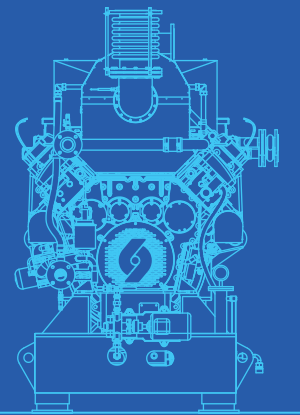


全球燃气发动机制造商 及能源解决方案专家

Global Expert In Gas Engines And Energy Solutions



序 Preface

当“双碳”成为时代命题，能源转型按下加速键。我们思考：在能源运用蓬勃发展的今天，燃气发电为何依然不可或缺？答案在于——置身能源结构变革的宏大叙事，我们需要更智慧的能源解决方案、更清洁的能源应用、更可靠的能源伙伴。

三十多年行业积淀，力宇将战略发展聚焦于燃气发电技术创新与系统集成。我们深信，燃气发电机组不仅是能量转换装置，更是构建新型电力系统的关键支点。在风电光伏的间歇性与电网稳定性之间，在能源安全与低碳目标之间，力宇以高效发电技术、超低排放技术和智慧管理系统架起桥梁，让每一立方燃气释放出更大价值。

我们追寻技术革新并致力于引领技术趋势，但深知技术参数并非衡量系统价值的单一维度。当传统发电设备遭遇运维低效、响应迟滞的痛点，我们重新定义燃气能源应用的价值边界——通过整合项目设计可研、核心动力设备制造与智慧运营管理，打造贯穿始终的一体化价值链条，让每台机组都成为可感知、可协同、可优化的能源生态节点。

能源革命的终极目标在于社会价值与用户价值的共振。我们期待以燃气发电动力技术护航能源结构平稳过渡，以创新服务模式加速低碳转型进程，与用户共绘这样的蓝图——当高效清洁的燃气发电机组与可再生能源共舞，当每度电都承载着环境友好的承诺，我们共同所追求的零碳未来终将触手可及。

As the era of “carbon peaking and carbon neutrality” goals unfolds, the energy transition accelerates. An important question arises: in today's evolving energy landscape, why does gas-fired power remain indispensable? The answer lies in this — amid the transformation of the global energy structure, we need smarter solutions, cleaner applications, and more reliable partners.

With over thirty years of industry experience, Liyu focuses on innovation in gas power generation and system integration. A gas engine generator is not merely a device for energy conversion—it is a key enabler of the modern power system. Between the intermittency of renewables and the need for grid stability, between energy security and low-carbon goals, Liyu bridges the gap with high efficiency, ultra-low emissions, and intelligent management systems—unlocking greater value from every cubic meter of gas.

We understand that innovation is not defined by technical parameters alone. As traditional power equipment faces inefficiency and slow response, Liyu redefines the value of gas energy through an integrated approach—covering project design, core equipment manufacturing, and smart operation management. Each genset becomes a connected, adaptive, and optimizable node within the energy ecosystem.

The essence of the energy revolution lies in the resonance of social and user values. Liyu is committed to supporting a smooth energy transition with advanced gas technologies and to accelerating low-carbon transformation through innovative service models. Together, we envision a future where efficient, clean gas generation complements renewable energy—and every kilowatt-hour reflects our shared commitment to a zero-carbon world.

为人才立心
为公司立命
为青山绿水
为后辈享太平

王跃峰
Wang YueFeng

力宇集团创始人、董事长
Founder & Chairman of Liyu Group



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集团简介 Group Overview

总部位于中国·湖南·长沙
Headquartered in Changsha, Hunan, China

创立于1994年，总产业面积35万平方米
Founded in 1994 , Total Industrial Area: 350,000 m²

力宇集团是一家全球化的燃气发动机制造商及能源解决方案提供商
Liyu Group is a global manufacturer of gas engines and a provider of integrated energy solutions

力宇集团始终致力于推动燃气能源技术的创新与发展，以技术领先、产品可靠、服务专业为核心基石，打造以“力宇动力”燃气发动机（单机功率覆盖900kW-4000kW功率段）产品品牌为核心，构建“力宇环能”能源系统解决方案和“力宇节能”能源数字化管理在内的三大能源体系，形成集项目投资、研发制造、设计可研、设备供应、电站建设、调试验收与运营管理为一体的全球化能源全产业链生态。

Since its founding, the Group has been committed to driving innovation and development in gas energy technology. With technological leadership, product reliability, and professional service as its core principles, Liyu has built a comprehensive energy ecosystem encompassing three major business segments: Liyu Power — gas engines with single-unit output ranging from 900 kW to 4,000 kW Liyu Energy — integrated energy system solutions Liyu Greenergy — digital energy management Together, these form a global full-industry energy chain, covering project investment, R&D and manufacturing, feasibility design, equipment supply, power plant construction, commissioning and acceptance, and operational management.



Development Milestones 发展历程

致远·全球布局（2021-至今）
Global Vision

2021年 成立“力宇节能”，构建清洁能源综合运营体系，实现一体化能源解决方案全覆盖

2022年 力宇首个工业煤气发电项目——科翰电站在内蒙古成功运营，获评国家节能降碳示范型项目

2023年 在国际市场，陆续在亚洲、欧非、美洲、澳洲东南亚市场区域建立分支机构

2024年 连续三年装机规模累计突破400MW

2025年 “力宇动力”品牌战略升级，自主研发单机功率4MW燃气发电机组成功下线

2021 Established “Liyu Greenergy” to build an integrated clean energy operation system, achieving comprehensive coverage of integrated energy solutions.

2022 Liyu's first industrial exhaust gas power generation project—Kohan Power Station—successfully commenced operations in Inner Mongolia, recognized as a national energy-saving and carbon-reduction demonstration project.

2023 In the international market, branches have been established in the Asia, Europe-Africa, Americas, Australia, and Southeast Asia market regions.

2024 Cumulative installed capacity exceeded 400MW for three consecutive years.

2025 “Liyu Power” brand underwent strategic upgrade; independently developed 4MW gas generator set rolled off the production line.

发展·战略转型（2004-2014）
Transformation and Expansion

2004年 更名为“力宇燃气动力”，力宇4万平方米广东东莞工业园区投建，进军清洁能源领域

2006年 首个企业愿景：成为中国最优秀的燃气发动机制造商

2009年 落子湖南长沙，投建13万平方米湖南力宇科技产业研发制造基地

2013年 成立“力宇环能”，产业链全面升级

2014年 山西阳泉力宇保安32MW瓦斯电站成功投建，荣获“湖南省高新技术企业”。

2004 Renamed as “Liyu Gas Power,” commenced construction of a 40,000-square-meter industrial park in Dongguan, Guangdong, entering the clean energy sector.

2006 Established first corporate vision: To become China's premier gas engine manufacturer.

2009 Expanded into Changsha, Hunan, establishing a 130,000-square-meter R&D and manufacturing base for Hunan Liyu Technology Industry.

2013 Founded “Liyu Energy,” achieving comprehensive industrial chain upgrades.

2014 Commissioned the 32MW Liyu Bao'an gas power station in Yangquan, Shanxi Province, and liyu was recognized as a “Hunan Provincial High-Tech”

筑基·创业启航（1994-2003）
Foundation and Growth

1994年 王跃峰先生创立“力宇机电”，开启能源事业征程

2003年 首个自主投建及运营的燃油电力能源站投入使用

1994 Mr. Wang Yuefeng founded “Liyu Electromechanical,” embarking on the journey of the energy industry.

2003 The first independently invested, constructed, and operated fuel-powered energy station commenced operations.

品牌理念 Brand Philosophy



力宇品牌的标识象征完美和无尽，传递力宇对绿色发展的承诺与追求。圆形LOGO传达出品牌的可靠性、稳定性、包容性以及科技创新的无尽探索，更体现了力宇员工关爱、客户友善和环境友好的品牌理念。

The Liyu logo embodies perfection and infinity, symbolizing our commitment to green development and sustainable innovation. Its circular form conveys reliability, stability, inclusiveness, and an enduring spirit of exploration—reflecting Liyu's care for employees, customers, and the environment.

我们的使命
“驱动零碳美好未来”

Our Mission

“Striving Towards Zero Carbon Future”

我们的愿景
“成为引领能源技术革新的绿色企业”

Our Vision

“To Lead Global Innovation in Green Energy Technology”

我们的价值观
“传承、创新、活力、合作、远见”

Our Value

“Legacy Innovation Youthful Unity Vision”

L

Legacy
传承

优秀基因的继承

创新力量的注入

完美融合

I

Innovation
创新

坚持产品创新

保持技术领先

Y

Youthful
活力

年轻有活力

积极和乐观

追求韧性成长和进步

U

Unity
合作

注重团结的力量

致力产业链协同共生

价值共创

V

Vision
远见

保持长期主义

构建可持续发展的生态电力系统

为社会贡献长远价值

业务覆盖 Business Scope

全产业链 Full Industry Chain

- 

可研设计
Feasibility Design
- 

投资申报
Investment Application
- 

制造集成
Equipment Integration
- 

长协服务
Long-term Service
- 

建设安装
Construction & Installation
- 

调试验收
Commissioning & Acceptance
- 

运营管理
Operation & Management

全专业链 Full Expertise Spectrum

- 

燃气发电机组
Gas Engine Generator Sets
- 

集装箱能源站
Containerized energy solutions
- 

气体收集净化
Gas Recovery & Utilization
- 

能源综合利用
Integrated Energy Applications
- 

CCUS
CCUS
- 

翻新再制造
Refurbishment & Remanufacturing
- 

技术培训
Technical Training

研发制造 | 技术专利

R&D and Manufacturing | Technical Patents

低压损高效燃气混合技术 Low-Pressure Loss, High-Efficiency Gas Mixing Technology

扇瓣形结构设计混合器，确保燃气与空气的均匀混合及进气充量，实现内燃机缸内均质稀薄燃烧，提高燃烧效率并提升发动机性能。
A fan-blade-shaped mixer ensures uniform gas-air blending and optimal intake volume. This achieves homogeneous lean combustion within the cylinders, enhancing combustion efficiency and overall engine performance.

数字高能点火技术 Digital High-Energy Ignition Technology

采用数字高能点火技术，实现缸内均质低温燃烧，控制缸内燃烧温度，抑制NO_x的产生，降低燃气消耗、改善排放。
By adopting advanced digital high-energy ignition, the system enables uniform, low-temperature combustion, precisely controls in-cylinder temperature, suppresses NO_x formation, reduces gas consumption, and improves emissions.

空燃比实时精确控制技术 Real-Time Air-Fuel Ratio Precision Control Technology

通过采用前馈控制策略与算法，提高空燃比的实时控制精度，最大限度消除由于外部环境变化与燃气或供气压力波动引起的缸内燃烧波动。
Utilizing a feed-forward control strategy and advanced algorithms, this technology enhances real-time control accuracy of the air-fuel ratio, minimizing combustion fluctuations caused by external environmental changes or variations in gas composition and supply pressure.

米勒循环 Miller Cycle Technology

米勒(MILLER)循环通过改变气门正时来使有效膨胀过程大于有效压缩过程，使有效压缩比减小，降低压缩终点时缸内温度和压力，从而抑制NO_x排放的生成。
The Miller cycle adjusts valve timing to achieve a longer expansion process than compression, reducing the effective compression ratio and lowering in-cylinder temperature and pressure at the end of compression. This helps suppress NO_x formation and improves overall engine efficiency.

爆震控制技术 Knock Control Technology

采用爆震控制技术可以精确识别提取并实时监测每个气缸产生的爆震信号，当某个气缸发生爆震时，爆震控制系统能够迅速测出爆震信号并做出合适的反应，降低爆震强度。
With precise real-time monitoring of each cylinder's knock signal, the system accurately identifies and responds to knocking events. The knock control system rapidly adjusts operating parameters to reduce knock intensity, ensuring stable and efficient engine operation.

力宇获得有效授权专利及软著
Patents and Software Copyrights

120项
120 in total



研发制造 | 智慧工厂

R&D and Manufacturing | Intelligent Factory

核心发动机零件精密制造

Precision Manufacturing of Core Engine Components

满足年产1000台套发动机产能需求
Supports an annual production capacity of 1,000 engine units.

发电机组装配车间

Generator Set Assembly Workshop

四条装配线满足1~4MW机组同步下线
Four assembly lines enable simultaneous production of 1~4 MW generator sets.

6大测试平台

Six Major Testing Platforms

为发电机组进行全方位“体检”，精准把控性能，铸就卓越品质

Provide comprehensive “health checks” for generator sets, ensuring precise performance control and exceptional quality.

撬装式气体处理装置装配制造车间

Skid-Mounted Gas Treatment Equipment Workshop

针对不同行业的气体处理需求，提供定制化撬装式解决方案

Offers customized skid-mounted solutions tailored to the gas treatment needs of different industries.

