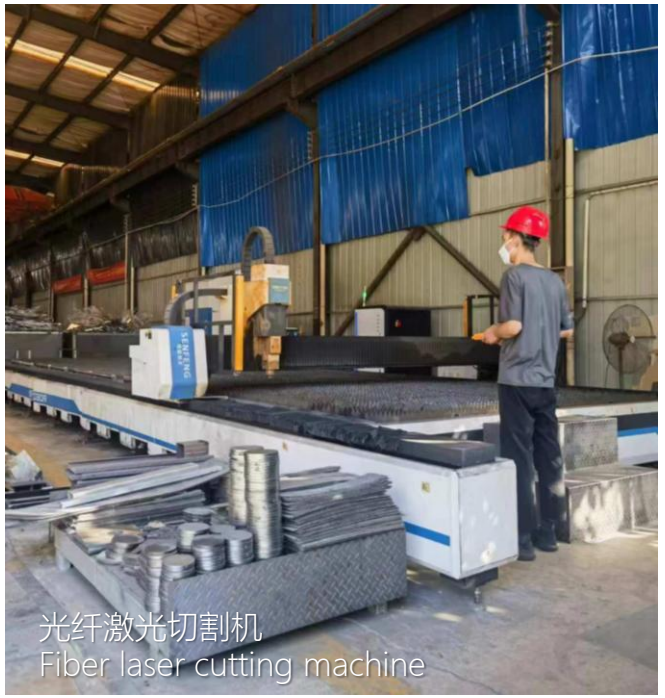
The workshop is equipped with various digitally controlled production equipment and laser welding machines,

和品质的保障，以满足、客户多订单供货。

Ensuring productivity and quality to meet customers' multi-order supply demands.







公司介绍
Company Profile

专业高效的团队
A professional and efficient team



公司紧紧围绕"专业、创新、严谨、信任"的经营理念开展工作。

The company operates closely around the business philosophy of "Professionalism, Innovation, Rigor, and Trust."



研究创造基于最新技术的系统解决方案
Research and develop system solutions based on the latest technologies



要求“工于精，行于品”满足顾客要求导向
Uphold the principle of "Excellence in Craftsmanship, Integrity in Action" to meet customer-oriented demands

公司资质证书
Company qualification certificates



四川省高新技术企业
High-tech Enterprise of Sichuan Province



营业执照
Business License



企业信用等级证书
Enterprise Credit Rating Certificate

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公司认证证书
Company certification certificates


环境管理体系认证证书

证书注册号：102624E0050R0S

兹证明

四川恒雅集创科技有限公司

统一社会信用代码：91510100MA61XOJMXF

注册地址：成都市青白江区同旺路 588 号
经营地址：成都市青白江区同旺路 588 号
审核地址：成都市青白江区同旺路 588 号

符合标准

GB/T24001-2016/ISO14001:2015

证书覆盖认证范围：

集装箱的设计、制造（含销售）所涉及的相关环境管理活动

初次发证日期：2024 年 03 月 14 日
证书颁发日期：2024 年 03 月 14 日
证书有效期至：2027 年 03 月 13 日

签发人：

四川华企信认证服务有限公司


职业健康安全管理体系认证

证书注册号：102624S0049R0S

兹证明

四川恒雅集创科技有限公司

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审核地址：成都市青白江区同旺路 588 号

符合标准

GB/T45001-2020/ISO45001:2018

证书覆盖认证范围：

集装箱的设计、制造（含销售）所涉及的相关职业健康安全管理活动

初次发证日期：2024 年 03 月 14 日
证书颁发日期：2024 年 03 月 14 日
证书有效期至：2027 年 03 月 13 日

签发人：

四川华企信认证服务有限公司


质量管理体系认证证书

证书注册号：102624Q0051R0S

兹证明

四川恒雅集创科技有限公司

统一社会信用代码：91510100MA61XOJMXF

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审核地址：成都市青白江区同旺路 588 号

符合标准

GB/T19001-2016/ISO9001:2015

证书覆盖认证范围：

集装箱的设计、制造（含销售）

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签发人：

四川华企信认证服务有限公司

ISO三体系认证
ISO Three-System Certification


Safenet Certification Services Ltd.

Ducart Suite, Castletroy Park Commercial Campus, Limerick, V94 Y6FD, Ireland

EC Examination Attestation of Conformity

This is to certify that

Sichuan Hengya Jichuang Technology Co., Ltd.

No. 8, Section 2 of Tengfei Road, Shigao Subdistrict, Tianfu New Area, Meishan City, Sichuan, China

Has had a range of Gas Generator Sets examined to the Machinery Directive 2006/42/EC, as amended and the Safety Objectives of the Low Voltage Directive 2014/35/EU.

With reference to model **F250N**

Manufactured by:

Sichuan Hengya Jichuang Technology Co., Ltd.

No. 8, Section 2 of Tengfei Road, Shigao Subdistrict, Tianfu New Area, Meishan City, Sichuan, China

1. The technical file contains all the relevant information.
2. Having verified that the appropriate tests have been conducted.
2.1. The standards and transposed standards have been applied correctly.
2.2. The example representing series production of the item, complies with the essential health and safety requirements of the Directive 2006/42/EC, as amended.
2.3. The technical file contains all the information required to include the models listed in the attached annex to this attestation of conformity.
2.4. Compliance with EN 60204-1:2018 gives compliance with the Low Voltage Directive 2014/35/EU.

Number: 3503151122

Date of Issue: 22/11/2022

Signed for Safenet Certification Services Ltd.

Peter McNicol
Technical Manager


Safenet Certification Services Ltd.

Ducart Suite, Castletroy Park Commercial Campus, Limerick, V94 Y6FD, Ireland

EC Examination Attestation of Conformity

Annex Certificate 3503151122

Models included:

RTF5N, RTF8N, RTF10N, RTF12N, RTF16N, RTF18N, RTF20N, RTF24N, RTF30N, RTF40N, RTF50N, RTF54N, RTF60N, RTF72N, RTF80N, RTF90N, RTF100N, RTF120N, RTF150N, RTF160N, RTF180N, RTF200N, RTF220N, RTF250N, RTF280N, RTF300N, RTF350N, RTF400N, RTF450N, RTF500N, RTF520N, RTF550N, RTF600N, RTF700N, RTF750N, RTF800N, RTF900N, RTF1000N, RTF1100N, RTF1200N, RTF1560N, RTF1800N, RTF2000N, RTF8C, RTF10C, RTF12C, RTF16C, RTF18C, RTF20C, RTF24C, RTF30C, RTF40C, RTF50C, RTF54C, RTF60C, RTF72C, RTF80C, RTF90C, RTF100C, RTF120C, RTF150C, RTF160C, RTF180C, RTF200C, RTF220C, RTF250C, RTF280C, RTF300C, RTF350C, RTF400C, RTF450C, RTF500C, RTF520C, RTF550C, RTF600C, RTF700C, RTF750C, RTF800C, RTF900C, RTF1000C, RTF1100C, RTF1200C, RTF1560C, RTF1800C, RTF2000C, RTF5S, RTF8S, RTF10S, RTF12S, RTF16S, RTF18S, RTF20S, RTF24S, RTF30S, RTF40S, RTF50S, RTF54S, RTF60S, RTF72S, RTF80S, RTF90S, RTF100S, RTF120S, RTF150S, RTF160S, RTF180S, RTF200S, RTF220S, RTF250S, RTF280S, RTF300S, RTF350S, RTF400S, RTF450S, RTF500S, RTF520S, RTF550S, RTF600S, RTF700S, RTF750S, RTF800S, RTF900S, RTF1000S, RTF1100S, RTF1200S, RTF1560S, RTF1800S, RTF2000S, RTF5CS, RTF8CS, RTF10CS, RTF12CS, RTF16CS, RTF18CS, RTF20CS, RTF24CS, RTF30CS, RTF40CS, RTF50CS, RTF54CS, RTF60CS, RTF70CS, RTF80CS, RTF90CS, RTF100CS, RTF120CS, RTF160CS, RTF180CS, RTF200CS, RTF220CS, RTF250CS, RTF280CS, RTF300CS, RTF350CS, RTF400CS, RTF450CS, RTF500CS, RTF520CS, RTF550CS, RTF600CS, RTF700CS, RTF750CS, RTF800CS, RTF900CS, RTF1000CS, RTF1100CS, RTF1200CS and RTF2000CS

Signed for Safenet Certification Services Ltd.

Peter McNicol
Technical Manager

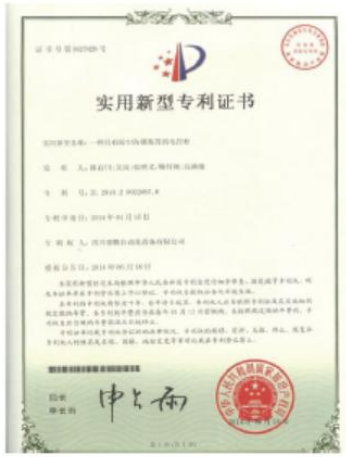
CE认证
CE Certification

HENGYA
恒 雅 集 创

公司部分专利证书
Some of the company's patent certificates





















部分典型客户
Some Representative Clients

中国石油
CNPC

中国石化
SINOPEC

CNOOC

北京燃气
BEIJING GAS

Greenland
绿地控股

HENGYA
恒 雅 集 创

部分典型合作伙伴
Some Representative Partners

CAMC 汉马科技

中国重汽 SINOTRUK

玉柴 YUCHAI

WEICHAI 潍柴

MWM Energy. Efficiency. Environment.

