Make the Power Clean

Marvel-Tech

H_2 / NH_3 gas turbine

2025.07

氢能科技 · 高效零碳

Zero Carbon Emission through Hydrogen Gas Turbine

Marvel-Tech is a tri-fuel gas turbine OEM

- Shanghai Marvel-Tech Co., Ltd. is **a high-tech enterprise in the field of green energy** founded in 2015 in Shanghai. The company is committed to the development of a **new generation of zero-carbon fuels turbine technology**. Marvel-Tech **is the first company worldwide** that has developed and manufactured **tri-fuel (H2/NH3/NG) gas turbine** to empower green economy.

Management Team's Solid Track Record

Key Clients

The 1st steam turbine in China for concentrated solar power

50MW NG gas turbine

660MW USC steam turbine

World's largest SCO2 turbine

APU air inlet / Nacelle

Leading Investors Backing Marvel-Tech

Key Investors

Top VC in China

Top 3 wind turbine OEM in the world

Envision Net Zero Tech Partner

A full range of R&D centers, Test Centers and Production Site

R&D Center (Shanghai)

- ✓ Area: 3,000 m2
- ✓ R&D Center for gas turbine development and H2/NH3 combustion technology
- ✓ >100 R&D Engineers, over 50% have masters or doctors' degree, covering GT development from scratch to product

H2/NG Gas Turbine Test Stand (Hangzhou)

- ✓ Area: 5,000 m2
- ✓ H2/NG Combustor test stand
- ✓ Gas Turbine Assembly Workshop
- ✓ H2/NG GT engine test stand (up to 5MW)
- ✓ the first 100% H2 GT in China successfully developed

Combustion Research Center (Shanghai)

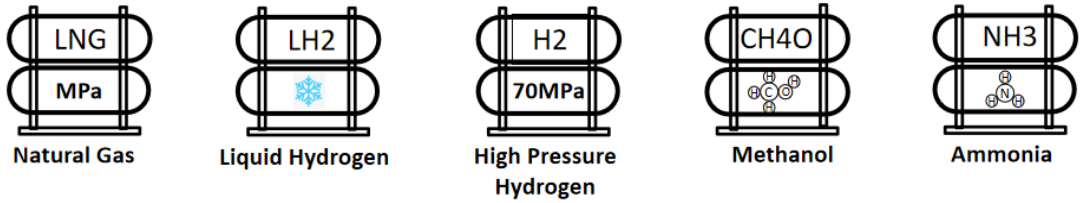
- ✓ Area: 5,000 m2
- ✓ H2/NH3/CH4O atmospheric combustion test stand
- ✓ Gas Turbine Assembly Workshop
- ✓ 3D printing workshop for advanced burner nozzle development

GT Test Center (Chifeng)

- ✓ Area: 50,000 m2
- ✓ H2/NH3/NG full pressure combustion test stand
- ✓ Gas Turbine Assembly Workshop
- ✓ H2/NH3/NG GT engine test stand (up to 50MW)
- ✓ Green H2/NH3 supply from wind and solar power to enable the P-X-P chain

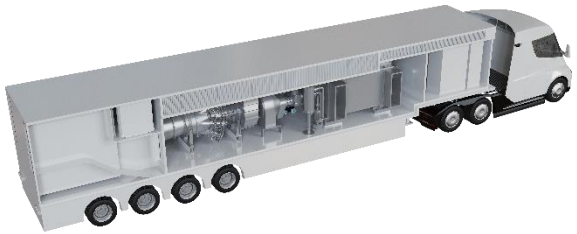
Power Generation based on different hydrogen carriers

Different hydrogen carriers



Gas Turbine Package Solution:

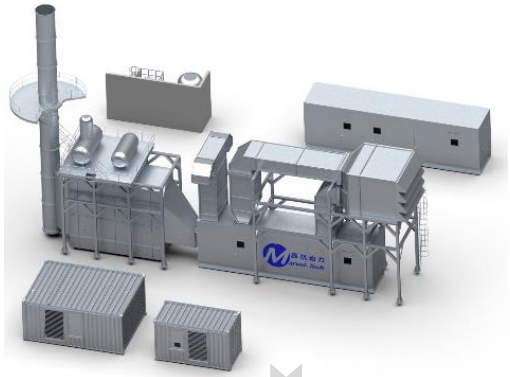
- Mobile version: Mobile Power Unit



Electricity

Gas Turbine Package Solution:

- Stationary version: CHP Power Plant



Electricity Steam

MGT8000

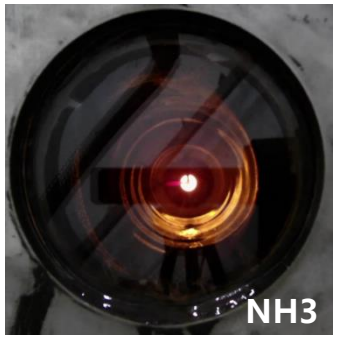
A Gas Turbine for all Hydrogen Fuels

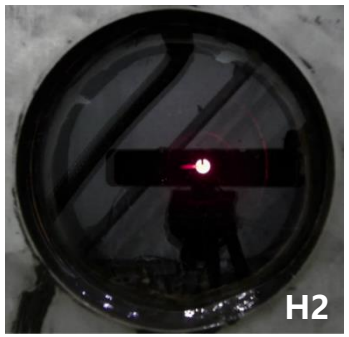
A New ZERO Emission Solution in Hydrogen Era