全球零件供应中心

Global Parts Supply Center

位于中国总部的全球零件供应中心，高效、可靠、高性能，实现全天候交付

Located at Liyu's China headquarters, the center ensures efficient, reliable, and high-performance 24/7 delivery.

翻新再制造中心

Refurbishment and Remanufacturing Center

从设备上拆下来的零部件，经特殊工艺流程“重焕新生”，恢复如新

Used components are restored to “like-new” condition through specialized remanufacturing processes.



全球布局

Global footprint



中国总部 | 五大产业基地

China Headquarters | Five Major Industrial Bases

湖南 / 广东 / 山西 / 内蒙古 / 北京
Hunan / Guangdong / Shanxi / Inner Mongolia / Beijing

在国内市场，我们设立湖南（总部）、广东、山西、内蒙古及北京等五大能源产业基地，总产业面积达35万平方米，拥有现代化能源设备产业体系及服务网络。

In the domestic market, we have established five major energy industry bases in Hunan (headquarters), Guangdong, Shanxi, Inner Mongolia, and Beijing, with a total industrial area of 350,000 square meters, providing a modern energy equipment industrial system and service network.

国际市场 | 四大区域

International Markets | Four Major Regions

亚洲 / 欧非 / 美洲 / 澳洲东南亚
Asia / Europe and Africa / Americas / Australia and Southeast Asia

在国际市场，我们在多地建立分支机构，实现全球业务覆盖与本地化响应能力的深度融合。

In the international market, we have established branches in multiple locations, achieving a deep integration of global business coverage and localized responsiveness.



湖南 Hunan

力宇集团总部
Liyu Group Headquarters
力宇先进生产制造基地
Liyu Advanced Manufacturing Base
力宇燃气发动机及能源解决方案研发中心
Liyu Gas Engine and Energy Solutions R&D Center

山西 Shanxi

力宇瓦斯气电站运营管理基地
Liyu Gas Power Station Operations Management Base

北亚 North Asia

力宇北亚分公司
Liyu North Asia Branch

哈萨克斯坦 Kazakhstan

力宇中亚业务中心
Liyu Central Asia Business Center

阿联酋 United Arab Emirates

力宇中东业务中心
Liyu Middle East Business Center

美国 America

力宇北美业务中心
Liyu North America Business Center

广东 Guangdong

力宇零件基地
Liyu Parts Base

北京 Beijing

力宇投资管理基地
Liyu Investment Management Base

尼日利亚 Nigeria

力宇非洲业务中心
Liyu Africa Business Center

印度尼西亚 Indonesia

力宇东南亚业务中心
Liyu Southeast Asia Business Center

智利 Chile

力宇南美业务中心
Liyu South America Business Center

澳大利亚 Australia

力宇澳洲业务中心
Liyu Australia Business Center

内蒙古 Inner Mongolia

力宇工业煤气电站运营管理基地
Liyu Industrial Gas Power Station Operations Management Base

全球布局 期待新章...

Global Expansion: A New Chapter Awaits...

南非 South Africa

力宇非洲业务中心
Liyu Africa Business Center

新加坡 Singapore

力宇东南亚业务中心
Liyu Southeast Asia Business Center

加拿大 Canada

力宇北美分公司
Liyu North America Branch

德国 Germany

力宇欧洲业务中心
Liyu European Business Center

合作模式 Cooperation Model

我们致力于与客户构建协同共生、价值共创的战略合作伙伴关系，提供多元化的业务合作模式。主要包括：

We are committed to building synergistic and mutually beneficial strategic partnerships with our clients, creating shared value through diverse business collaboration models. These primarily include:

设备销售服务 Equipment Sales and Service

力宇提供量身定制的发电机组设备，帮助客户完成电站建设及调试验收并交付使用，客户按照合同约定支付设备款项。

LiYu provides customized generator sets, and assist clients in completing power plant construction, commissioning, acceptance, and delivery for operational use. Clients shall pay for the equipment as stipulated in the contract.

合同能源管理 Energy Performance Contracting

由力宇与客户根据约定的投资界面共同投资节能降碳型发电项目，按照《合同能源管理合同》模式展开合作，并根据当地电价分享节能收益。

LiYu and the client jointly invest in energy-saving and carbon-reduction power generation projects based on the agreed investment interface, collaborating under the Energy Performance Contracting (EPC) model and sharing energy-saving benefits according to local electricity rates.

代理渠道合作 Agency Channel Partnership

我们建立完善的代理分销体系，实现市场全覆盖。通过严格的代理商、OEM商综合评估机制，遴选优质合作伙伴，授予力宇代理经销资质，纳入力宇品牌代理渠道管理体系。

We have established a comprehensive agency distribution system to achieve full market coverage. Through a rigorous evaluation mechanism for agents and OEM partners, we select high-quality collaborators, grant them LiYu agency distribution qualifications, and integrate them into the LiYu brand agency channel management system.

EPC总包服务 EPC Turnkey Services

力宇提供从项目设计、设备采购到工程施工的一站式EPC总承包服务，确保项目高质量交付。我们的专业团队将为客户提供全程项目管理服务，确保项目按期、保质、保量完成。

LiYu provides one-stop EPC turnkey contracting services from project design and equipment procurement to construction, ensuring high-quality project delivery. Our professional team delivers comprehensive project management services to guarantee timely completion with guaranteed quality and quantity.

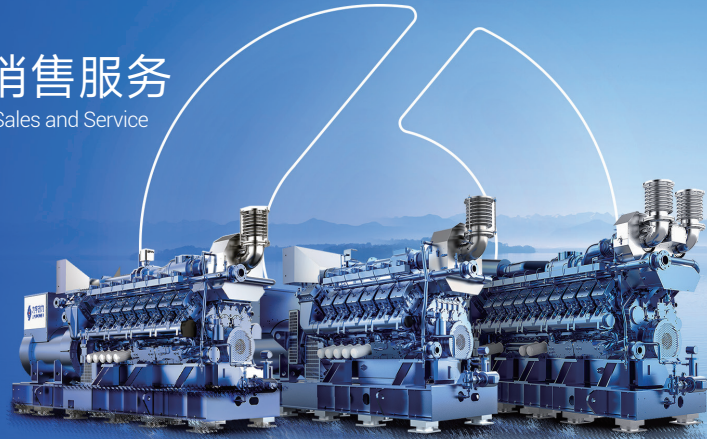
IPP模式 IPP Model

独立发电厂商（IPP）模式为企业开发和管理自己的发电资产提供了一条战略途径。力宇提供端到端的支持，包括融资、技术专长和运营管理，以确保项目成功执行。

The Independent Power Producer (IPP) model provides a strategic pathway for enterprises to develop and manage their own power generation assets. LiYu offers end-to-end support encompassing financing, technical expertise, and operational management to ensure successful project execution.

设备销售服务

Equipment Sales and Service



合同能源管理

Energy Performance Contracting



代理渠道合作

Agency Channel Partnership



EPC总包服务

EPC Turnkey Services



IPP模式

IPP Model



力宇品牌架构

LiYu Brand Architecture

力宇集团构建层次分明、多元协同的品牌架构体系，四大核心品牌各展所长、协同发展：专注燃气发动机产品的"力宇动力"、专注于能源系统解决方案的"力宇环能"、深耕能源数字化管理的"力宇节能"以及提供全生命周期专业服务的"力宇服务"。各品牌通过差异化定位与协同发展，共同构筑起集团在能源动力领域的综合竞争力。

LiYu Group has established a clearly defined, multi-faceted brand architecture system where four core brands leverage their respective strengths and develop synergistically. Liyu Power, specializing in gas engine products; Liyu Energy, focused on energy system solutions; Liyu Greenergy, deeply engaged in energy digital management; and Liyu Service, providing comprehensive lifecycle professional services. Through differentiated positioning and collaborative development, these brands collectively build the Group's comprehensive competitiveness in the energy and power sector.





力宇动力—能源产品

Liyu Power—Energy Products

湖南省力宇燃气动力有限公司是国家高新技术企业，数十年专注于高效、稳定的燃气发动机设备研发与制造。

“力宇动力”自主研发的LY170系列、LY260系列燃气发电机组产品，以节能、高效、稳定及卓越的燃料适应性为特点，单机功率覆盖900kW-4000kW功率段，全面适用于天然气、石油伴生气、生物质气、沼气、高低浓瓦斯气、工业煤气、高炉煤气、转炉煤气、煤制气等多种燃气类型，帮助客户实现业务增长和成功，持续引领行业技术革新与市场拓展，助力全球能源转型。

Hunan Liyu Gas Power Co., Ltd., with decades of dedication to the R&D and manufacturing of high-efficiency, stable gas engine equipment, It is a National High-Tech Enterprise and a Hunan Provincial Specialized and Sophisticated SMEs.

Liyu Power's independently developed LY170 and LY260 series gas generator sets feature energy efficiency, high performance, stability, and exceptional fuel adaptability. With single-unit power ranging from 900kW to 4000kW, these units are fully compatible with diverse gas types, including natural gas, associated petroleum gas, biomass gas, biogas, high/low concentration coalbed methane, industrial gas, blast furnace gas, converter gas, and coal-to-gas. They empower customers to achieve business growth and success, continuously driving technological innovation and market expansion within the industry while supporting the global energy transition.



超高效率 Ultra-high efficiency

发电效率高达42%以上（天然气）
综合利用效率高达88%以上
Power Generation Efficiency: Over 42% (Natural gas)
Comprehensive Utilization Efficiency: Up to 88%



超低排放 Ultra-low emissions

Nox≤500mg/ Nm³ (2g/kW·h)
Nox≤500mg/ Nm³ (2g/kW·h)



结构紧凑 Compact structure

体积小、重量轻，升功率同类型机组创新高
Small size and lightweight, Highest power output in its class



安全性高 Highly secure

多级阻火防爆设计,先进的爆震控制技术
Multi-stage flameproof and explosion-proof construction,
Advanced detonation control systems



维保便捷 Convenient maintenance

专家级维保团队随时支持，充足备件库24小时极速响应
Expert maintenance team provides round-the-clock support, with a well-stocked spare parts inventory ensuring rapid 24-hour response.



节能降耗 Energy Conservation and Consumption Reduction

润滑油消耗≤0.2g/kW·h，运维成本显著优化
Lubricant Oil Usage: ≤0.2 g/kW·h,
significantly optimized operational costs



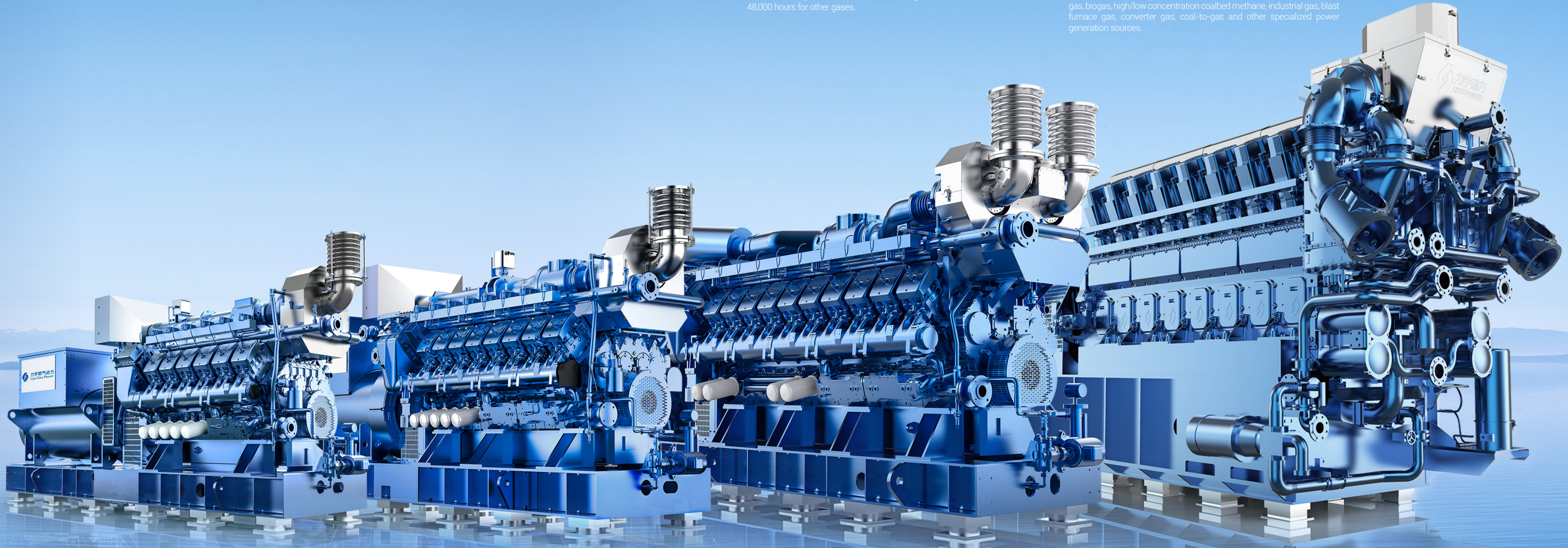
长效可靠 Long-lasting and reliable

年运行小时高达8000小时
机组大修周期64000小时（天然气）
机组大修周期48000小时（其他气体）
Annual Operating Hours: Up to 8,000 hours;
Unit Overhaul Cycle: 64,000 hours for natural gas;
48,000 hours for other gases.