LIEBHERR

mecc alte

LEROY SOMER

EControls

ComAp

BOSCH Invented for life

ABB



2

产品介绍

Product Introduction

产品介绍
Products Introduction

HENGYA
恒 雅 集 创

新能源发电机组
New Energy Power Generation Unit

- 甲醇发电机组

Methanol Power Generation Unit

- 天然气发电机组

Natural Gas Power Generation Unit

- 沼气发电机组

Biogas Power Generation Unit

- 垃圾填埋气发电机组

Landfill Gas Power Generation Unit

- 生物质发电机组

Biomass Power Generation Unit

智能电气产品
Intelligent Electrical Products

- 钠离子启动蓄电池

Sodium-ion Starter Battery

- 电气成套业务

Electrical System Integration Services

- SCADA系统

SCADA System

- PLC控制系统

PLC System

- 软启动柜、变频柜

PLC Control System

钣金产品
Sheet Metal Containers

- 电气箱柜

Electrical Enclosures and Cabinets

- 监控、指挥台

Monitoring and Control Consoles

- 设备及仪表壳体

Equipment and Instrument Housings

- 储物箱柜

Storage Cabinets and Lockers

甲醇发电机组

Methanol power generator set

HENGYA 恒 雅 集 创

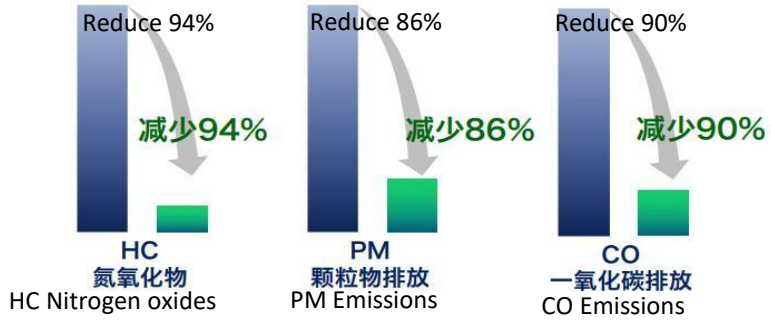
自主开发和生产的系列低噪音甲醇发电系统，其大功率覆盖范围：100kW ~ 600kW，机组具有环保显著优势、结构紧凑、功率储备大、可靠性高、经济性好、噪音小等优点，便于移动、搬运、安装和使用，适用于工矿、工地、通讯、小型城镇作为流动或固定电源供给动力、照明、通讯或其它用途。

Independently developed and manufactured series of low-noise methanol power generation systems, with high-power coverage ranging from 100kW to 600kW,The units offer significant environmental advantages, compact structure, high power reserve, excellent reliability, strong cost-effectiveness, and low noise levels,Easy to transport, relocate, install, and operate,Suitable for use in industrial and mining sites, construction areas, telecommunications, and small towns as mobile or stationary power sources for energy supply, lighting, communication, or other applications.



甲醇较比柴油发电排放指标下降

Methanol power generation emits less than diesel





甲醇发电机组
Methanol power generator set

HENGYA 恒 雅 集 创

油田钻井甲醇分布式发电站
Methanol Distributed Power Station for Oilfield Drilling



柴油和甲醇机都按照240KW发电功率计算运行20小时，单台节约燃料费用**2253**元，甲醇比柴油下降**26**%。

Based on 240kW output running for 20 hours, a single methanol unit saves ¥2,253 in fuel costs, with emissions 26% lower than diesel.

型号 Model	CM6D30F·408 30	GS13M435HF·41
应用场景 Application Scenario	并机发电 Parallel Power Generation	并机发电 Parallel Power Generation
需求发电量(kWh) Required Power Generation (kWh)	1500000	1500000
运行时长(h) Operating Hours (h)	1000	1000
需求发动机数量（台） Required Number of Engines	6	10
单台平均分配电功率（kW） Average Power per Unit (kW)	250	150
平均每度电油耗（g/kWh） Average Fuel Consumption per kWh (g/kWh)	215	500
油价（元/L） Fuel Price (CNY/L)	7	2
运行成本（元/ kWh） Operating Cost (CNY/kWh)	1.81	1.26
运行成本（元/台/h） Operating Cost (CNY/unit/h)	452.5	189
运行成本（万元） Total Operating Cost (10,000 CNY)	271.5	189

甲醇发电机组
Methanol power generator set

HENGYA 恒 雅 集 创

甲醇清洁能源移动充电站
Methanol Clean Energy Mobile Charging Station



柴油和甲醇机都按照240KW发电功率计算运行20小时，单台节约燃料费用**2253**元，甲醇比柴油下降**26**%。

Both diesel and methanol generators are calculated based on a power output of 240KW running for 20 hours.Each methanol unit saves ¥2,253 in fuel costs compared to diesel. Methanol fuel cost is 26% lower than diesel.

型号 Model	CM6D30F·408 30	GS13M435HF·41
应用场景 Application Scenario	充电桩Charging Pile	充电桩Charging Pile
需求发电量(kWh) Required Power Generation (kWh)	720（180×4）	720（180×4）
需求发动机数量（台） Required Number of Engines	2	2
单台平均分配电功率（kW） Average Power Distribution per Unit (kW)	360	240
平均每度电油耗（g/kWh） Average Fuel Consumption per kWh (g/kWh)	215	450
油价（元/L） Fuel Price (RMB/L)	7	2
运行成本（元/ kWh） Operating Cost (RMB/kWh)	1.81	1.26
运行成本（元/台/h） Operating Cost (RMB/unit/hour)	651.6	273.6
运行时长预测（h/台/年）Predicted Operating Hours (hours/unit/year)	6000	6000
运行成本（万元） Operating Cost (Ten Thousand RMB)	781.9	492.5

燃气发电机组
Gas generator set

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燃气发电机组特点 Features of Gas Power Generation Units

恒雅燃气发电机组，为满足于边缘井回收制LNG工厂用电、CNG加气站用电、油气田钻机用电开发的新一代产品。

Hengya gas power generation units are a new generation of products developed to meet the power needs of LNG plants from marginal well recovery, CNG refueling stations, and oilfield drilling rigs.



该产品特点如下：
The product features are as follows:

- 环保节能，助力国家"碳达峰"政策；
- Eco-friendly and energy-saving, supporting the national "carbon peaking" policy.

- 适应多种恶劣环境下使用，尤其适合于高温、高湿、高寒、风沙多等场所；
- Adaptable to various harsh environments, especially suitable for high temperatures, high humidity, extreme cold, and dusty conditions.

- 适应多种气源条件（3kPa~20MPa气源压力均可使用）；
- Compatible with a wide range of gas source pressures (from 3kPa to 20MPa).

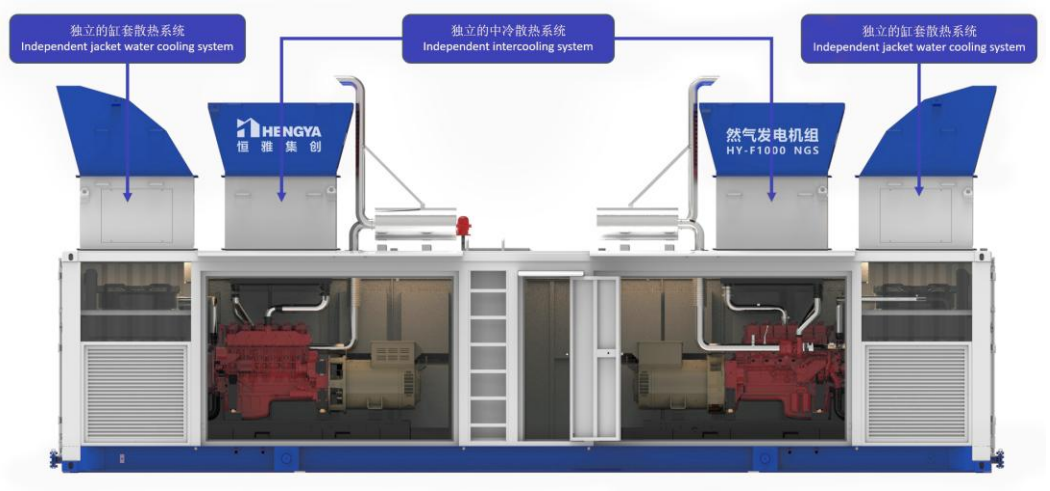
- 机组模块化，冷却系统独立运行
- Modular unit design with an independently operating cooling system.

燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创

一．冷却系统
Cooling System

- 机组模块化组装；
- **Modular assembly of the unit;**
- 缸套水冷却系统与中冷散热独立，中冷散热位于发动机舱室顶部，便于独立清洁；
- **Cylinder liner water cooling system operates independently from the intercooler; the intercooler is positioned at the top of the engine compartment for easy cleaning;**
- 散热富裕量50%以上（在环境温度45℃的条件下运行）
- **Cooling capacity exceeds 50% margin (operates under ambient temperature of 45°C)**



本公司生产的燃气发电机组能适应复杂环境工况，经济性能优于现有柴油机；
Our gas power generation units are designed to operate under complex environmental conditions, offering better economic performance than existing diesel engines.

机组可快速响应负载变化，在复杂工况稳定运行。
The units can respond quickly to load changes and maintain stable operation under challenging conditions.

更低的运行噪音。在额定负荷条件下，静音型机组可将噪音控制在75dB(A)以下（距离机组7m处）；
Lower operating noise: under rated load, the silent-type unit keeps noise below 75dB(A) at a distance of 7 meters.

燃气发电机组采用集成式分区箱体设计，具有防雨、防沙尘、防蚊虫、降噪等功能。
The gas generator adopts an integrated compartmentalized enclosure design, featuring rainproofing, dust and insect protection, and noise reduction.

燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创

二、低噪音 Low Noise

川渝钻井区域内，钻井及LNG液化工厂与居民区距离较近，

In the Sichuan-Chongqing drilling area, drilling sites and LNG liquefaction plants are located close to residential areas,

采用静音型燃气发电机组可大幅降低噪声对居民区的影响。

Using silent-type gas generator sets can significantly reduce noise impact on nearby residential areas.

根据国家GB 12348《工业企业厂界环境噪声排放标准》中的排放限制的规定，

According to the emission limits specified in the national standard GB 12348 "Emission Standard for Industrial Enterprises Noise at Boundary",

夜间噪声的最大声级不得高于55dB(A)，

The maximum sound level of nighttime noise shall not exceed 55 dB(A),

（居民区夜间噪声排放限值为45dB(A)，

(The nighttime noise emission limit for residential areas is 45 dB(A),

夜间频发噪声最大声级超过功能区类别限制幅度不得高于10 dB(A)）。

and the maximum sound level of frequent nighttime noise shall not exceed the functional zone limit by more than 10 dB(A)).

距离 Distance	柴油发电机组 Diesel Generator Set	燃气发电机组（静音型） Gas Generator Set (Silent Type)
7米处dB(A) 7 meters dB(A)	103	75
20米处dB(A)	99	72
50米处dB(A) 50 meters dB(A)	90	65
80米 80 meters	80	55

燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创

三、清洁环保，助力国家政策"碳达峰"、"油改气"政策
Powering Progress with Clean Energy — Supporting Carbon Peaking and Oil-to-Gas Transition.

发电机组尾气排放是大气环境中主要的气体污染源之一，随着国家法律法规对环保要求的不断提高，降低尾气排放对环境的影响也日趋重要。

Exhaust emissions from generator sets are one of the main sources of air pollution, and with increasingly stringent national environmental laws and regulations, reducing their environmental impact has become increasingly important.

井队使用柴油发电机组尾气排放主要为颗粒物及氮氧化物、一氧化碳排放。

Diesel generator sets used on drilling rigs mainly emit particulate matter, nitrogen oxides (NOx), and carbon monoxide (CO).

其中氮氧化物的排放加剧了大气酸沉降，光化学烟雾和雾霾的污染。

Nitrogen oxide emissions contribute to acid deposition, photochemical smog, and haze pollution.

燃气发电机组以天然气清洁能源为燃料，可降低40%CO2排放，尾气中不含颗粒物，通过SCR等脱硝技术后，可有效降低氮氧化物排放至30mg/Nm³(满足当前最严苛的排放法规及要求)。

Gas generator sets use natural gas as a clean energy source, reducing CO_2 emissions by 40%. Their exhaust contains no particulate matter, and with SCR and other denitrification technologies, NOx emissions can be effectively reduced to 30 mg/Nm³ (meeting the most stringent current emission regulations and standards).



燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创

四、站控系统
Station Control System

- 运行数据采集与记录；

Operational data collection and logging;

- 故障自动监控报警；

Automatic fault monitoring and alerting;

- 手机APP及WEB界面远程查看；

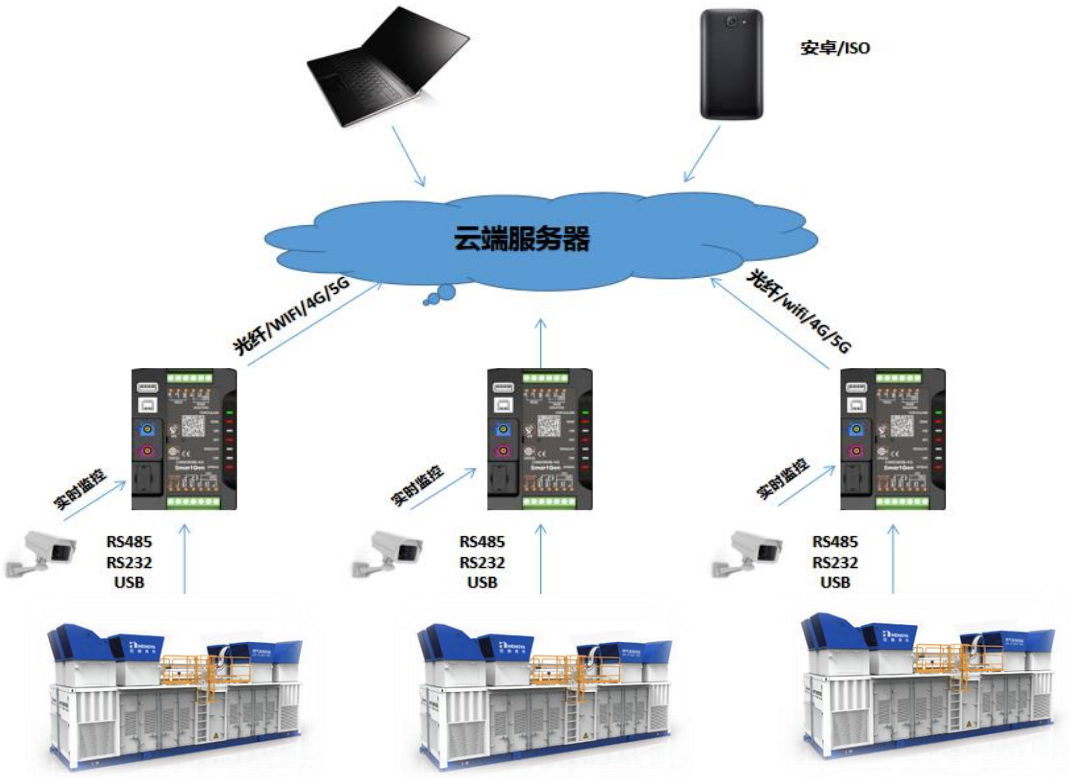
Remote viewing via mobile app and web interface;

- 大数据分析，预警未知故障；

Big data analysis for early warning of unknown faults;

- 维保周期自动提醒，便于客户掌握机组状态，提高供电可靠性；

Automatic maintenance cycle reminders to help customers monitor unit status and enhance power supply reliability;



燃气发电机组
Gas generator set

HENGYA 恒雅集创

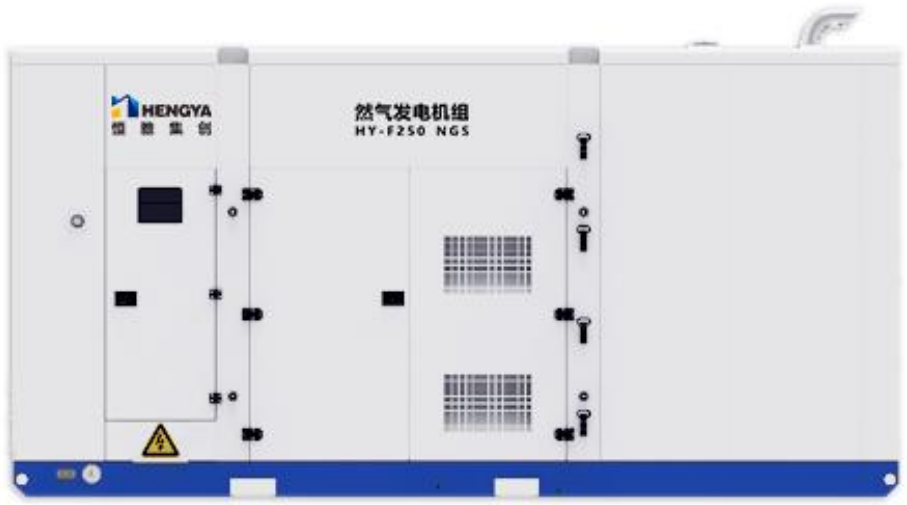
常规动力配置 Conventional Power Configuration	组合数量 Number of Units	项目类型 Project Type
250kW燃气发电机组 250kWGas Generator Set	1台	CNG井口伴生气回收（压缩机变频启动） CNG Wellhead Associated Gas Recovery
1000kW燃气发电机组 1000kWGas Generator Set	2台	5万方井口气制LNG项目 50,000 Nm^3/day Wellhead Gas-to-LNG Project
1000kW燃气发电机组 1000kWGas Generator Set	4台	10万方井口气制LNG项目 100,000 Nm^3/day Wellhead Gas-to-LNG Project
1000kW燃气发电机组 1000kWGas Generator Set	8台	20万方井口气制LNG项目 200,000 Nm^3/day Wellhead Gas-to-LNG Project
1000kW+ 500kW燃气发电机组 1000kW+ 500kWGas Generator Set	2台+1台	50钻机气代油供电项目 Gas-to-Power Project for 50 Drilling Rigs (Replacing Diesel)
1000kW+ 500kW燃气发电机组 1000kW+ 500kWGas Generator Set	3台+1台	70钻机气代油供电项目 Gas-to-Power Project for 70 Drilling Rigs (Replacing Diesel)
1000kW燃气发电机组 Gas Generator Set	可达128台组网 Supportsnetworking of up to 128 units	燃气电站项目（并网发电或孤网运行） Gas Power Plant Project (Grid-Connected or Island Mode Operation)

说明：上述动力配置为多数情况下匹配方案。客户订货前需根据项目实际负荷特性、环境条件、气源条件等情况，确定具体动力配置方案。井口气制LNG项目可动力部分场站EPC总包，可提供箱式升压撬、余热锅炉（导热油或蒸汽）、尾气处理等可选配置。

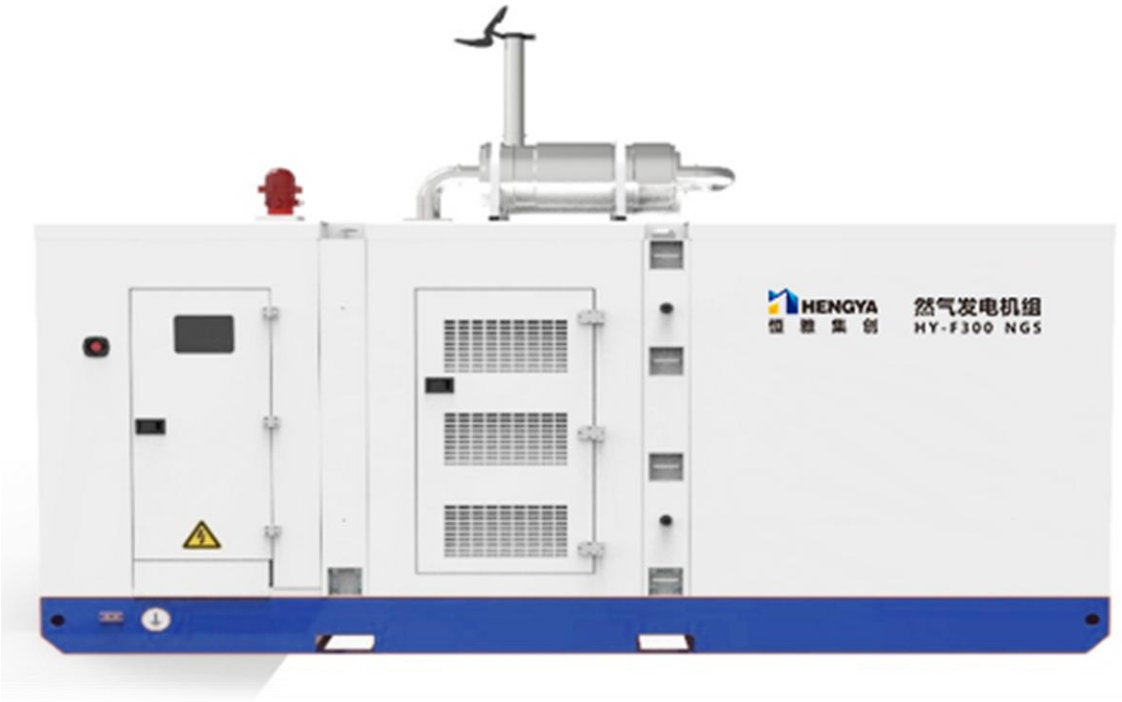
Note: The above power configurations represent typical matching solutions in most cases. Before placing an order, customers should determine the specific power configuration based on actual project load characteristics, environmental conditions, and gas source parameters.
For wellhead gas-to-LNG projects, the power section of the station can be provided as a turnkey EPC package, with optional configurations such as skid-mounted booster units, waste heat boilers (thermal oil or steam), and exhaust gas treatment systems.