应用广泛 Widely applicable

适配天然气、石油伴生气、生物质气、沼气、高低浓瓦斯气、工业煤气、高炉煤气、转炉煤气、煤制气等多种燃气类型，场景覆盖更加全面
Liyu gas generator sets are highly versatile, suitable for a wide range of applications, including natural gas, associated petroleum gas, biomass gas, biogas, high/low concentration coalbed methane, industrial gas, blast furnace gas, converter gas, coal-to-gas and other specialized power generation sources.



LY1200 【900kW-1200kW】

LY1600 【1100kW-1600kW】

LY2000 【1400kW-2000kW】

LY2616 【2500kW-4000kW】

技术参数

Technical Parameters

发电机组型号 Genset Model	单位 Unit	LY1200	LY1600	LY2000	LY2616
缸数 Cylinders	qty	12缸	16缸	20缸	16缸
缸径/行程 Bore / Stroke	mm	170/195	170/195	170/195	260/320
排气量 Displacement	dm ³	53.1	70.8	88.5	271.8
转速 Rotating Speed	rpm	1500	1500	1500	1000
平均活塞速度 Mean Piston Speed	m/s	9.75	9.75	9.75	10.67
长度 1) Length	mm	5700	6820	7450	8700
宽度 1) Width	mm	1700	1700	1700	2700
高度 1) Height	mm	2650	2650	2700	3700
发电机组净重 Dry Weight Genset	t	13	15	18	24
润滑油平均消耗 Lube Oil Consumption	g/kW·h	≤0.2	≤0.2	≤0.2	≤0.3

1) 发电机组交通运输尺寸，单独设置的部件必须单独考虑
1.For the transportation size of genset, the components set separately must be considered separately

2) NO_x排放：NO_x≤500mg/Nm³，NO_x/Nm³干燥排气在5% O₂中的含量
2.NO_x emission: NO_x≤500mg /Nm³，NO_x/Nm³(Content of dry exhaust gas in 5% O₂)

3) 参照ISO8525-1, 50Hz发电机U=10kV，Cosphi=1.0,天然气甲烷值最小为MN70，发电效率输出±5%
3.Refers to ISO8525-1, 50Hz Generator U=10kV，Cosphi=1.0, the minimum methane number of natural gas is MN70

4) 参照ISO3046/1, 50Hz发电机U=10kV，Cosphi=1.0,天然气甲烷值最小为MN70
4.Refers to ISO3046/1, 50Hz Generator U=10kV，Cosphi=1.0, the minimum methane number of natural gas is MN70

LY2616 --技术参数 (50Hz)

应用领域 Application area	发电功率 Electrical Power	燃料消耗 Fuel Consumption	发电效率 Electrical Efficiency	热效率 Thermal Efficiency	总效率 Total Efficiency
天然气应用 Natural gas application	3680kW	9200kW	42%	44.9%	86.9%

注：1、对于特殊气体和双燃料气体应用，请另行咨询；本数据资料仅供参考，不作为有约束力的数值。
For special gas and dual fuel gas applications, please consult our staff. The data herein are for reference only and not as binding value.

2、气质、气压、热值以及运行环境、人员操作水准等因素将影响机组的最终输出。
Note: Factors such as gas quality, air pressure, calorific value, operating environment, and personnel operation level will affect the final output of the unit.

LY1200 --技术参数 (50Hz)

应用领域 Application area	单位 Unit	天然气应用 Natural gas application	石油伴生气应用 Associated petroleum gas application	低浓瓦斯气应用 Low-concentration CBM application	沼气应用 Biogas application	工业煤气应用 Industrial Gas Application	生物质气应用 Biomass Gas Application	高炉煤气应用 Blast Furnace Gas Application	煤制气应用 Coal-to-gas Application
发电机组型号 Genset Model		LY1200AGL/M/H-T	LY1200AGL/M/H-T1	LY1200AGL/M/H-WL	LY1200AGL/M/H-Z	LY1200AGL/M/H-M	LY1200AGL/M/H-S	LY1200AGL/M/H-G	LY1200AGL/M/H-M1
发电功率 3) Electrical Power	kW	1200	900	1100	1150	900	830	850	900
燃料消耗 Fuel Consumption	kW	2745	2368	2500	2689	2368	2133	2162	2368
发电效率 4) Electrical Efficiency	%	41.9	38.0	40.0	40.9	38.1	37.5	37.0	38.0
热效率 Thermal Efficiency	%	45.5	48.4	47.3	46.0	48.4	48.2	48.6	47.6
总效率 Total Efficiency	%	87.4	86.4	87.3	86.9	86.5	85.7	85.6	85.6

LY1600 --技术参数 (50Hz)

应用领域 Application area	单位 Unit	天然气应用 Natural gas application	石油伴生气应用 Associated petroleum gas application	低浓瓦斯气应用 Low-concentration CBM application	沼气应用 Biogas application	工业煤气应用 Industrial Gas Application	生物质气应用 Biomass Gas Application	高炉煤气应用 Blast Furnace Gas Application	煤制气应用 Coal-to-gas Application
发电机组型号 Genset Model		LY1600AGL/M/H-T	LY1600AGL/M/H-T1	LY1600AGL/M/H-WL	LY1600AGL/M/H-Z	LY1600AGL/M/H-M	LY1600AGL/M/H-S	LY1600AGL/M/H-G	LY1600AGL/M/H-M1
发电功率 3) Electrical Power	kW	1600	1200	1500	1550	1200	1100	1100	1200
燃料消耗 Fuel Consumption	kW	3682	3141	3483	3650	3000	2910	2933	3141
发电效率 4) Electrical Efficiency	%	42.1	38.2	40.2	41.1	40.0	37.8	37.5	38.2
热效率 Thermal Efficiency	%	45.8	48.2	47.6	47.1	47.2	48.4	48.6	46.7
总效率 Total Efficiency	%	87.9	86.4	87.8	88.2	87.2	86.2	86.1	84.9

LY2000 --技术参数 (50Hz)

应用领域 Application area	单位 Unit	天然气应用 Natural gas application	石油伴生气应用 Associated petroleum gas application	低浓瓦斯气应用 Low-concentration CBM application	沼气应用 Biogas application	工业煤气应用 Industrial Gas Application	生物质气应用 Biomass Gas Application	高炉煤气应用 Blast Furnace Gas Application	煤制气应用 Coal-to-gas Application
发电机组型号 Genset Model		LY2000AGL/M/H-T	LY2000GL/M/H-T1	LY2000AGL/M/H-WL	LY2000AGL/M/H-Z	LY2000AGL/M/H-M	LY2000AGL/M/H-S	LY2000AGL/M/H-G	LY2000AGL/M/H-M1
发电功率 3) Electrical Power	kW	2000	1500	1850	1900	1500	1400	1400	1500
燃料消耗 Fuel Consumption	kW	4808	3896	4591	4390	3741	3684	3723	3896
发电效率 4) Electrical Efficiency	%	42.0	38.5	40.3	41.0	40.1	38.0	37.6	38.5
热效率 Thermal Efficiency	%	46.5	48.5	47.9	46.3	47.6	48.2	48.7	47.9
总效率 Total Efficiency	%	88.5	87.0	88.2	87.3	87.7	86.2	86.3	86.4

No_x≤500mg/Nm³ 2)

No_x≤500mg/Nm³ 2)

No_x≤500mg/Nm³ 2)



力宇环能—能源解决方案

Liyu Energy—Energy Solutions

湖南力宇环保能源有限公司，具备设计可研、设备制造、EPC总包及全生命周期售后服务能力，为客户提供量身定制节能、高效、环保的一体化系统能源解决方案。截至2025年10月，公司投入商业运用及在建项目每年向社会提供近126亿度绿色电力，每年减少二氧化碳排放约1480万吨以上，创造节能减排效益约77亿元人民币。

Hunan Liyu Environmental Energy Co., Ltd. possesses capabilities in feasibility study design, equipment manufacturing, EPC contracting, and full-lifecycle after-sales service, providing customers with customized integrated energy solutions that are energy-efficient, high-performance, and environmentally friendly. As of October 2025, the company's operational and under-construction projects collectively supply nearly 12.6 billion kilowatt-hours of green electricity annually, reducing carbon dioxide emissions by approximately 14.8 million metric tons per year and generating energy-saving and emission-reduction benefits valued at around 7.7 billion RMB.

力宇环能一体化系统能源解决方案

Liyu Energy System Solutions

力宇以技术创新为驱动，以用户需求为导向，整合集团内外优势科技资源、组建深谙行业痛点的专业技术团队，打造从需求洞察到方案落地的闭环体系，覆盖项目全生命周期——提供可行性研究、方案设计、设备采购、施工管理及售后服务的一站式综合服务，精准响应用户需求。

Driven by technological innovation and guided by user needs, Liyu integrates top-tier domestic and international technological resources and assembles a specialized technical team deeply familiar with industry pain points. We establish a closed-loop system spanning from demand insight to solution implementation—delivering one-stop comprehensive services—including feasibility studies, solution design, equipment procurement, construction management, and after-sales support to precisely meet user requirements across the entire project lifecycle.



力宇集装箱式能源站

Liyu Containerized Energy Station

集装箱能源站的优势

Advantages of containers

占地面积小：箱体尺寸为 13.4*3*3m，节约空间成本

安装成本低：露天摆放，无需建厂房，节约厂房建设成本

高度集成化：通气即可发电，输出电压10.5kV，节约安装成本

撬装式设计：安装工期短（1-2个月），建设周期短

静音设计：集装箱外1米处噪声≤85dB(A)，环保可靠

维护便利：转移运输方便

灵活度高：可根据气量自由组合，电厂规模可大可小，更高利用效率

Small footprint: The container size is 13.4*3*3m, saving space cost;

Low installation cost: Open-air placement, no need to build a plant, saving plant construction costs;

Highly integrated: electricity generated upon ventilation, output voltage 10.5KV, saving installation costs;

Skid-mounted design: short installation period (1-2 months), short construction cycle;

Silent design: Noise ≤ 85dB(A) at 1 meter outside the container, environmentally friendly and reliable;

Convenient maintenance: Easy to transfer and transport;

High flexibility: can be freely combined according to the gas volume, the size of the plant can be large or small, higher utilization efficiency.

力宇集装箱式能源站结构

Containerized unit structure

力宇燃气内燃发电机组以集装箱式结构布置，单个集装箱即一个小型能源站，多个小型能源站组成一个大型电厂，以高灵活度适应现场气源工况，保证在不同工况下的高效输出。

The gas engine generator sets are arranged in containerized units, with each container serving as a compact energy station. Multiple stations can be combined to form a large-scale power plant, offering high flexibility to adapt to onsite gas conditions and ensuring efficient output under varying operating scenarios.

集装箱型号 Container type	长 L	宽 W	高 H
LY1200-CT	13.4m	3m	3m
LY1600-CT	14.0m	3m	3m
LY2000-CT	14.0m	3m	3m

可根据需求灵活调节现场
Can be flexibly adjusted according to on-site requirements.



报警监控系统
Alarm Monitoring System

配置全套气体泄漏及消防报警系统，实时监测箱内运行状况，安全更有保障
Equipped with a full set of gas leakage and fire alarm system, real-time monitoring of the operating conditions in the container, safety is more assured;

烟气排放系统
Flue Gas Emission System

采用抗腐蚀新材料，有效延长运行寿命，实现≥30dB(A)的降噪效果
The use of corrosion-resistant new materials, effectively extend the operating life, noise reduction up to ≥30dB (A);

燃料供给系统
Fuel Supply System

燃气阀组单元随机组成套供货，有效调节进气流量及压力，安全可靠且空间利用率高
The gas valve units are supplied in conjunction with gensets, which effectively regulate the inlet gas flow and pressure, ensuring safety, reliability and high space utilization rate.

冷却水系统
Cooling Water System

能效优异，相较常规散热器节能30%，散热量设计不小于使用机组高低温水散热量的1.3倍
Excellent energy efficiency, 30% energy saved compared with conventional radiator, the designed heat dissipation capacity is at least 1.3 times higher than the high and low temperature water heat dissipation.

通风系统
Ventilation System

根据环境温度自动调节箱内温度，保证机组更加高效稳定运行
Automatic temperature control based on ambient conditions, ensures efficient and stable operation.

控制系统
Control System

ES柜、AS柜置于控制室内可集中实时监控集装箱内的所有设备，独立的空间设计，安全更有保障、操作更便捷

ES cabinet, AS cabinet placed in the control room can be centralized real-time monitoring of all the equipment in the container, independent space design, security is more assured, more convenient operation.