燃气发电机组
Gas generator set

HENGYA
恒 雅 集 创



250kW
(非静音撬装型)
Open Skid-Mounted Configuration (Non-Soundproof)



300kW
(非静音撬装型)
Open Skid-Mounted Configuration (Non-Soundproof)

燃气发电机组
Gas generator set

HENGYA
恒 雅 集 创



500KW/600KW
(非静音 / 静音&烟气汇总)
Open / Enclosed Type with Exhaust Gas Integration



500kW/600KW
(非静音 / 静音&独立排气)
Open / Enclosed Type with Dedicated Exhaust Outlet

燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创



1000kW/1200kW
(非静音 / 静音&烟气汇总)
Open / Enclosed Type with Dedicated Exhaust Outlet

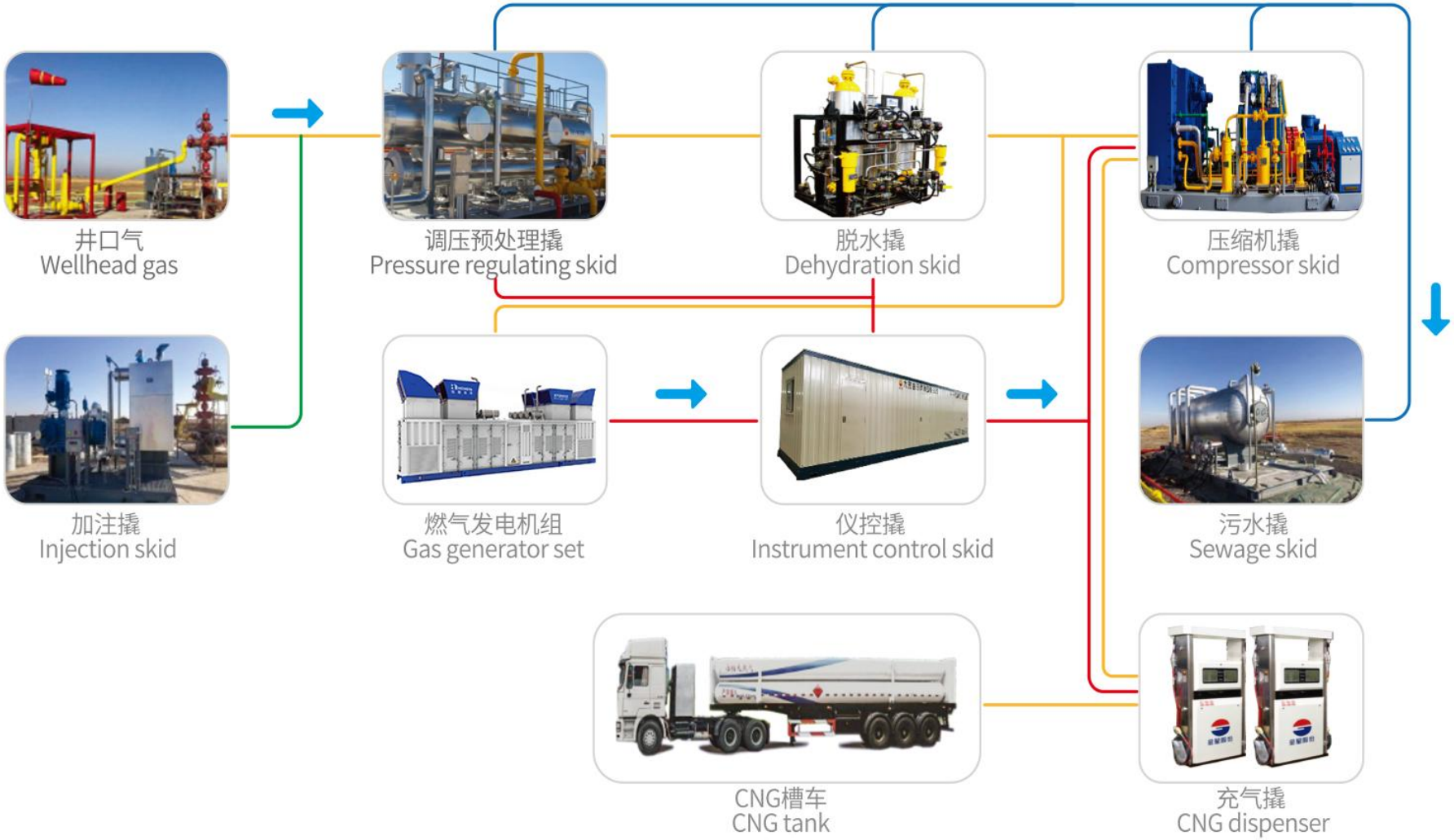


1000kW/1200kW
(非静音 / 静音&独立排气)
Non-Silent / Silent with Independent Exhaust System

燃气发电机组
Gas generator set

HENGYA
恒 雅 集 创

井口气CNG项目应用
Application of Wellhead Gas CNG Projects



燃气发电机组
Gas generator set

HENGYA 恒雅集创

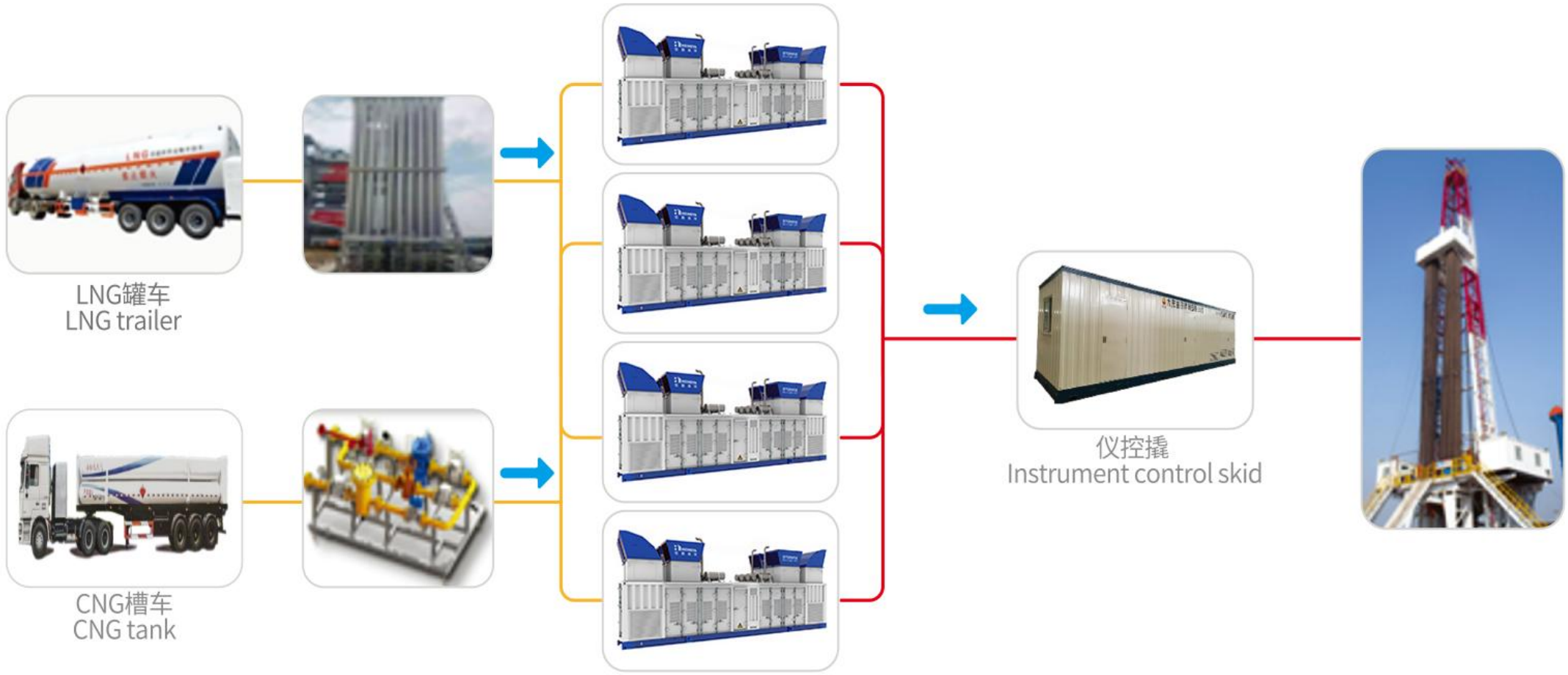
井口气LNG项目应用
Application of Wellhead Gas LNG Projects



燃气发电机组
Gas generator set

HENGYA
恒 雅 集 创

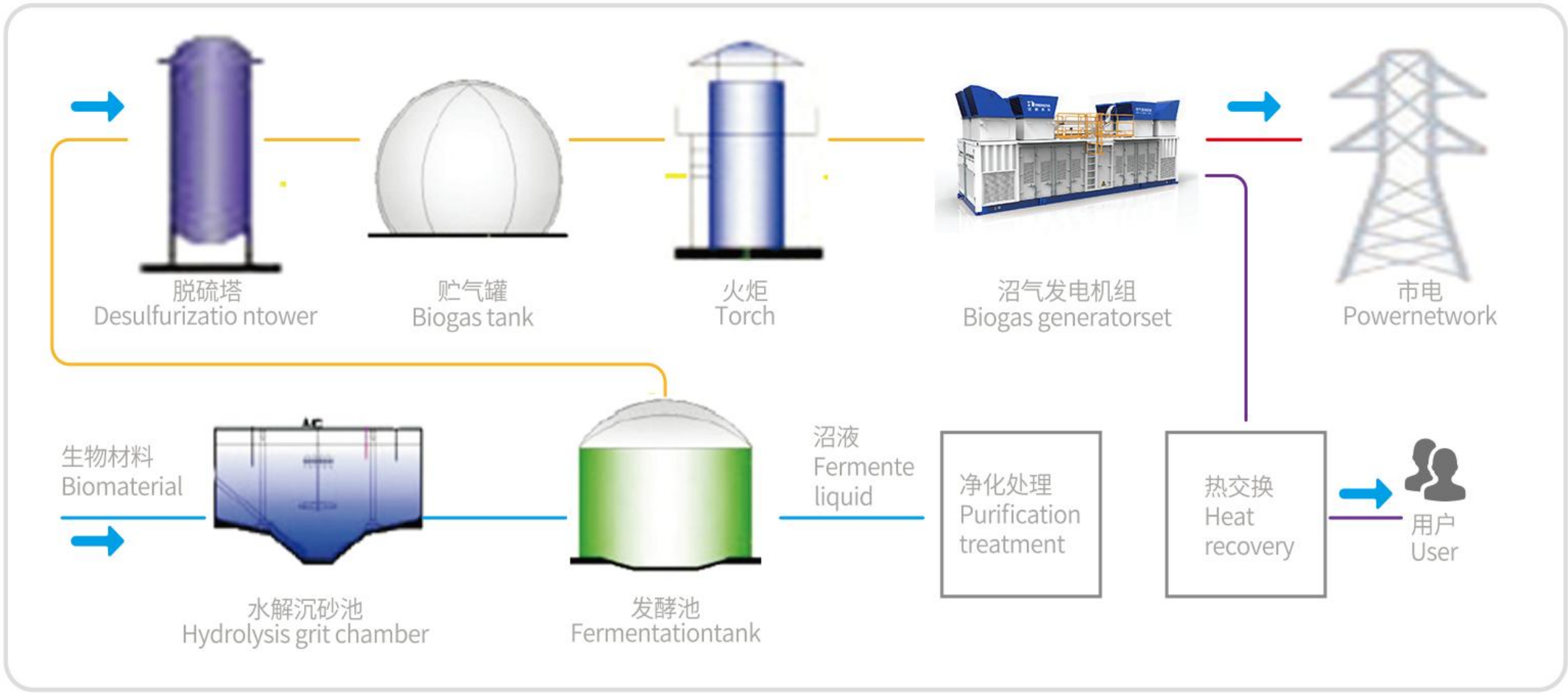
油气田钻井项目应用
Application in Oil and Gas Field Drilling Projects



燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创

再生能源气体(沼气)发电项目应用
Application of Renewable Gas (Biogas) Power Generation Projects

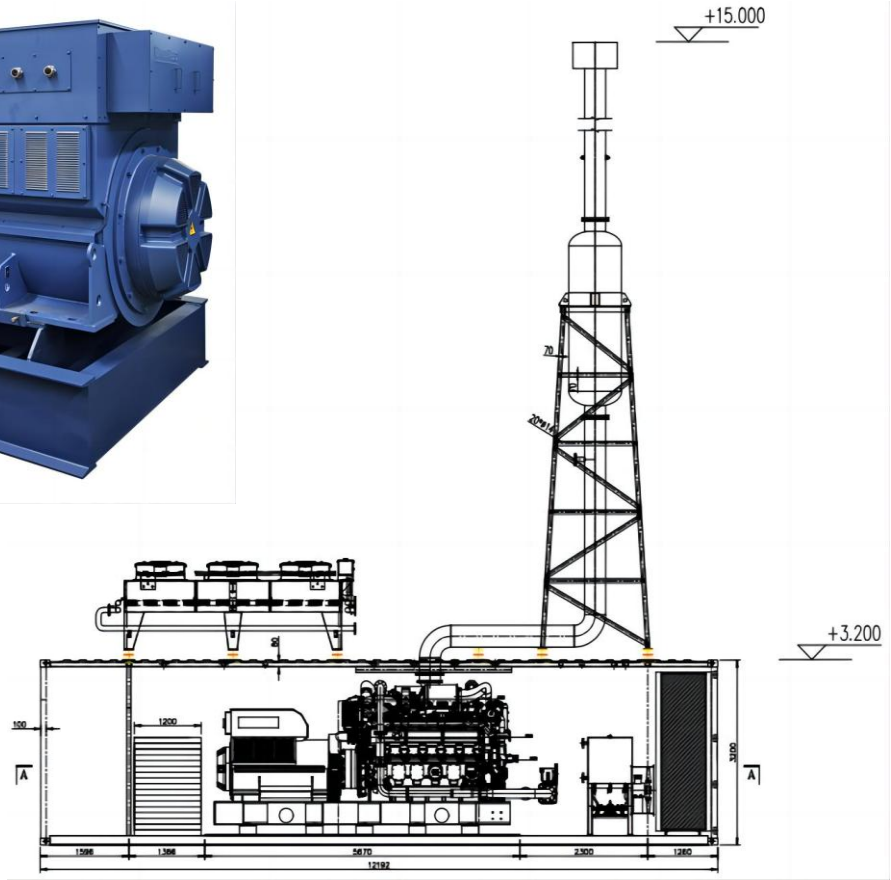


燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创

高压机组-1000kW撬装静音机组
1000kW High-Voltage Silent Skid-Mounted Generator Set





机组型号	1000NGS-1/10A
常用功率（kW）	1000
额定频率（Hz）	50
额定电压（V）	10500
额定转速（rpm）	1000
功率因素	0.8
发电效率（%）	38
燃气消耗量（m³/h）	309
噪声级别（dB）	≤116
燃料	天然气
机组使用环境	温度-10～40℃,海拔高度≤1000m
使用机油	15W-40燃气机油
集装箱尺寸（mm）	12192*2438*2896
机组重量（kg）	23000
大修期（h）	40000

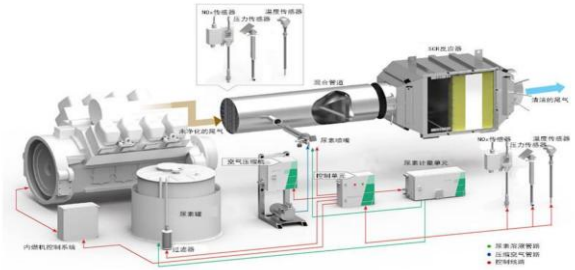
燃气发电机组
Gas generator set

HENGYA 恒 雅 集 创

机组应用在不同场景的扩展性选配产品
Expandable Optional Products for Generator Set Applications in Various Scenarios



燃气调压设备
Gas Pressure Regulating Equipment



尾气净化装置
Exhaust Gas Purification Unit



高压变压撬
High-Voltage Transformer Skid



生活热水余热装置
Domestic Hot Water Waste Heat Recovery Unit



余热导热油炉
Waste Heat Thermal Oil Heater



余热蒸汽锅炉
Waste Heat Steam Boiler

智能电气
Smart electrical

燃气发动机钠离子启动电池
Sodium-Ion Starter Battery for Gas Engine

HENGYA 恒 雅 集 创

我们深耕智能燃气能源设备技术十余年，聚焦新兴能源技术的探究与研究，面对环境气候复杂多变，

We have been deeply engaged in intelligent gas energy equipment technologies for over a decade, focusing on the exploration and development of emerging energy solutions.

极寒气温下铅酸蓄电池启动燃气发动机困难等痛点。我司与四川华芯智宇新能源科技有限公司，强

In response to challenges such as complex environmental conditions and the difficulty of starting gas engines with lead-acid batteries in extremely cold climates,

强合作，联合研发燃气发动机超低温钠离子启动电池。这既彰显其技术创新与市场拓展并重的发展

Our company has partnered with Sichuan Huaxin Zhiyu New Energy Technology Co., Ltd. to jointly develop an ultra-low-temperature sodium-ion starter battery for gas engines.

战略。同时也探索〝智慧能源+钠电" 应用场景，为行业提供高效解决方案。 目前NaM1270L钠离子

This reflects our development strategy that emphasizes both technological innovation and market expansion.



启动电池已广泛投入市场使用，我司也全面应用于汉马13L燃气机的启动电源，仅内蒙古地区已分三批次投入1000余套，性能强劲、安全稳定，被川庆油田列为“安全启动电源”。

It also explores the application of “Smart Energy + Sodium Battery” to provide efficient solutions for the industry. Currently, the NaM1270L sodium-ion starter battery has been widely adopted in the market, And our company has fully implemented it as the starting power source for Hanma 13L gas engines. In Inner Mongolia alone, over 1,000 units have been deployed across three phases. With strong performance and reliable safety, it has been designated by Chuanqing Oilfield as a “Safe Starter Power Source.

钠离子电池概述与优势
Overview of Sodium-Ion Batteries

钠离子电池是一种新型二次电池，工作原理与锂离子电池类似，依靠钠离子（Na^+）在正负极间迁移实现充放电。
Sodium-ion batteries are a new type of rechargeable battery, operating similarly to lithium-ion batteries by relying on the migration of sodium ions (Na^+) between the anode and cathode during charging and discharging.