润滑油添加系统
Lube Oil Filling System

标配300升大容量润滑油箱配置超声波液位计，实时监测油位补油系统自动补油，省时省力灵活简便操作

Standard 300-liter large-capacity lubricating oil tank equipped with ultrasonic level meter, real-time monitoring of oil level replenishment system automatically replenish oil, saving time and effort, flexible and simple to operate.

力宇动力发电机组
Liyu Power Generator Sets

900kW-2000kW



力宇节能—能源资源化应用

LiYu Greenenergy—Energy Resource Utilization Applications

湖南力宇节能科技有限公司，始终关注并赋能企业在高质量发展中的全面绿色转型。致力于节能环保型可燃气体资源化综合利用发电项目投资建设、运营管理与技术服务，节能技术团队达200人以上，为客户提供稳定可靠、经济高效的能源服务，助力企业实现降本增效的同时满足节能环保要求。

Hunan Liyu Energy Conservation Technology Co., Ltd. remains committed to empowering enterprises in their comprehensive green transformation toward high-quality development. We specialize in the investment, construction, operation management, and technical services of energy-saving and environmentally friendly projects that utilize combustible gas resources for power generation. With an energy-saving technology team exceeding 200 professionals, we deliver stable, reliable, and cost-effective energy solutions. Our services help businesses reduce costs, enhance efficiency, and meet energy conservation and environmental protection requirements.

能源投资 Energy Investment

精准评估企业能源需求与项目潜力，投入资金建设节能环保型可燃气体资源化综合利用发电项目，为企业绿色转型筑牢根基。

Our approach is to accurately assess corporate energy requirements and project potential, invest in constructing energy-efficient and environmentally friendly power generation projects that utilize combustible gas resources, and thereby lay a solid foundation for corporate green transformation.

能源管理 Energy Management

运用前沿能源管理理念与智能化技术，为企业量身定制能源管理方案，显著提升能源利用效率，降低能耗成本。

Leveraging cutting-edge energy management concepts and intelligent technologies, we tailor customized energy management solutions for enterprises, significantly enhancing energy utilization efficiency and reducing energy consumption costs.

运营服务 Operations Services

组建经验丰富、技术精湛的运维团队，提供7×24小时不间断运营服务，保障发电项目高效稳定运行，让用户无后顾之忧。

We assemble an experienced and highly skilled operations and maintenance team to provide 24/7 uninterrupted operational services, ensuring the efficient and stable operation of power generation projects and giving users complete peace of mind.





服务目标 Service Objectives

以客户为中心，聚焦客户需求，实现共赢。
Customer-centric, focused on customer needs, achieving mutual success.

服务方式 Service Method

品质保障 价值创造

为客户提供高效、稳定、可靠的能源设备，这是我们最核心的服务价值，与此同时，我们紧紧围绕客户需求，提供超预期的增值服务，为客户创造价值。

Quality Assurance, Value Creation
Providing customers with efficient, stable, and reliable energy equipment is our core service value. At the same time, we focus intently on customer needs, delivering value-added services that exceed expectations to create value for our clients.

服务范畴 Scope of Services

我们的能源解决方案从项目规划、项目设计、项目建设、项目运营为客户提供一体化、全方位的优质服务。

Our energy solutions provide clients with integrated, comprehensive premium services spanning project planning, design, construction, and operation.

服务内容 Service Offerings

以价值服务为导向，优化供应链，创新研发，全专业协同共生，一站式响应，满足客户项目可研、设计选型、投资建设、运维服务全产业链、全生命周期的能源应用服务。

Guided by value-driven services, we optimize supply chains, drive innovation in R&D, foster cross-disciplinary synergy, and deliver one-stop solutions to meet clients' comprehensive energy application needs across the entire project lifecycle—from feasibility studies and design selection to investment construction and operations & maintenance services.

服务理念 Service Philosophy

全面服务 服务全面

服务不止 不只服务

Comprehensive Service
Service Beyond Expectations



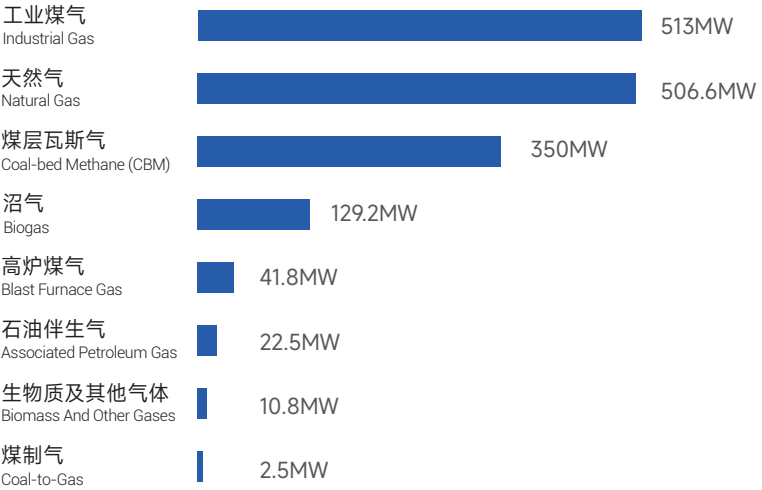
业绩总览

Performance Overview

截至2025年，公司投入商业运用及在建项目总装机容量超过1570MW。预计每年向社会提供近百亿度绿色电力，每年减少二氧化碳排放约1480万吨以上，创造节能减排效益约77亿元人民币。

By 2025, the company's total installed capacity from projects in commercial operation and under construction exceeded 1,570 MW. It is projected to supply nearly 10 billion kilowatt-hours of green electricity to society annually, reducing carbon dioxide emissions by approximately 14.8 million metric tons per year and generating energy-saving and emission-reduction benefits worth about 7.7 billion yuan.

【业绩表】Performance Table



总装机容量超
Total installed capacity exceeds

1570MW

年减排二氧化碳约
Annual reduction in carbon dioxide

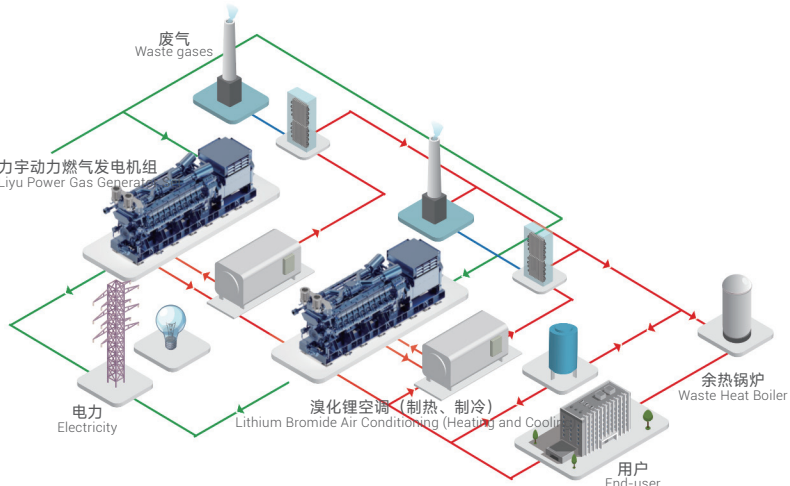
1480万吨
14.8 million tons

创造节能减排效益约
Generate energy-saving and emission-reduction benefits

77亿元
7.7 billion yuan

天然气领域应用

Applications in the Natural Gas Sector



天然气应用工艺流程说明

Natural Gas Application Process Flow Description

天然气作为目前最清洁高效的可燃气体，可直接通过天然气管道接入燃气发动机作为燃料做功，带动发电机发电，产生电能可用于生产、生活用电，同时所产生的热能可通过热交换装置生产用于满足现场热负荷等，还可以通过溴化锂机组满足空调制冷需求，实现冷、热、电三联供（CCHP），获得高经济效益。天然气发电应用能够有效利用天然气的能量，同时也能够减少能源浪费，显著降低二氧化碳等温室气体的排放，有助于推动能源结构调整和可持续发展。

Natural gas, currently the cleanest and most efficient combustible gas, can be directly fed through pipelines into gas engines as fuel to drive generators. The electricity produced can be used for industrial and domestic purposes, while the generated thermal energy can be harnessed via heat exchangers to meet on-site thermal loads. Additionally, lithium bromide chillers can satisfy air conditioning demands, enabling combined cooling, heating, and power (CCHP) systems that deliver high economic returns.

Natural gas power generation effectively utilizes the energy inherent in natural gas while minimizing energy waste. It significantly reduces emissions of greenhouse gases such as carbon dioxide, thereby contributing to energy structure adjustment and sustainable development.



天然气主要成分表 Major Components of Natural Gas

组成成分	甲烷(CH ₄)	乙烷(C ₂ H ₆)	丙烷(C ₃ H ₈)	丁烷(C ₄ H ₁₀)	戊烷(C ₅ H ₁₂)	氮气(N ₂)	二氧化碳(CO ₂)
单位	%	%	%	%	%	%	%
最小值	85	0	0	0	0	0	0
典型值	90.6	8	1.6	0.5	0.1	3.7	0.5
最大值	98	10.3	2	0.7	0.15	11	2

天然气是一种清洁、高效的能源 最高效率、最佳稳定性

Natural gas is a clean and efficient energy source
Maximum Efficiency, Optimal Stability

天然气主要产自天然气井或石油伴生气经过轻烃回收后的工艺尾气。主要可燃成份为甲烷CH₄，甲烷浓度一般为70%-100%，非常适合作为燃气发动机的燃料。Natural gas is primarily derived from natural gas wells or as a by-product of light hydrocarbon recovery from associated petroleum gas. The main combustible component is methane (CH₄), with a concentration typically ranging from 70% to 100%. It is highly suitable as a fuel for gas engines.

以天然气为燃料的冷热电三联供（CCHP）能源站，将天然气转变成电能、热能、冷能

Combined Cooling, Heat, and Power (CCHP) Energy Station Fueled by Natural Gas
Transforming Natural Gas into Electricity and Thermal Energy

力宇燃气发电机组为您提供清洁、高效的冷热电三联供（CCHP）能源解决方案
Liyu Gas-Fired Power Generation Units: Providing Clean and Efficient CCHP Energy Solutions

天然气作为最清洁高效的可燃气体，可直接通过天然气管道接入燃气发动机作为燃料做功，带动发电机发电，在没有天然气管道的应用场景，力宇可配套建设LNG储存及气化站，将液化天然气气化后供机组使用。

利用发电机组的缸套水余热、烟气余热：1、配置溴化锂空调机组，为建筑物提供低成本的制冷制热；2、配套热水锅炉，为工厂和社区提供热水；3、制冷制热的同时，机组仍可正常发电，综合能源利用效率88%。

Natural gas, as the cleanest and most efficient combustible gas, can be directly fed into gas engines via natural gas pipelines to generate power by driving generators. In scenarios where natural gas pipelines are unavailable, Liyu can construct LNG/CNG storage and regasification stations to supply the units with re-gasified LNG/CNG. By utilizing the waste heat from the cylinder liner water and flue gas of the power generation units, we can achieve the following:

1. Connect to lithium bromide air conditioning units to provide low-cost cooling and heating services for buildings;
2. Equip with hot water boilers to supply hot water for factories and communities;
3. While providing cooling and heating, the units can still generate electricity normally.

The overall energy utilization efficiency reaches to 88%.



北亚天然气分布式能源站

North Asia Gas Distributed Energy Station

本次项目建设内容包含：力宇燃气内燃发电机组、机组配套电气控制系统、400V 低压配电系统、缸套水余热利用系统、6.3kV 高压供电系统。项目总装机容量为 1.5MW，配置1台力宇自主品牌LY1600GH/L-T 天然气发电机组。并网成功后，电厂每年将产生约1200万度绿色电力，预计节约标准煤约3840吨/年，减排二氧化碳约 1.4万吨/年。

The scope of this project includes: Liyu gas-fired internal combustion generator sets, supporting electrical control systems, 400V low-voltage power distribution systems, cylinder jacket water waste heat utilization systems, and 6.3kV high-voltage power supply systems. The project has a total installed capacity of 1.5MW, featuring one Liyu-branded LY1600GH/L-T natural gas generator set. Upon successful grid connection, the power plant will generate approximately 12 million kWh of green electricity annually, projected to save about 3,840 tons of standard coal per year and reduce carbon dioxide emissions by approximately 14,000 tons per year.

北亚天然气分布式能源站项目（一期）

North Asia Gas Distributed Energy Station Project (Phase I)

项目位于北亚，力宇为其提供30台X2MW 天然气发电机组。项目投入运营后年发电量约4.8亿度，所发电量全部接入该项目厂区使用，可节约标准煤约15.3万吨/年，减排二氧化碳约56.37万吨/年。

The project is located in North Asia, where Liyu supplied 30 sets of 2MW natural gas power generation units. Upon commissioning, the project will generate approximately 480 million kWh of electricity annually. All generated power will be fed into the project site for on-site consumption, saving approximately 153,000 tons of standard coal per year and reducing carbon dioxide emissions by approximately 563,700 tons annually.