钠离子电池包含正极（如层状氧化物、普鲁士蓝化合物）、负极（主流为硬碳材料）、电解液、隔膜、铝箔集流体及电池外壳。
Sodium-ion batteries consist of a cathode (such as layered oxides or Prussian blue compounds), an anode (mainly hard carbon materials), electrolyte, separator, aluminum foil current collector, and battery casing.

NA+

钠离子电池有如下核心优势：
Sodium-ion batteries offer the following key advantages:

- 成本优势 钠资源地壳丰度（2.6%）远超锂（0.0065%），碳酸钠价格仅为碳酸锂的约1/200；负极集流体采用铝箔（替代锂电池铜箔），降低材料成本8%~10%。
- Cost Advantage: Sodium is far more abundant in the Earth's crust (2.6%) than lithium (0.0065%), and the price of sodium carbonate is only about 1/200 that of lithium carbonate; aluminum foil is used as the anode current collector (replacing copper foil in lithium batteries), reducing material costs by 8%–10%.
- 快充快放与低温性能 支持15分钟充至80%容量，20分钟完全充满，倍率型电芯最大放倍率可达30C，远超铅酸电池；-40℃低温环境下仍可稳定工作，容量保持率>80%。
- Fast Charging/Discharging & Low-Temperature Performance: Supports charging to 80% capacity in 15 minutes and full charge in 20 minutes; high-rate cells can discharge at up to 30C, far exceeding lead-acid batteries; operates stably in -40°C environments with capacity retention over 80%.
- 安全性与寿命 电芯可通过目前最严苛的穿刺测试，无起火爆炸、风险，支持0V过放而不损伤电池；循环寿命超2000次（铅酸电池的5.7倍）。
- Safety & Lifespan: Cells pass the most rigorous puncture tests without fire or explosion risk, support 0V over-discharge without damage, and offer a cycle life exceeding 2,000 times (5.7 times that of lead-acid batteries).
- 环保与资源可持续性 原料不受锂矿资源限制，供应链更稳定。
- Environmental & Resource Sustainability: Raw materials are not constrained by lithium mining, resulting in a more stable supply chain.

钠离子电池可应用于燃油车启动、、电动汽车、特种车辆、储能领域等诸多领域。 Sodium-ion batteries can be applied in fuel vehicle starting, electric vehicles, specialty vehicles, and energy storage systems across various sectors.

智能电气
Smart electrical

智能钠离子电池系统
Intelligent Sodium-Ion Battery System

HENGYA 恒 雅 集 创

独创Hyson X智能系统，引爆智能电池新时代，自主研发硬核AI黑科技释放前所未有的极致性能表现，

The pioneering Hyson X intelligent system ignites a new era of smart batteries, Featuring proprietary AI-driven technologies that unleash unprecedented performance, With a groundbreaking AI system and a completely redesigned appearance,

史无前例的人工智能系统、全新外观设计等全面提升，成为当之无愧的启动电池中的爱马仕。

It rightfully earns its place as the “Hermès of starter batteries.”

全新微型能量智能管理系统集提升动力，节能减排于一体。

The new micro energy intelligent management system integrates power enhancement with energy saving and emission reduction.六大功能如下：

The six core functions are as follows:




F 00061741

NIMTT 中国测试技术研究院
National Institute of Measurement and Testing Technology

测 试 报 告
Test Report

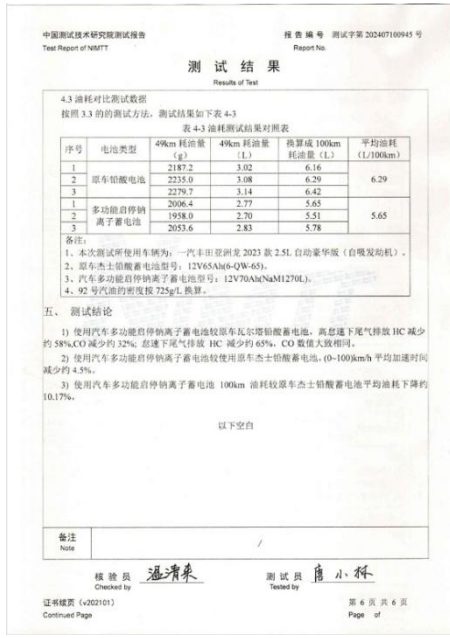
报告编号：测试字第 202407100945 号
Report No.

客户名称 Client Name：四川华芯智宇新能源科技有限公司
联络信息 Contact Information：成都市双流区空港四路 2666 号
样品名称 Sample Name：汽车多功能启停钠离子蓄电池
型号/规格 Model：12V50Ah(NaM1250L)/ 12V70Ah(NaM1270L)
样品编号 Sample No.：/
标称生产单位 Manufacturer：四川华芯智宇新能源科技有限公司

扫码验真 1010050908

批准人 Approved by：

签发日期 Issue Date：2024 年 08 月 01 日


中国测试技术研究院测试报告 Test Report of NIMTT

报告编号 Report No.：测试字第 202407100945 号

测 试 结 果
Results of Test

4.3 油耗对比测试数据

按照 3.3 的的测试方法，测试结果如下表 4-3

表 4-3 油耗测试结果对照表

序号	电池类型	49km 耗油量（g）	49km 耗油量（L）	换算成 100km 耗油量（L）	平均油耗（L/100km）
1	原车铅酸电池	2187.2	3.02	6.16	6.29
2		2235.0	3.08	6.29	
3		2279.7	3.14	6.42	
1	多功能启停钠离子蓄电池	2006.4	2.77	5.65	5.65
2		1958.0	2.70	5.51	
3		2053.6	2.83	5.78	

备注：

1、本次测试所使用车辆为：一汽丰田亚洲龙 2023 款 2.5L 自动豪华版（自吸发动机）。

2、原车杰士铅酸蓄电池型号：12V65Ah(6-QW-65)。

3、汽车多功能启停钠离子蓄电池型号：12V70Ah(NaM1270L)。

4、92 号汽油的密度按 725g/L 换算。

五、 测试结论

1）使用汽车多功能启停钠离子蓄电池较原车瓦尔塔铅酸蓄电池，高怠速下尾气排放 HC 减少约 58%,CO 减少约 32%；怠速下尾气排放 HC 减少约 65%，CO 数值大致相同。

2）使用汽车多功能启停钠离子蓄电池较使用原车杰士铅酸蓄电池，(0-100)km/h 平均加速时间减少约 4.5%。

3）使用汽车多功能启停钠离子蓄电池 100km 油耗较原车杰士铅酸蓄电池平均油耗下降约 10.17%。

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备注 Note：/

核验员 Checked by：温清来　测试员 Tested by：唐小林

证书续页（v202101）Continued Page　第 6 页 共 6 页 Page of

中测院权威检测报告

智能电气
Smart electrical

汽车智能钠离子启停电池（竞技版）
Automotive Smart Sodium-Ion Start-Stop Battery (Performance Edition)

HENGYA 恒 雅 集 创

搭载自主研发的Hyson X智能系统，纯燃油汽车使用，具有如下性能优势：

Equipped with the independently developed Hyson X intelligent system, designed for pure gasoline vehicles, offering the following performance advantages:

可节省10.17%的燃油。

Fuel savings of up to 10.17%.

低温特色，-45°C可轻松启动。

Exceptional low-temperature capability, enabling easy engine start at -45°C.

超长寿命，正常使用寿命可达8~10年。

Ultra-long lifespan, with a typical service life of 8 to 10 years.

智能保电，延长蓄电池待机时长。

Smart power retention, extending battery standby duration.

提升动力，减少碳排放。

Enhanced power output with reduced carbon emissions.



序号	规格型号	电压（v）	容量（Ah）	外形尺寸（mm）	冷启动电流（BCI）
1	NaM1240L	12	40	238*133*198/222	500
2	NaM1250L	12	50	245*175*188	650
3	NaM1270L	12	70	278*175*188	850
4	NaM1280L	12	80	315*175*188	900

智能电气
Smart electrical

超级钠离子启动电池
Super Sodium-Ion Starter Battery

HENGYA
恒 雅 集 创

当传统铅酸电池在-10℃瑟瑟发抖，钠离子汽车启动蓄电池以-40℃秒启的硬核实力，让您的座驾在极寒中如虎添翼！

When traditional lead-acid batteries shiver at -10°C, the sodium-ion automotive starter battery showcases its hardcore strength with instant ignition at -40°C—empowering your vehicle to thrive in extreme cold like a tiger with wings!

- 启动性能强劲：瞬间点火，无惧低温衰减！

Powerful Starting Performance: Instant ignition with no fear of low-temperature degradation

- 超低温启动：零下40°C轻松启动汽车！

Ultra-Low Temperature Start: Easily starts vehicles at -40°C

- 长寿命更省钱：启停寿命大于50万次，是铅酸电池启停寿命的3倍以上！ 正常使用寿命可达8~10年。

Long Lifespan, More Savings: Over 500,000 start-stop cycles—more than 3 times that of lead-acid batteries; typical service life of 8–10 years

- 节能减排：汽车自动启动功能放心使用，可提升动力降低油耗！

Energy Saving & Emission Reduction: Confident use of auto start-stop function boosts power and reduces fuel consumption

- 绿色环保：钠电池不含重金属，对环境无污染！

Eco-Friendly: Sodium batteries contain no heavy metals and pose no environmental pollution



智能电气
Smart electrical

HENGYA
恒 雅 集 创

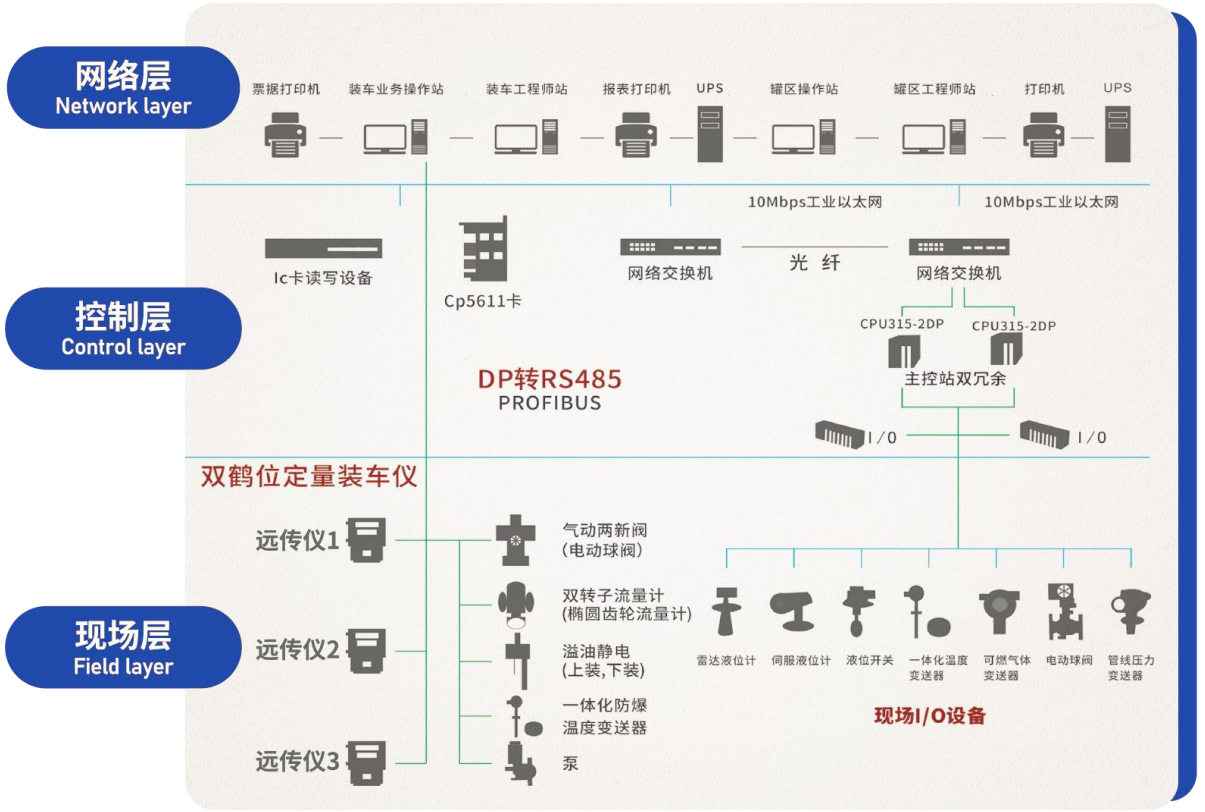
工业智能控制系统
Industrial Intelligent Control System

工业智能控制系统是集自动化控制(SCADA)、安防(SPS)、经营决策支持(DSS)等多种应用于一体的多功能平台， The industrial intelligent control system is a multifunctional platform integrating automation control (SCADA), security protection (SPS), and decision support systems (DSS).

实现对设备及环境进行多区域全方位的监控、数据访问、信息传递等。 It enables multi-zone, comprehensive monitoring of equipment and environment, along with data access and information transmission.

本公司可根据不同行业及项目灵活构建系统框架，为系统运营商提供优质的解决方案， Our company can flexibly build system frameworks tailored to different industries and projects, Providing high-quality solutions for system operators,

向经营管理者在指挥、调度方面提供强有力的支持。 And offering strong support to business managers in command and dispatch operations.



智能电气
Smart electrical

电气成套
Electrical Equipment Package

HENGYA 恒 雅 集 创

公司产品不断在发展和创新的同时，对外承接电气成套业务，根据用户技术要求，进行器件采购、柜体制作和系统成套。

While continuously developing and innovating its products, the company also undertakes external electrical system integration projects.

Component procurement, cabinet fabrication, and complete system assembly are carried out based on user technical requirements.

整个生产过程遵照ISO9001质量体系进行质量控制；

The entire production process follows ISO9001 quality management standards for quality control.

严格依照客户技术要求和国家GB3797标准相关检验内容进行出厂检验及通电测试。

Factory inspection and power-on testing are strictly conducted in accordance with customer specifications and the national GB3797 standard.

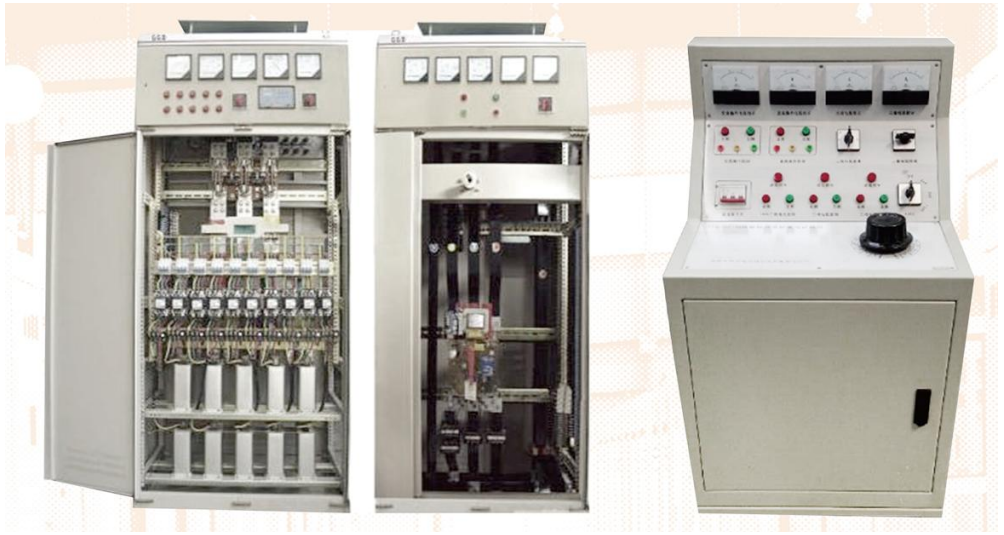
本公司本着互利互惠的原则，长期与设备生产厂家、代理商、工程承包商合作，为其提供成套电气柜。

Upholding the principle of mutual benefit, the company maintains long-term cooperation with equipment manufacturers, distributors, and engineering contractors.

We provide them with fully integrated electrical cabinets.

公司现有配套产品，无论在性能、外观、价格和售后服务上均得到设备生产厂家的认可。

Our supporting products are widely recognized by equipment manufacturers for their performance, appearance, pricing, and after-sales service.



低压配电柜
Low-Voltage
Distribution Cabinet

测试设备
Testing Equipment

HENGYA
恒 雅 集 创

PLC控制系统
PLC Control System



正压防爆控制柜
Positive Pressure Explosion-Proof Control Cabinet

防爆控制柜
Explosion-Proof Control Cabinet

PLC控制柜
PLC Control Cabinet



PLC控制柜内部具有结构紧凑、工作稳定、功能齐全等特点，可根据控制规模大小进行组合，

PLC control cabinets feature a compact structure, stable operation, and comprehensive functionality. They can be configured flexibly according to the scale of control requirements,

既可以实现单机自动控制，也可以实现多机、多级通过工业网络总线联机控制。

Supporting standalone automatic control, as well as multi-machine and multi-level networked control via industrial bus systems.

本公司可根据客户项目需求，量身设计PLC控制系统，为客户实现最优化的解决方案。

Our company can tailor PLC control systems based on specific project requirements, Delivering optimized solutions for our clients.

智能电气
Smart electrical

软起动控制柜、变频控制柜
Soft Starter Control Cabinet，Frequency Converter Control Cabinet

HENGYA 恒 雅 集 创

软起动控制柜满足大功率电机平稳起动/停止，减少起动过程中对机械、电网的冲击，降低起动电流及配电容量，对电机提供过载、短路、缺相等多重保护，为电机安全运行提供保障。

The soft starter control cabinet enables smooth start/stop operations for high-power motors, Reducing mechanical and grid impact during motor startup, Lowering starting current and distribution capacity requirements, Providing multiple protections such as overload, short circuit, and phase loss, Ensuring safe and reliable motor operation.

变频控制柜可以最大限度地限制电动机的起动电流，减少电网压降,且节电效果显著根据设备工艺所需配置对应的运行模式或参数，适应不同工艺和环境下的使用。 专业的控制方案和成套设计，有效解决变频器散热和干扰，且能有效保护电机安全地运行。

The variable frequency drive (VFD) control cabinet can effectively limit the motor’s starting current。 Reducing voltage drops in the power grid and delivering significant energy savings. It can be configured with operating modes or parameters tailored to specific process requirements, Making it adaptable to various industrial processes and environmental conditions. With professional control strategies and integrated system design, It effectively addresses issues related to VFD heat dissipation and electromagnetic interference,
While ensuring the motor operates safely and reliably.





变频控制柜
Variable Frequency Drive (VFD) Control Cabinet



AB 7500系列变频柜
AB 7500 Series VFD Cabinet



软启动柜
Soft Starter Cabinet

钣金产品
Sheet metal products

HENGYA 恒 雅 集 创

一体化仪控房 Integrated Instrumentation and Control Room

一体化仪控房(又名仪控撬)集保温房体、SCADA系统、PLC(RTU)控制系统、UPS系统、ESD系统、视频系统、通讯系统、燃气和火警报警控制系统为一体，实现对场站设备进行集中监视、控制、记录和数据远传。

The integrated instrumentation and control room (also known as I&C skid) combines insulated housing, SCADA system, PLC (RTU) control system, UPS system, ESD system, video surveillance, communication system, and gas/fire alarm control system into one unit, Enabling centralized monitoring, control, logging, and remote data transmission for station equipment.



一体化仪控房在天然气井口采集、处理、调压、液化等工艺场站得到较多的应用，具有功能齐备、紧凑、环境及区域适用广等特点，

Integrated I&C rooms are widely used in process stations for natural gas wellhead collection, treatment, pressure regulation, and liquefaction, Featuring comprehensive functionality, compact design, and broad adaptability to various environments and regions,





为现场安装施工、调试、运行等提供较多便利。

Providing significant convenience for on-site installation, commissioning, and operation.

钣金产品
Sheet metal products

HENGYA 恒 雅 集 创

电气箱柜、网络监控、操作台控制类集成撬、环保类隔音产品等

Electrical Enclosures and Cabinets，Network Surveillance Systems，Integrated Skids for Console-Based Control Systems and Environmental Noise Reduction Products 或 Eco-Friendly Acoustic Insulation Products.