长沙黄花国际机场分布式能源站

Changsha Huanghua International Airport Distributed Energy Station

项目位于长沙黄花国际机场T2航站楼，是湖南省第一个分布式能源项目，力宇为其提供了1台1.1MW 天然气发电机组。年发电量约880万度，所发电量供航站楼使用，可节约标准煤约2816吨/年，减排二氧化碳约1.03万吨/年。

The project is located at Terminal 2 of Changsha Huanghua International Airport, and is the first distributed energy project in Hunan Province. Liyu supplied a 1.1MW natural gas generator for the project. The annual power generation is approximately 8.8 million kWh, all of which is used to supply the terminal, saving about 2,816 tons of standard coal per year and reducing carbon dioxide emissions by around 10,300 tons annually.

上海虹桥机场分布式能源站项目

Shanghai Hongqiao Airport Distributed Energy Station Project

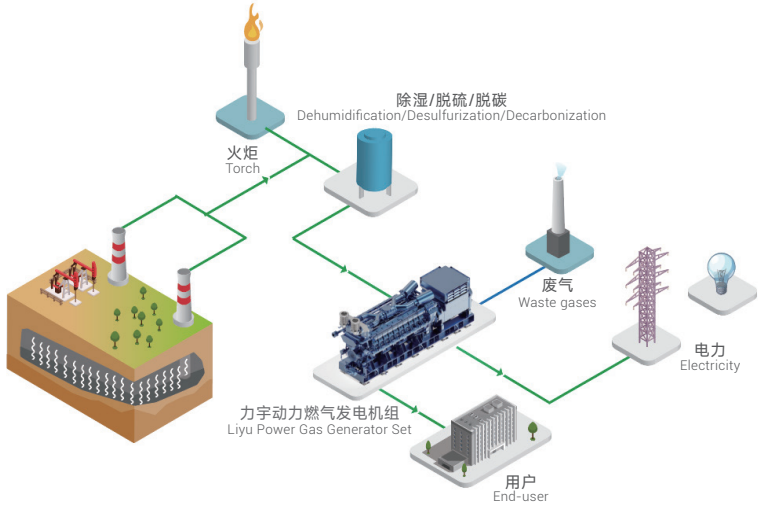
项目位于上海虹桥机场，力宇为其提供1台×1.6MW 燃气内燃发电机组，项目投入运营后，年发电量约1280万度，所发电量供机场使用，可节约标准煤约4096吨/年，减排二氧化碳约1.5万吨/年。

The project is located at Shanghai Hongqiao Airport, where Liyu supplied one 1.6MW gas-fired internal combustion generator set. Upon commissioning, the project generates approximately 12.8 million kWh of electricity annually, which is supplied to the airport. This initiative saves about 4,096 tons of standard coal per year and reduces carbon dioxide emissions by approximately 15,000 tons annually.



石油伴生气应用

Application of Associated Petroleum Gas



石油伴生气应用工艺流程说明
Process Flow Description for Associated Petroleum Gas Applications

在石油开采过程中，伴生气会与原油一同从井口出来，采集伴生气需要对原油进行分离、净化等处理。然后再经压缩流程提高伴生气能量密度，通过管道输送到力宇燃气内燃机组中，将伴生气与空气混合后燃烧，产生高温高压气体，驱动机组发电。通过力宇燃气发电机组能将油田气体直接转化为电能，所发电能可就地应用于生产工作，可有效避免甲烷释放到大气中,减少石油的消耗，具有良好的经济效益和环境效益。

During oil extraction, associated gas is produced alongside crude oil at the wellhead. Collecting this gas requires separating and purifying the crude oil. The gas is then compressed to increase its energy density before being piped to LiYu gas internal combustion units, where it is mixed with air and combusted to generate high-temperature, high-pressure gas that drives the units to produce electricity.

Liyu gas generator sets enable the direct conversion of oilfield gas into electrical energy. This locally generated power can be utilized for production operations, effectively preventing methane release into the atmosphere while reducing petroleum consumption. This approach delivers significant economic and environmental benefits.



石油伴生气主要成分		Major Components of Associated Petroleum Gas					
组成成分	Composition	甲烷(CH ₄)	乙烷 (C ₂ H ₆)	丙烷(C ₃ H ₈)	丁烷(C ₄ H ₁₀)	多链烃(C _n H _y)	氮气 (N ₂)
单位	Unit		%	%	%	%	%
最小值	minimum	35	3	1	0.1	0.1	0
典型值	Typical value	56	22	7	3.3	0.1	11.6
最大值	maximum	92	35	25	20	10	0.5

将石油伴生气作为一种可靠的能源

Associated Petroleum Gas (APG): A Reliable Energy Source

在地下油气藏中，天然气通常以溶解状态或游离气顶的形式与原油共存，开采时，随压力降低溶解分析出，并与乙烷、丙烷等碳氢化合物及水蒸气、硫化氢（H₂S）、二氧化碳（CO₂）、氮气（N₂）等混合，形成伴生气。其主要成分为甲烷(CH₄)、乙烷(C₂H₆)、丙烷(C₃H₈)等烃类气体，及少量氮气(N₂)、二氧化碳(CO₂)、硫化氢(H₂S)和其他化合物。此类气源组分波动大，且未经处理难以直接运输和使用。

In underground oil and gas reservoirs, natural gas usually coexists with crude oil either in a dissolved state or as a free gas cap. During oil extraction, natural gas is released from underground reservoirs as pressure drops, forming APG—a mixture of methane, ethane, propane, and other hydrocarbons, as well as impurities such as water vapor, hydrogen sulfide (H₂S), carbon dioxide (CO₂), and nitrogen (N₂). Due to its unstable composition and untreated condition, APG is difficult to transport and use directly.

石油伴生气的应用

Common Applications of APG

净化后注入天然气管网，直接输送居民区作为燃料使用。

作为加热炉、锅炉的清洁燃料，替代煤炭或原油，降低排放。

通过低温液化制成LNG，通过催化反应制甲醇。

轻烃组分可提纯制取液化石油气（LPG）、乙烷、丙烷等。

发电利用，满足现场用电需求，并提升能源利用效率。

多数油田位于偏远沙漠或海上，电网覆盖缺失，传统依赖柴油发电成本高昂（燃料及运输成本居高不下）。石油伴生气作为现场清洁能源，适配内燃机发电，可以替代柴油，降低综合用能成本，同时提升能效。

Purified and injected into the natural gas pipeline network for residential fuel use.

Used as clean fuel for furnaces and boilers, replacing coal or crude oil.

Converted into LNG via cryogenic liquefaction or into methanol through catalytic reactions.

Light hydrocarbons extracted to produce LPG, ethane, and propane.

Utilized for power generation to meet on-site electricity needs and enhance energy efficiency.

In remote oilfields—such as deserts or offshore platforms—where grid coverage is limited, diesel power generation is costly with high fuel and transportation expenses. APG offers a cleaner on-site energy alternative, reducing total energy costs and improving efficiency when used in gas generators.



北亚汉特-曼西斯克石油伴生气发电项目

Hantek-Mansisk Oil and Gas Power Generation Project in North Asia

项目位于北亚，力宇为其提供7台X1.2MW石油伴生气发电机组。项目投入运营后年发电量约0.67亿度，所发电量全部接入该项目厂区使用，可节约标准煤约2.15万吨/年，减排二氧化碳约7.89万吨/年。

The project is located in North Asia, where Liyu supplied seven 1.2MW APG power generation units. Upon commissioning, the project will generate approximately 67 million kWh of electricity annually. All generated power will be fed into the project site for on-site consumption, saving about 21,500 tons of standard coal equivalent per year and reducing carbon dioxide emissions by approximately 78,900 tons annually.



北亚苏尔古特石油伴生气发电项目

North Asia Surgut Oil and Gas Power Generation Project

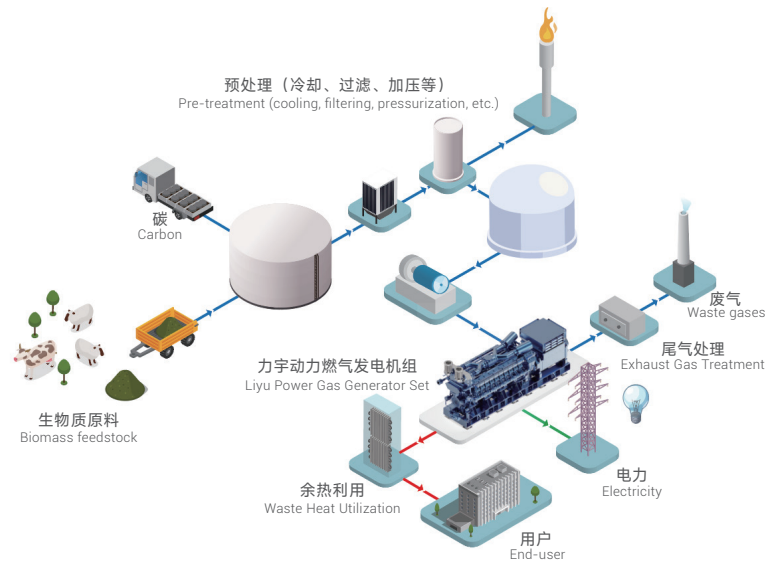
项目位于北亚，力宇为其提供1台X1.2MW石油伴生气发电机组。项目投入运营后年发电量约960万度，所发电量全部接入该项目厂区使用，可节约标准煤约3072吨/年，减排二氧化碳约1.12万吨/年。

The project is located in North Asia, where Liyu supplied one 1.2MW APG power generation unit. Upon commissioning, the unit will generate approximately 9.6 million kWh annually. All electricity produced will be fed into the project site for on-site consumption, saving about 3,072 tons of standard coal per year and reducing carbon dioxide emissions by approximately 11,200 tons annually.



生物质裂解气领域应用

Applications in the Field of Biomass Pyrolysis Gas



生物质裂解气应用工艺流程说明
Process Flow Description for Biomass Pyrolysis Gas Applications

将木屑、秸秆等生物质原料收集到预处理池经催化热分解从而产生出以甲烷为主要成分的生物质气，再经燃气冷却、净化等工艺获得高质量的生物质气输送至储气罐，通过加压流程输送进入力宇燃气内燃机缸内燃烧做功带动发电机进行发电。高温裂解所产生的炭基肥还田可用于农业种植，发电机组尾气可循环利用与前端工艺所需的余热利用，解决了有机固废物处理问题，形成了能源再生的良性利用循环。

Wood chips, straw, and other biomass feedstocks are collected into a pretreatment tank where catalytic pyrolysis generates biomass gas primarily composed of methane. This gas undergoes cooling and purification processes to produce high-quality biomass gas, which is then transported to storage tanks. Through a pressurization process, the gas enters the cylinders of Liyu engines for combustion, driving generators to produce electricity. The carbon-based fertilizer produced from high-temperature pyrolysis can be returned to fields for agricultural use. Exhaust gases from the generator set can be recycled and utilized as residual heat for front-end processes. This approach resolves organic solid waste disposal issues while establishing a virtuous cycle of energy regeneration and sustainable utilization.



生物沼气主要成分					
Major Components of Biogas					
组成成分	Composition	甲烷(CH ₄)	二氧化碳(CO ₂)	氮气(N ₂)	氧气(O ₂)
单位	Unit	%	%	%	%
最小值	minimum	35	3	1	0.1
典型值	Typical value	56	22	7	3.3
最大值	maximum	92	35	25	20
		硫化氢(H ₂ S)			
		ppm/36MJ			
		0			
		11.6			
		15			

成都生物质裂解气发电项目

Chengdu Biomass Pyrolysis Gas Power Generation Project

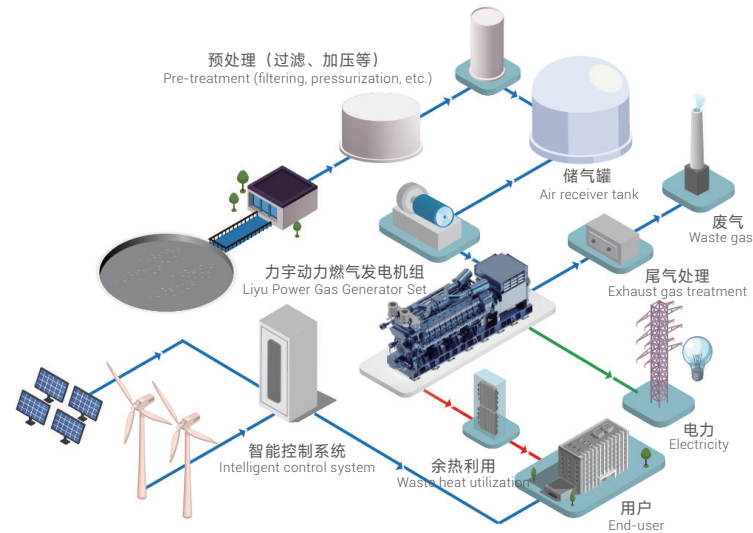
该项目位于成都，装机量为1台LY1200生物质气发电机组，使用无焦油生物质气燃料，在低位热值为1200kcal/m3时，机组功率800kW，项目投入运营后年发电量约640万度，所发电量全部接入该项目厂区使用，可节约标准煤2048吨/年，减排二氧化碳7516吨/年。

The project is located in Chengdu and features one LY1200 biomass gas generator unit. It utilizes tar-free biomass gas fuel with a lower heating value of 1200 kcal/m³. The unit delivers an output of 800 kW. Upon operation, the project is projected to generate approximately 6.4 million kWh annually. All electricity produced will be fed into the project site for on-site consumption, achieving an annual standard coal savings of 2,048 tons and reducing carbon dioxide emissions by 7,516 tons.



沼气应用领域

Biogas Application Field



沼气应用工艺流程说明
Biogas Application Process Flow Description

先将有机物质收集起来形成原料池，经预处理后输送至发酵罐里，从中生成的沼气经脱硫后统一被收集在储气罐内,而后沼气经脱水、除尘、加压流程被输入到力宇燃气内燃机组内，产生的电能既可以供业主工厂自用,也可以选择输送至公共电网，而同步产生的热能可用于抵消处理设备自身的热量需求或向其他设施供热。以沼气为燃料的燃气发电机组是有机物质资源化利用的有效路径，力宇沼气发电机组能够有效耐受垃圾填埋气中常见的杂质，能改善废气管理，解决废气处理及排放的难题，使经济供能利用达到最大化。

Organic matter is first collected into a raw material pool. After pretreatment, it is transported to fermentation tanks. The biogas generated is desulfurized and uniformly collected in storage tanks. Subsequently, the biogas undergoes dehydration, dust removal, and pressurization before being fed into LiYu gas internal combustion engine units. The generated electricity can either be used for the owner's factory's own consumption, or fed into the public grid. The concurrently generated thermal energy can offset the heat demand of the treatment equipment itself or provide heating to other facilities. Biogas-fueled generator sets represent an effective pathway for resource recovery of organic matter. LiYu biogas generator sets can effectively tolerate impurities commonly found in landfill gas, improve exhaust gas management, resolve exhaust gas treatment and emission challenges, and maximize economical energy utilization.



污水净化沼气主要成分 Major Components of Sewage Biogas						
组成成分 Composition	甲烷(CH ₄)	二氧化碳 (CO ₂)	氮气 (N ₂)	氧气(O ₂)	硅化合物	硫化氢 (H ₂ S)
单位 Unit	%	%	%	%	mg/36MJ	ppm/36MJ
最小值 minimum	35	3	1	0.1	0.1	0
典型值 Typical value	56	22	7	3.3	0.1	11.6
最大值 maximum	92	35	25	20	10	15

沼气特性与应用价值 Characteristics and Application Value of Biogas

沼气是有机物（如农业废弃物、城市有机垃圾、工业有机废料、水陆植物等）在厌氧条件下发酵产生的清洁高效可再生能源。其主要成分为甲烷（30%-70%）和二氧化碳（20%-55%），具有较高热值。通过先进技术（如热电联产）和有利的政策支持，沼气的能源综合利用效率和经济效益可显著提升，成为可再生能源体系中不可或缺的重要补充。

Biogas is a clean, efficient, and renewable energy source produced through the anaerobic fermentation of organic matter (such as agricultural residues, municipal organic waste, industrial organic waste, aquatic and terrestrial plants). Its major components are methane (30%-70%) and carbon dioxide (20%-55%), possessing a high calorific value. Through advanced technologies (such as combined heat and power generation) and robust policy support, biogas's comprehensive energy utilization efficiency and economic benefits can be significantly enhanced, making it an indispensable and vital supplement within the renewable energy system.

沼气热电联产的核心优势 Core Advantages of Biogas Cogeneration

超高能源效率 Ultra-High Energy Efficiency

发电效率高达40%以上，热能利用效率达45%以上（源自缸套水、烟气余热回收），可用于供暖、制冷或工业流程，综合能源效率最高可达 87%以上，实现能源价值最大化。

Power efficiency exceeds 40%, with thermal utilization efficiency surpassing 45% (derived from jacket water and flue gas heat recovery). Heat can be utilized for heating, cooling, or industrial processes, achieving a comprehensive energy efficiency of up to 87% or higher to maximize energy value.

显著经济效益 Significant Economic Benefits

电力可自发自用或上网销售（享受电价政策），回收的热能可生产热水、蒸汽、用于制冷、供暖，创造双重收益，投资回报周期短，经济附加值高。

Electricity can be self-consumed or sold to the grid (benefiting from favorable electricity pricing policies). Recovered thermal energy can produce hot water, steam, or be used for cooling and heating, generating dual revenue streams. This results in a short investment payback period and high economic added value.

卓越环保减排 Exceptional Emissions Reduction

替代化石燃料：1m³ 沼气发电 ≈ 节约 0.7kg 标准煤，减少 CO₂ 排放约1.5kg。避免甲烷逸散：有效收集利用沼气，消除直接排放（甲烷温室效应是CO₂的25倍以上）。低排放运行：NO_x 原始排放≤ 500mg/Nm³，脱硝后 ≤ 50mg/Nm³，符合严苛环保标准。

Fossil fuel substitution: 1m³ biogas-generated electricity ≈ saves 0.7kg standard coal, reducing CO₂ emissions by approximately 1.5kg. Methane leakage prevention: Efficient biogas capture and utilization eliminate direct emissions (methane's greenhouse effect is over 25 times that of CO₂). Low-Emission Operation: Raw NO_x emissions ≤500mg/Nm³, post-denitrification ≤50mg/Nm³, meeting stringent environmental standards.

能源安全稳定 Energy Security and Stability

分布式能源：建设区域化能源站，降低对主电网依赖。灵活调峰：沼气可储存，发电出力稳定可控，有效弥补风电、太阳能的间歇性缺陷。

Distributed Energy: Establish regional energy stations to reduce reliance on the main grid. Flexible Peak Shaving: Biogas is storable, enabling stable and controllable power generation output that effectively compensates for the intermittent nature of wind and solar power.



贵阳比例坝垃圾填埋气发电项目

Guiyang Bili Dam Landfill Gas Power Generation Project

项目位于贵阳市白云区，力宇为其提供7台X1.5MW+3台x1MW沼气发电机组。项目投入运营后年发电量约1.08亿度，所发电量全部接入贵阳电网，可节约标准煤约3.45万吨/年，减排二氧化碳约12.68万吨/年。

The project is located in Baiyun District, Guiyang City, where Liyu supplied seven 1.5MW biogas generators and three 1MW biogas generators. Upon operation, the project generates approximately 108 million kWh of electricity annually, all of which will be fed into the Guiyang power grid. This will save approximately 34,500 tons of standard coal per year and reduce carbon dioxide emissions by approximately 126,800 tons annually.



江门污水处理厂沼气发电项目

Biogas Power Generation Project at Jiangmen Sewage Treatment Plant

项目位于江门仁科污水处理厂内，力宇为其提供了1台x1MW沼气高压发电机组。项目投入运营后年发电量约800万度，所发电量供厂区自用，可节约标准煤约2560吨/年，减排二氧化碳约9395吨/年。

The project is located within the Renke Wastewater Treatment Plant in Jiangmen, where Liyu supplied one 1MW high-pressure biogas generator set. Upon operation, the project generates approximately 8 million kWh of electricity annually, which is used for the plant's own consumption, saving about 2,560 tons of standard coal per year and reducing carbon dioxide emissions by approximately 9,395 tons annually.



江门旗杆石垃圾填埋气发电项目

Jiangmen Qiganshi Landfill Gas Power Generation Project

该项目采用力宇品牌5台1.5WM沼气发电机组+6台1MW沼气发电机组，项目建成后，年发电量约1.08亿度，可节约标准煤约3.45万吨/年，减排二氧化碳约12.68万吨/年。所发电量全部输送至南方电网，实现100%消纳。

The project utilizes five 1.5MW biogas generator sets and six 1MW biogas generator sets of Liyu. Upon completion, it generates approximately 108 million kWh of electricity annually, saving about 34,500 tons of standard coal equivalent per year and reducing carbon dioxide emissions by approximately 126,800 tons per year. All generated electricity is transmitted to the China Southern Power Grid, achieving 100% consumption.



江西新余正合沼气发电项目

Jiangxi Xinyu Zhenghe Biogas Power Generation Project

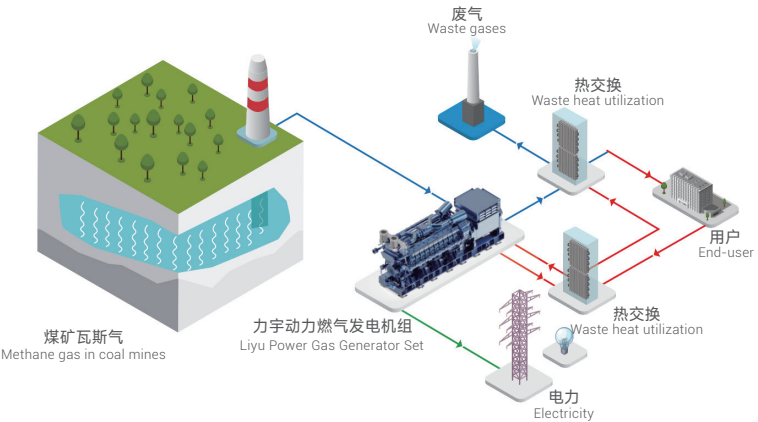
该项目采用力宇品牌LY1200发动机组1台，项目建成后，预计年发电量约840万度，年可节约标煤约2688吨，减排二氧化碳约9864吨/年，使得来自养殖场的粪污，华丽转身，变成清洁电能，满足电厂自用电能需求的同时，多余电量并入国家电网，为客户带来可观的绿色能源经济收益。

This project utilizes one LY1200 generator set. Upon completion, the project is projected to generate approximately 8.4 million kWh of electricity annually, saving about 2,688 tons of standard coal equivalent per year and reducing carbon dioxide emissions by approximately 9,864 tons annually. This transforms waste from livestock farms into clean electricity, meeting the power plant's self-consumption needs while feeding surplus electricity into the national grid. This approach delivers substantial green energy economic benefits to the client.



瓦斯气领域应用

Applications in the CBM(Coalbed Methane) Industry



瓦斯气应用工艺流程说明

CBM Application Process Flow Description

瓦斯气经脱水、除尘、升压、稳压等预处理流程后输送入力宇瓦斯气专用发电机组作为燃料运行，推动活塞做功，由燃气发动机带动发电机发电，产生的热能用作余热供暖。一般来说，大部分的煤矿都具有一定量的煤矿瓦斯和废弃矿井甲烷，可将其有效用于燃气发动机进行发电和供热。大力进行煤矿瓦斯发电利用，可以节能减排、变害为利，降低煤矿安全事故、减少温室气体排放，形成良好的经济、环保和社会综合效益。

After undergoing pretreatment processes such as dehydration, dust removal, pressurization, and pressure stabilization, the CBM is fed into specialized gas-fired power generation units, where it serves as fuel to drive pistons, with the gas engine powering generators to produce electricity. The generated thermal energy is utilized as waste heat for heating. Generally, most coal mines contain significant quantities of coal mine gas and methane from abandoned shafts, which can be effectively utilized in gas engines for power generation and heating. Promoting CBM utilization for power generation can achieve energy conservation and emission reduction, turning hazards into benefits. It reduces coal mine safety accidents, decreases greenhouse gas emissions, and generates favorable economic, environmental, and social benefits.



低浓瓦斯气主要成分		Major Components of Low-Concentration CBM				
组成成分	Composition	甲烷(CH ₄)	二氧化碳 (CO ₂)	氮气 (N ₂)	氧气(O ₂)	粉尘
单位	Unit	%	%	%	%	mg/36MJ
最小值	minimum	8	0	4	0	0
典型值	Typical Value	15	8	60	17	5
最大值	maximum	25	25	75	20	10

煤层气利用作为能源的优势

Advantages of Utilizing Coalbed Methane as an Energy Source

更高的效率 Greater efficiency

热电联产总效率最高可达86%以上，电气效率最高可达41%以上，热效率最高可达45%以上，实现高效利用。

The overall efficiency of cogeneration can reach over 86%, with electrical efficiency exceeding 41% and thermal efficiency surpassing 45%, achieving highly efficient utilization.

更高的经济效益 Greater economic benefits

瓦斯气作为燃料，其成本通常低于煤炭和石油等传统燃料，更低的燃料成本获得更高的经济效益。

CBM, as a fuel, typically costs less than traditional fuels such as coal and oil. Lower fuel costs yield greater economic benefits.

安全性与稳定性 Safety and Stability

将煤矿开采过程中产生的有害气体收集发电，避免直接排放到大气中而导致的安全事故，减少煤矿事故；力宇瓦斯气发电机组自动化程度高和稳定性高，能够确保供电的连续性和稳定性。

Collecting harmful gases generated during coal mining for power generation prevents direct atmospheric emissions that could cause safety incidents. Liyu's CBM gas generator units feature high automation and stability, ensuring continuous and reliable power supply.