采用先进的钣金制造工艺技术，并运用全数控剪、折、冲设备，为客户提供专业的产品和服务。

Utilizing advanced sheet metal fabrication technologies, And employing fully CNC-controlled shearing, bending, and punching equipment,we deliver professional products and services to our clients.





专业的噪音处理，通过系统的设计采用不同的治理方法，充分将隔、消、吸、减有效结合。

Professional noise control is achieved through systematic design using various mitigation techniques, Effectively integrating isolation, elimination, absorption, and reduction methods.



项目案例

Project Case

项目案例
Project Case

HENGYA 恒 雅 集 创

应用案例一：大庆油田-重庆项目30万方LNG液化站项目

Application Case 1: Daqing Oilfield – Chongqing Project 300,000 m³ LNG Liquefaction Station

项目介绍： Project Overview:

12MW天然气发电机组；

12MW natural gas generator set

采用静音型带烟气汇总集装箱；

Equipped with a silent-type container featuring integrated exhaust gas collection

项目正常运行中；

The project is currently in stable operation





项目案例
Project Case

HENGYA 恒雅集创

应用案例二：川庆油田-内蒙项目20万方LNG液化站项目

Application Case 2: Chuanqing Oilfield – Inner Mongolia Project 200,000 m³ LNG Liquefaction Station

项目介绍：

Project Overview:

7.2MW天然气发电机组；

7.2MW natural gas generator set

采用静音型带烟气汇总集装箱；

Equipped with a silent-type container featuring integrated exhaust gas collection

项目正常运行中；

The project is currently in stable operation



项目案例
Sheet metal products

HENGYA 恒 雅 集 创

应用案例三：钻机气化项目

Application Case 3: Rig Gasification Project

项目介绍： Project Overview:

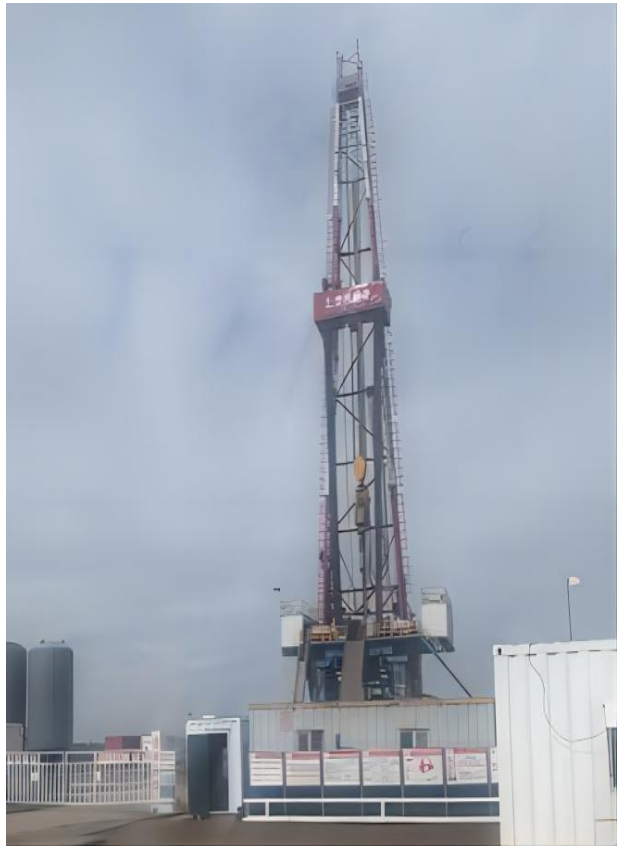
3.5MW超过15套在各大油田使用，

Over 15 sets of 3.5MW units deployed across major oilfields,

配合电网直流控制模块，完成机械钻机的电动化。

Integrated with grid-based DC control modules to achieve electrification of mechanical drilling rigs.





项目案例
Project Case

HENGYA 恒雅集创

应用案例四：广州垃圾填埋场

Application Case 4: Guangzhou Landfill Site

项目介绍：

Project Overview:

中国大型垃圾填埋场30万方液化，

300,000 m³ liquefaction capacity at a major landfill site in China

12万方液化9MW燃气发电，

120,000 m³ liquefied gas used for 9MW power generation

已稳定运行2年，

Stable operation for 2 years

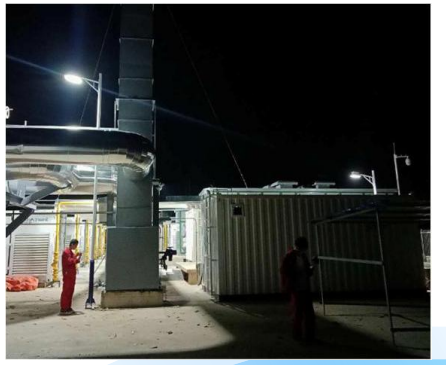
10年现场运行和维保服务

10-year on-site operation and maintenance service









项目案例
Project Case

HENGYA 恒 雅 集 创

应用案例五：重庆中石油-页岩气压裂项目

Application Case 5: PetroChina Chongqing – Shale Gas Fracturing Project

项目介绍：

Project Overview:

采用静音型集装箱，15台1200KW静音型天然气发电机组；项目正常运行中；

Utilizes silent-type containers equipped with 15 units of 1200KW silent natural gas generator. The project is currently in stable operation The project is currently in stable operation sets





项目案例
Project Case

HENGYA 恒 雅 集 创

应用案例六：气回收项目(LNG)

Application Case 6: Gas Recovery Project (LNG)

项目介绍：

Project Overview:

乐山5万方液化工厂:2台1MW静音机组

Leshan 50,000 m³ LNG liquefaction plant: equipped with two 1MW silent generator sets

宜宾、庆阳、大庆、阿克苏、云南威信、广安、绵阳、靖边、自贡、榆林、克拉玛依等地累计为每日140万方LNG撬装工厂供电

In Yibin, Qingyang, Daqing, Aksu, Weixin (Yunnan), Guang'an, Mianyang, Jingbian, Zigong, Yulin, and Karamay, the total installed capacity supplies power to LNG skid-mounted plants producing 1.4 million m³ per day







4

售后服务

After-sale service

售后服务
After-sale service

HENGYA 恒雅集创

01 外观验收 Appearance Inspection

设备到达项目现场后，箱体表面无严重损伤，内部设备固定螺栓无断裂、松动现象，客户验收合格并签字后即算完成。Upon arrival at the project site, the equipment casing shows no significant surface damage, and the internal equipment mounting bolts are intact and secure without signs of breakage or looseness. The process is considered complete once the customer approves the inspection and signs off.

02 配件验收 Accessory Inspection

设备到达项目现场后，根据货物清单清点相关随机配件、随机备件、随机附件，客户验收合格并签字后即算完成。Upon arrival at the project site, all accompanying accessories, spare parts, and attachments are checked against the packing list, The process is considered complete once the customer approves the inspection and signs off.

03 性能验收 Performance Acceptance

燃气发电机组在满足项目负荷条件下，正常运行36小时，则达到验收标准（特殊验收标准按技术协议执行），客户验收合格并签字后即算完成。The gas generator set must operate continuously for 36 hours under project load conditions, to meet the acceptance criteria (special standards are subject to the technical agreement), the process is considered complete once the customer approves the inspection and signs off.

人员培训及培训内容

Personnel Training and Training Content

我司对客户2-4个操作人员进行现场培训，培训分两个阶段；

Our company provides on-site training for 2 to 4 customer operators, divided into two phases:

第一阶段：在我司燃气发电机组装及厂内试车阶段，由客户安排操作人员到我公司进行机组性能培训。

Phase 1: During the assembly and factory testing of the gas generator set at our facility, the customer assigns operators to receive performance training at our site.

第二阶段：设备在客户项目现场调试期间，由我司服务人员对客户操作、维修人员进行技术培训。

Phase 2: During equipment commissioning at the customer's project site, our service personnel provide technical training to the customer's operation and maintenance staff.

培训内容：

Training Content:

1、发电机组各个主要部件介绍
Introduction to the main components of the generator set
2、燃气发电机组操作使用规程
Operating procedures for the gas generator set
3、设备维护 Equipment maintenance
4、火花塞、空气滤芯的正确拆卸及安装
Proper disassembly and installation of spark plugs and air filters
5、燃气发电机火花塞、空气滤芯清洗程序
Cleaning procedures for spark plugs and air filters of the gas generator
6、电器设备清洁安全操作规程
Safety procedures for cleaning electrical equipment

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售后保障
After-Sales Support



1、自发货之日起12个月或机组连续运行2200小时（以先到为准）为质量保证期。

1. The warranty period is 12 months from the date of shipment or 2,200 hours of continuous operation of the unit, whichever comes first.

2、可选择延保服务，由我司指派专业技术服务人员到现场实施维保。质保期内客户需使用我司配件，并按照设备维修保养手册要求进行定期维保，如客户未按上述要求执行，质保期自动结束。

2. Optional extended warranty services are available, with our company assigning professional technical personnel for on-site maintenance. During the warranty period, customers must use our designated spare parts and perform regular maintenance as specified in the equipment maintenance manual. Failure to comply will result in automatic termination of the warranty.

3、保证货物在进行安装、调试和试运行等过程中，损坏或有缺陷的合同组件或零部件可得到免费修理或更换（人为原因损坏的零部件不在免费服务范围内）。

3. During installation, commissioning, and trial operation, any damaged or defective contractual components or parts will be repaired or replaced free of charge (excluding damage caused by human factors).

4、设备使用期间，凡发生质量问题，我司应能够及时地为客户提供技术服务。

4. During equipment operation, our company will promptly provide technical support for any quality-related issues.

5、在质量保证期内，客户在发出通知后，我司提供免费的修理或更换不合格的零部件，以保证设备正常运行。

5. Within the warranty period, upon receiving customer notification, our company will provide free repair or replacement of defective parts to ensure normal equipment operation.

HENGYA
恒 雅 集 创

THANKS

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