技术适应性与灵活性 Technical Adaptability and Flexibility

成熟的瓦斯气发电技术，能够适应8%及以上浓度和不同品质的瓦斯气。瓦斯气发电设备可以根据需要调整发电量，以适应电力需求的变化；还可以与其他可再生能源（如太阳能、风能等）进行互补，提高整个能源系统的灵活性和可靠性。

Mature coalbed methane power generation technology can accommodate gas concentrations of 8% or higher with varying gas qualities. Coalbed methane power generation equipment can adjust output levels as needed to respond to fluctuations in electricity demand. It can also complement other renewable energy sources such as solar and wind power, enhancing the flexibility and reliability of the entire energy system.

环保与可持续性 Environmental Protection and Sustainability

瓦斯气燃烧产生的污染物较少，是一种相对清洁的能源，减少煤矿等工业领域直接向大气中排放的甲烷，而甲烷是一种比二氧化碳更强大的温室气体。将甲烷转化为电能，可以减少其对全球气候变暖的贡献。瓦斯气通常被视为一种废弃物，通过发电利用，可以实现资源的再利用，减少浪费。

CBM combustion produces fewer pollutants, making it a relatively clean energy source. It reduces direct atmospheric emissions of methane—a greenhouse gas more potent than carbon dioxide. Converting methane into electricity not only cuts greenhouse gas emissions, but also turns gas—usually considered waste—into a valuable resource.



上社低高浓瓦斯发电项目

Shangshe Low-to-High Concentration CBM Power Generation Project

【国家重点节能技术应用典型案例】

【National Key Energy-Saving Technology Application Case】

项目位于山西盂县，利用上社煤矿、上社二景的瓦斯建设一座瓦斯发电厂，充分利用浓度低于8%的矿井瓦斯进行发电。项目投入15台×1MW低浓瓦斯发电机组和15台×1.1MW高浓瓦斯发电机组，总投资约3.778亿元，年发电量约2.52亿度，年可节约标煤约8.06万吨，年减排二氧化碳约29.59万吨。所发电量并入国家电网，产生的余热为上社煤矿提供冬季供暖等生活及生产所需。

The project is located in Yuxian County, Shanxi Province, utilizing gas from the Shangshe Coal Mine and Shangshe No. 2 Mine to construct a gas power plant. It utilizes mine gas with concentration below 8% for power generation. The project deploys 15 units of 1MW low-concentration CBM generators and 15 units of 1.1MW high-concentration CBM generators, with a total investment of approximately 377.8 million yuan. Annual power generation capacity reaches about 252 million kWh, saving approximately 80,600 tons of standard coal equivalent annually and reducing carbon dioxide emissions by about 295,900 tons per year. The generated electricity is fed into the national grid, while the residual heat is utilized to provide winter heating for living and production needs of the Shangshe Coal Mine.



小回沟煤矿低浓度瓦斯发电项目

Low-Concentration CBM Power Generation Project at Xiaohuigou Coal Mine

该项目位于山西省清徐县马峪乡小回沟煤矿，力宇为其提供10台×1MW低浓瓦斯发电机组，电厂投产后年发电量约0.8亿度，所发电量并入国家电网，可节约标准煤约2.56万吨/年，减排二氧化碳约9.39万吨/年。

The project is located at the Xiaohuigou Coal Mine, Qingxu County, Shanxi Province. Liyu supplied 10 × 1MW low concentration CBM power generation units. Upon commissioning, the power plant generates approximately 80 million kWh annually. The electricity will be fed into the State Grid, saving about 25,600 tons of standard coal per year and reducing carbon dioxide emissions by approximately 93,900 tons annually.

阳泉保力公司低浓瓦斯发电项目

Yangquan Baoli Company Low-Concentration Coalbed Methane Power Generation Project

项目位于山西省阳泉市，以保安煤矿甲烷浓度为7%-8%的抽采瓦斯为燃料，项目投入6台×1MW低浓瓦斯发电机组，年发电量约4800万度，年可节约标煤约1.53万吨，年减排二氧化碳约5.63万吨。所发电量采用并网上网的运营模式，全部输送至国家电网。

The project is located in Yangquan City, Shanxi Province, utilizing methane gas extracted from Baoan Coal Mine with a concentration of 7%-8% as fuel. It employs six 1MW low-concentration gas power generation units, producing approximately 48 million kilowatt-hours of electricity annually. This initiative saves about 15,300 tons of standard coal equivalent per year and reduces carbon dioxide emissions by approximately 56,300 tons annually. The generated electricity is transmitted entirely to the State Grid through a grid-connected operation model.



山西省官地低浓瓦斯发电项目

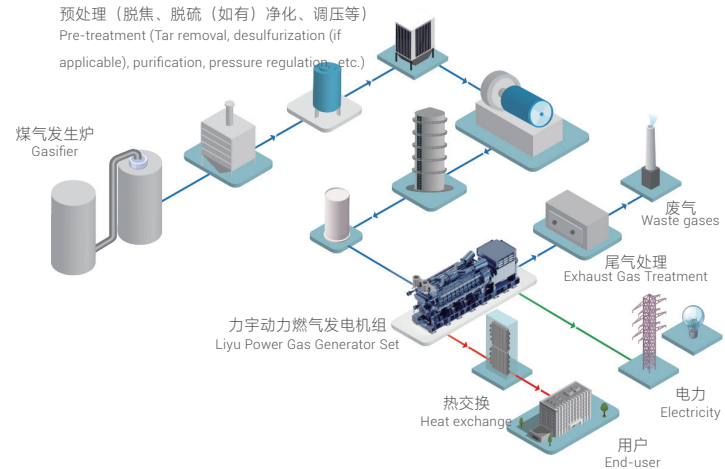
Shanxi Province Guandi Low-Concentration Coalbed Methane Power Generation Project

该项目位于山西省太原市，力宇为其提供1台×1MW低浓瓦斯发电机组，电厂投产后年发电量约800万度，所发电量并入国家电网，可节约标准煤约0.25万吨/年，减排二氧化碳约0.93万吨/年。

This project is located in Taiyuan City, Shanxi Province. Liyu supplied one 1MW low-concentration gas generator unit. Upon commissioning, the power plant generates approximately 8 million kWh annually. The electricity will be fed into the State Grid, saving about 2,500 tons of standard coal per year and reducing carbon dioxide emissions by approximately 9,300 tons annually.

煤制气领域应用

Applications in the Coal-to-Gas Field



煤制气应用工艺流程说明

Process Flow Description for Coal-to-Gas Applications

煤制气发电涉及到煤气化、气体净化、发电及余热利用等主要环节。以蒸汽和空气的混合气作为气化剂，采用两段式煤气发生炉连续制气，气化及净化系统主要包括：上煤设备、煤气发生炉、煤气冷却、脱焦、脱硫（如有）净化、焦油、轻油、循环水系统，软化水输水系统、炉底鼓风、站内管路、低压配电、自控仪表以及相应的辅助设施，所产生的干馏煤气与气化煤气的混合气经除尘、脱油、降温净化加压后作为生产的燃料气，燃料气进入燃气发电机组做功产生稳定、高效的电能，发电过程中同时产生的余热可以被回收利用，用于现场供热或其他用途，以提高能源利用率。由此产生焦油及炉渣可用于当地基建用料。

Coal-to-gas power generation involves key processes including coal gasification, gas purification, power generation, and waste heat utilization. Using a steam-air mixture as the agent, continuous gas production is achieved through a two-stage gasifier. The gasification and purification system primarily comprises: coal feeding equipment, gasifiers, gas cooling, coke removal, desulfurization (if applicable), purification, tar, light oil, circulating water systems, softened water delivery systems, furnace bottom air supply, on-site piping, low-voltage power distribution, automated control instruments, and corresponding auxiliary facilities. The mixture of dry distillation gas and gasification gas undergoes dust removal, oil separation, cooling, purification, and pressurization to serve as fuel gas for production. This fuel gas enters gas-fired power generation units to produce stable, high-efficiency electricity. Simultaneously, the generated waste heat during power generation can be recovered and utilized for on-site heating or other purposes, enhancing energy utilization efficiency. The resulting tar and furnace slag can be utilized as construction materials for local infrastructure projects.



煤制气主要成分表				Main Components of Coal-to-Gas			
组成成分	Composition	甲烷(CH ₄)	一氧化碳(CO)	氢气(H ₂)	氮气(N ₂)	二氧化碳(CO ₂)	氧气(O ₂)
单位	Unit	%	%	%	%	%	%
最小值	minimum	0.1	15	5	30	1	0.1
典型值	typical value	2.3	27	14	50	5	0.2
最大值	maximum	4.5	40	30	58	15	1.5

印尼煤制气发电项目

Indonesia Coal-to-Gas Power Generation Project

项目位于印尼，力宇为其提供2台LY2000煤制气发电机组，项目投入运营后年发电量约1920万度，所发电量全部接入该项目厂区使用，可节约标准煤6140吨/年，减排二氧化碳16097吨/年。
The project is located in Indonesia, where Liyu supplied two LY2000 coal-to-gas power generation units. Upon commissioning, the project generates approximately 19.2 million kWh of electricity annually. All generated power is fed into the project site for on-site consumption, achieving an annual standard coal savings of 6,140 tons and reducing carbon dioxide emissions by 16,097 tons.

利用煤制气作为能源的优势 促进可持续发展和为您带来更高的经济效益

Advantages of using coal gas as an energy source
Contribute to sustainable development and higher economic efficiency for you

节能降碳 Energy efficiency and carbon reduction

热电联产时的总效率高达86%以上，电效率超过38%，高效的利用，输出更多的电能；优化的空燃比计算，使燃烧更充分从而减少氮氧化物的排放。
With a total efficiency of more than 86% at cogeneration and an electrical efficiency of more than 38% , it is efficiently utilised to output more electricity.Optimised air-fuel ratio allow for better combustion and thus reducing NOx emissions.

稳定可靠 Stable and reliable

既可独立运行，也可并入源网荷储多能互补微电网系统，提高了能源供应的灵活性、可靠性；在6分钟内实现从启动需求到100%负载，获得快速负载能力，保证电网可持续性、稳定性。
It can either operate independently or be integrated into the source-network-load-storage multi-energy complementary microgrid system, which improves the flexibility and reliability of energy supply; from start-up to 100% load in 6 minutes, gain fast load capacity and ensure grid sustainability and stability.

更高的经济收益 Higher economic returns

增加电能和热能收入，可通过向公共电网输送剩余电力，向消费者供应热水或蒸汽。
Increasing revenues from electricity and heat can be achieved by delivering surplus electricity to the public grid or even supplying hot water or steam to consumers.

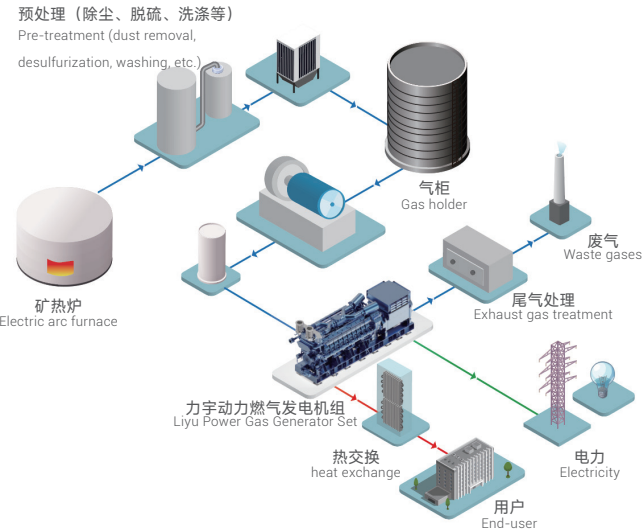
更低的投资与运营成本 Lower investment and operating costs

模块化设计，结构紧凑，实现更高的空间利用率及安装成本；
智能化控制，减少运营投入及维护消耗。
Cast modular design, compact structure, to achieve higher space utilisation and reduced installation costs; Intelligent control reduces operational investment and maintenance consumption.



工业煤气领域应用

Applications in the Industrial Gas Sector



工业煤气应用工艺流程说明

Process Flow Description for Industrial Gas Applications

工业煤气经脱硫、除尘、除水、冷却（必要时增压）、电捕焦等预处理后作为力宇燃气发动机的燃料做功，由燃气发动机带动发电机发电，发动机尾气在必要时需脱硝处理以达到氮氧化物排放标准。多台燃气发电机组可集成为单个发电单元，单个发电单元为一个小型能源站，接入工业煤气即可发电。众多小型能源站可组合为较大的燃气发电厂，且能更好地适应不同产能需求的工况，灵活调整控制发电单元的使用率，始终保持效率最优的运行状态，为企业持续高效提供生产、生活用电的同时解决其冶炼炉煤气带来的环保问题。

Industrial gas undergoes pretreatment including desulfurization, dust removal, dehydration, cooling (with pressurization if necessary), and electrostatic precipitators before serving as fuel for LiYu gas engines to generate power. The gas engines drive generators to produce electricity, with exhaust gases undergoing denitrification treatment when required to meet nitrogen oxide emission standards. Multiple gas generator sets can be integrated into a single power generation unit, functioning as a compact energy station capable of generating electricity upon connecting to industrial gas. Numerous compact energy stations can be combined into larger gas power plant, offering superior adaptability to varying production demands. Flexible adjustment of power generation unit utilization ensures consistently optimal operational efficiency. This approach provides enterprises with continuous, high-efficiency electricity for both production and daily use while simultaneously resolving environmental issues associated with blast furnace gas emissions.



铁合金煤气主要成分							
Major Components of Ferroalloy Gas							
组成成分	Composition	甲烷(CH ₄)	一氧化碳 (CO)	氢气(H ₂)	氮气 (N ₂)	二氧化碳(CO ₂)	氧气(O ₂)
单位	Unit	%	%	%	%	%	%
最小值	minimum	0	50	0.5	5	5	0
典型值	Typical value	0.5	70	4.5	10	15	0.1
最大值	maximum	3.5	85	12	25	45	1.5

利用铁合金煤气作为燃料的优势

Advantages of Using Ferroalloy Gas for Power Generation

高效率

High Efficiency

发电效率达38%以上，综合效率超过86%，最大化能源利用率。
Power generation efficiency above 38%, with total system efficiency exceeding 86%.

高适应

Wide Fuel Adaptability

机组可稳定适应工业煤气中50%~85%CO含量及0.5%~12%H₂含量，兼容热值波动，确保复杂气体成分下的高效发电。燃料适应性覆盖铁合金煤气、高炉煤气、转炉煤气、焦炉煤气等多种工业煤气类型。
Stable operation with CO content of 50–85% and H₂ content of 0.5–12%, ensuring reliable combustion under complex gas conditions. Compatible with multiple industrial gases including ferroalloy gas, blast furnace gas, converter gas, and coke oven gas.

低排放

Low Emissions

NO_x排放≤500mg/Nm³ (2g/kW·h)，符合严苛环保标准。铁合金煤气发电减少了对企业对外部传统能源的依赖，有助于降低碳排放，符合国家环保政策和可持续发展战略要求。
NO_x ≤ 500 mg/Nm³ (≈ 2 g/kWh), meeting the strictest environmental standards and supporting carbon-neutral policies.

高可靠

Long Lifecycle

大修周期长达48000小时，年运行8000小时，实现长时间稳定运行，降低维护成本。
Overhaul interval up to 48,000 hours, annual operation exceeding 8,000 hours, reducing maintenance costs.

经济效益

Economic benefits

铁合金煤气零放散：将富余铁合金煤气转化为电能或热能，降低能源成本。
政策收益：符合国家循环经济政策，可申请绿色电价补贴或碳交易收益。
Zero Gas Flaring: Converts surplus exhaust gas into electricity and heat, lowering energy costs.
Policy Incentives: Eligible for green tariff subsidies or carbon credit benefits under national circular-economy programs.



科翰公司工业煤气发电项目

Kohan Company Industrial Gas Power Generation Project

【国家节能中心示范项目】

National Energy Conservation Center Demonstration Project

该项目位于内蒙古丰镇市，力宇为其提供12台×1.2MW工业煤气发电机组，项目完工后年发电量约1.2亿度，所发电量全部供内蒙古科翰公司使用，可节约标准煤约3.68万吨/年，减排二氧化碳约13.52万吨/年。

The project is located in Fengzhen City, Inner Mongolia. Liyu supplied 12 units of 1.2MW industrial gas generator sets. Upon completion, the project generates approximately 120 million kWh of electricity annually. All generated power is supplied to Inner Mongolia Kohan Company, saving approximately 36,800 tons of standard coal per year and reducing carbon dioxide emissions by approximately 135,200 tons annually.



内蒙古瑞濠66MW工业煤气发电项目(一期)

Inner Mongolia Ruihao 66MW Industrial Gas Power Generation Project (Phase I)

该项目位于内蒙古丰镇市，项目一期力宇为其提供22台×1.5MW工业煤气发电机组，该电厂一期投产后年发电量约2.64亿度，所发电量供业主公司生产用电消耗，可节约标准煤约8.44万吨/年，减排二氧化碳约31万吨/年。

The project is located in Fengzhen City, Inner Mongolia. For Phase I, Liyu supplied 22 units of 1.5MW industrial gas generators. Upon commissioning, this phase generates approximately 264 million kWh annually. The electricity is used to meet the owner company's production needs, saving about 84,400 tons of standard coal per year and reducing carbon dioxide emissions by approximately 310,000 tons annually.



内蒙古川顺工业煤气发电项目

Inner Mongolia Chuan Shun Industrial Gas Power Generation Project

该项目位于内蒙古化德县，力宇为其提供10台×1.2MW工业煤气发电机组，项目完工后年发电量约0.96亿度，所发电量全部供内蒙古川顺公司使用，可节约标准煤约3.07万吨/年，减排二氧化碳约11.27万吨/年。

The project is located in Huade County, Inner Mongolia, where Liyu supplied 10 units of 1.2MW industrial gas generator sets. Upon completion, the project generates approximately 96 million kWh of electricity annually. All generated power will be supplied to Inner Mongolia Chuan Shun Company, saving approximately 30,700 tons of standard coal per year and reducing carbon dioxide emissions by about 112,700 tons annually.



内蒙古丰宇工业煤气发电项目

Inner Mongolia Fengyu Industrial Gas Power Generation Project

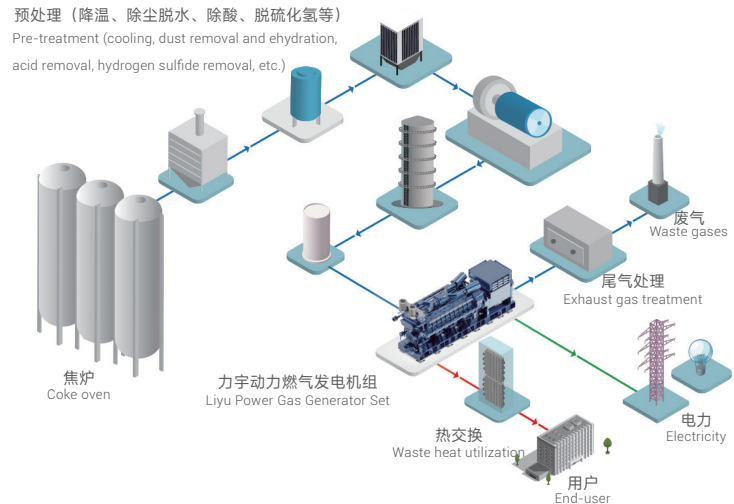
该项目位于内蒙古丰镇市，力宇为其提供11台×1.2MW+11台×1.2MW工业煤气发电机组，项目完工后年发电量约2.11亿度，所发电量全部供丰宇铁合金公司消耗，可节约标准煤约6.7万吨/年，减排二氧化碳约24.8万吨/年。

The project is located in Fengzhen City, Inner Mongolia. Liyu supplied 11 units of 1.2MW industrial gas generators and 11 units of 1.2MW industrial gas generators. Upon completion, the project generates approximately 211 million kWh of electricity annually. All generated power will be supplied to Fengyu Ferroalloy Company for consumption, saving approximately 67,000 tons of standard coal per year and reducing carbon dioxide emissions by approximately 248,000 tons annually.



高炉煤气领域应用

Applications in the Blast Furnace Gas (BFG) Sector



高炉煤气应用工艺流程说明
Process Flow Description for Blast Furnace Gas Applications

高炉煤气发电的设计工艺是一个综合性的工程，涉及到气体的收集、净化、发电、余热利用等多个环节。

煤气净化：根据气源成分，进行降温、除尘脱水、除酸、脱硫化氢等预处理，确保燃料清洁稳定。

发电系统：力宇燃气发电机组高效燃烧，输出电能。

余热利用：回收缸套水、烟气余热，用于蒸汽或热水供应。

智能控制：全自动化运行，实时监控能耗与排放。

The design process for blast furnace gas power generation is a comprehensive engineering endeavor involving multiple stages, such as gas collection, purification, power generation, and waste heat utilization.

Gas Purification: Based on the gas source composition, pre-treatment processes including cooling, dust removal, dehydration, acid removal, and hydrogen sulfide removal are performed to ensure clean and stable fuel.

Power Generation System: Liyu gas-fired generator sets achieve high-efficiency combustion to produce electrical energy.

Waste Heat Utilization: Recover heat from cylinder jacket water and flue gas for steam or hot water supply.

Intelligent Control: Fully automated operation with real-time monitoring of energy consumption and emissions.



高炉煤气主要成分 Main Components of Blast Furnace Gas

组成成分 Composition	甲烷(CH ₄)	一氧化碳(CO)	氢气(H ₂)	氮气(N ₂)	二氧化碳(CO ₂)	氧气(O ₂)	硫化氢(H ₂ S)
单位 Unit	%	%	%	%	%	%	ppm/36MJ
最小值 minimum	0	18	0.5	20	10	0.1	0
典型值 Typical value	0.5	25	2.5	50	20	2	100
最大值 maximum	2.5	40	10	55	35	5.5	1500

河南高炉煤气发电项目

Henan Blast Furnace Gas Power Generation Project

项目选用力宇品牌LY2000高炉煤气发电机组，共计22台，作为核心发电设备。项目完工后，年发电量约2.21亿度，所产生电力将全部供应业主公司使用，满足其生产用电需求。通过该自备发电系统，每年可节约标准煤约7.09万吨，减少对传统化石能源的依赖，每年可减少二氧化碳排放量约18.59万吨，对降低区域碳排放强度、推动绿色生产具有积极作用。

The project selected LY2000 blast furnace gas generator sets, totaling 22 units, as the core power generation equipment. Upon completion, the project generates approximately 221 million kWh annually. All electricity produced will be supplied to the owner company to meet its production requirements. This self-owned power generation system is expected to save approximately 70,900 tons of standard coal equivalent annually, reducing reliance on traditional fossil fuels. It will also decrease carbon dioxide emissions by approximately 185,900 tons per year, playing a positive role in lowering regional carbon emission intensity and promoting green production.

利用高炉煤气作为燃料的优势

Advantages of Using Blast Furnace Gas for Power Generation

高效能源转化 High efficiency

发电效率≥34.5%，综合热效率达85%以上，最大化利用低热值煤气（热值≥717kcal/Nm³）。适应CO含量18%-40%、H₂含量0.5%-10%的复杂气体成分，运行稳定可靠。

Power-generation efficiency ≥ 34.5%, total combined efficiency > 85%; maximizing the use of low-calorific BFG (≥ 717 kcal/Nm³). Adaptable to complex gas compositions with 18–40% of CO and 0.5–10% of H₂.

环保减排 Low emissions

NO_x排放≤500mg/Nm³ (2g/kW·h)，符合严苛环保标准。减少煤气直接排放，助力企业实现碳达峰、碳中和目标。

NO_x ≤ 500 mg/Nm³ (≈ 2 g/kWh), meeting stringent environmental standards; Helping enterprises achieve carbon peak and carbon neutrality goals.

更高的经济收益 Economic benefits

增加电能和热能收入，可通过向公共电网输送剩余电力，向消费者供应热水或蒸汽；年运行8000小时，大修周期长达48000小时，降低维护成本。

Surplus power can be fed to the public grid, and hot water or steam can be supplied to nearby consumers. Typical annual operation > 8,000 hours, major overhaul cycle up to 48,000 hours, reducing lifecycle cost.

更低的投资与运营成本 Lower investment & operation costs

模块化设计，结构紧凑，实现更高的空间利用率及更低的安装成本；智能化控制，减少运营投入及维护消耗。

Maximized space utilization and simplified installation; intelligent control reduces operating and maintenance workload.



力宇社交媒体与联络方式
LiYu Social Media and Contact Information

中国官方社交媒体
China's official social media



力宇公众号
Liyu Wechat Account



力宇抖音号
Liyu Douyin



力宇云游
Liyu Virtual Tour



力宇微博
Liyu's Weibo

海外官方社交媒体
Overseas Official Social Media



@LiyuPower



@Liyu-Power



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官方网站：

Official Website:

中文： www.liyupower.cn

英文： www.liyupower.com

俄文： www.liyupower.ru

法语： fr.liyupower.com

阿拉伯语： www.liyupower.ae

力宇·中国总部

Liyu China Headquarters

电话： 0731-88730808

Tel: +86 (0) 731-88730808

电子邮箱： liyu@liyupower.com

Email: liyu@liyupower.com

地址： 湖南省长沙市高新区麓云路289号力宇科技产业园

Add: No. 289, Luyun Road, High-tech Zone, Changsha , Hunan Province