- **Flexible Operation**
  - Can direct burn pure H2, NH3 and CH4
  - Online Fuel Switch over among H2,NH3 and CH4 in tri-fuel combustor
- **Best solution to NH3 long duration energy storage**
  - PEM fuel cell can only use 99.99% pure H2
  - Piston Engine can not burn pure NH3
  - Limited power of fuel cells and piston engines
- **High & Stable Performance**
  - >80% overall efficiency (electricity + steam)
  - >8000 kWe electric power output
  - >16 t/h high pressure steam generation
  - >30000EOH between Overhaul

Technology: tri-fuel combustion and mobile power unit

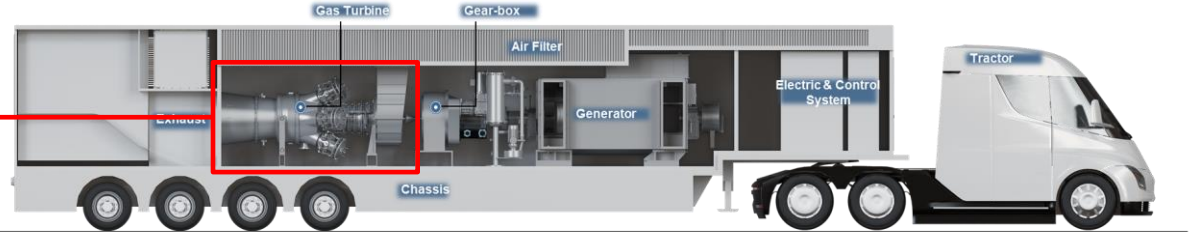
Worldwide FIRST Gas Turbine Tri-fuel Combustor (H2/NH3/CH4)





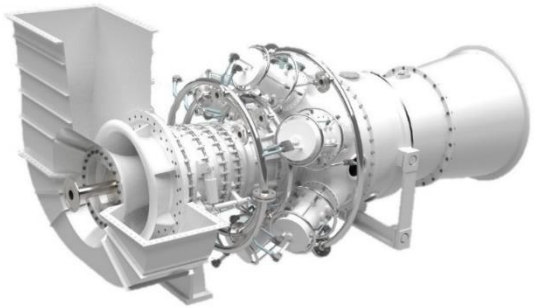
SGS Approved technology

Large size Carbon-neutral mobile Power Generator



Main Features

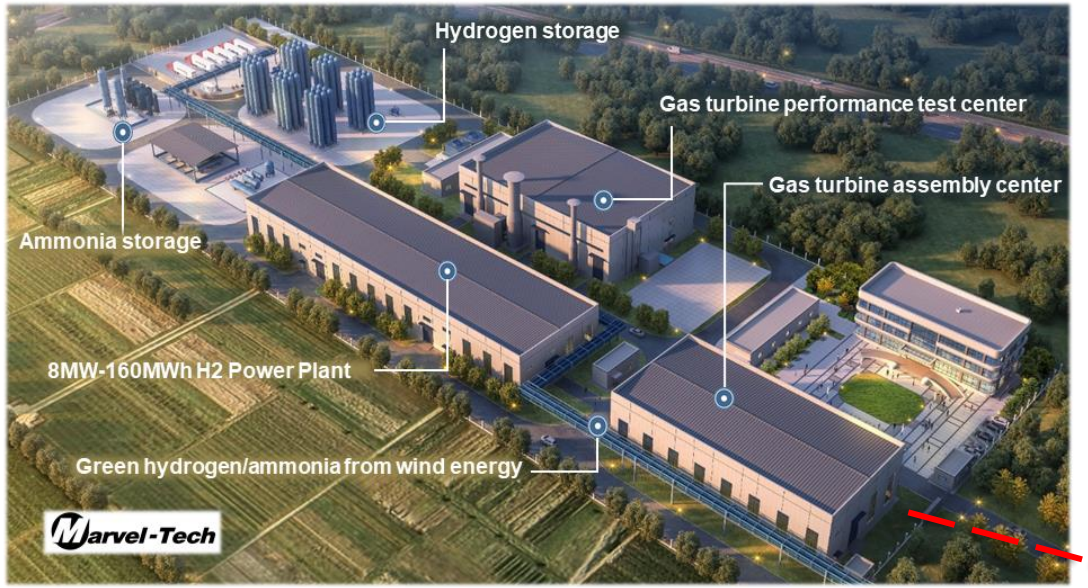
- highly integrated design, one truck for everything
- Compact and lightweight, 17m long and 70 tons
- High mobility, and adaptable to various road conditions
- Multiple fuel flexibility (NG, H2, NH3, etc.)
- Easy and quick installation, starting up within 4 hours after parking



Core gas turbine engine

Chifeng GT Test Center

World's only GT center with onsite green Hydrogen/Ammonia production



Gas Turbine manufacture capability:

- **20 units of tri-fuel gas turbines per year**

Fuel flexibility for performance testing:

- High pressure H_2 storage > 10 t
- Liquid Ammonia storage > 100 t
- Natural Gas pipeline connection

100% off-grid green ammonia production: 320 kt/a

H_2/NH_3 fuel supply system

H_2/NH_3 fuel supply system

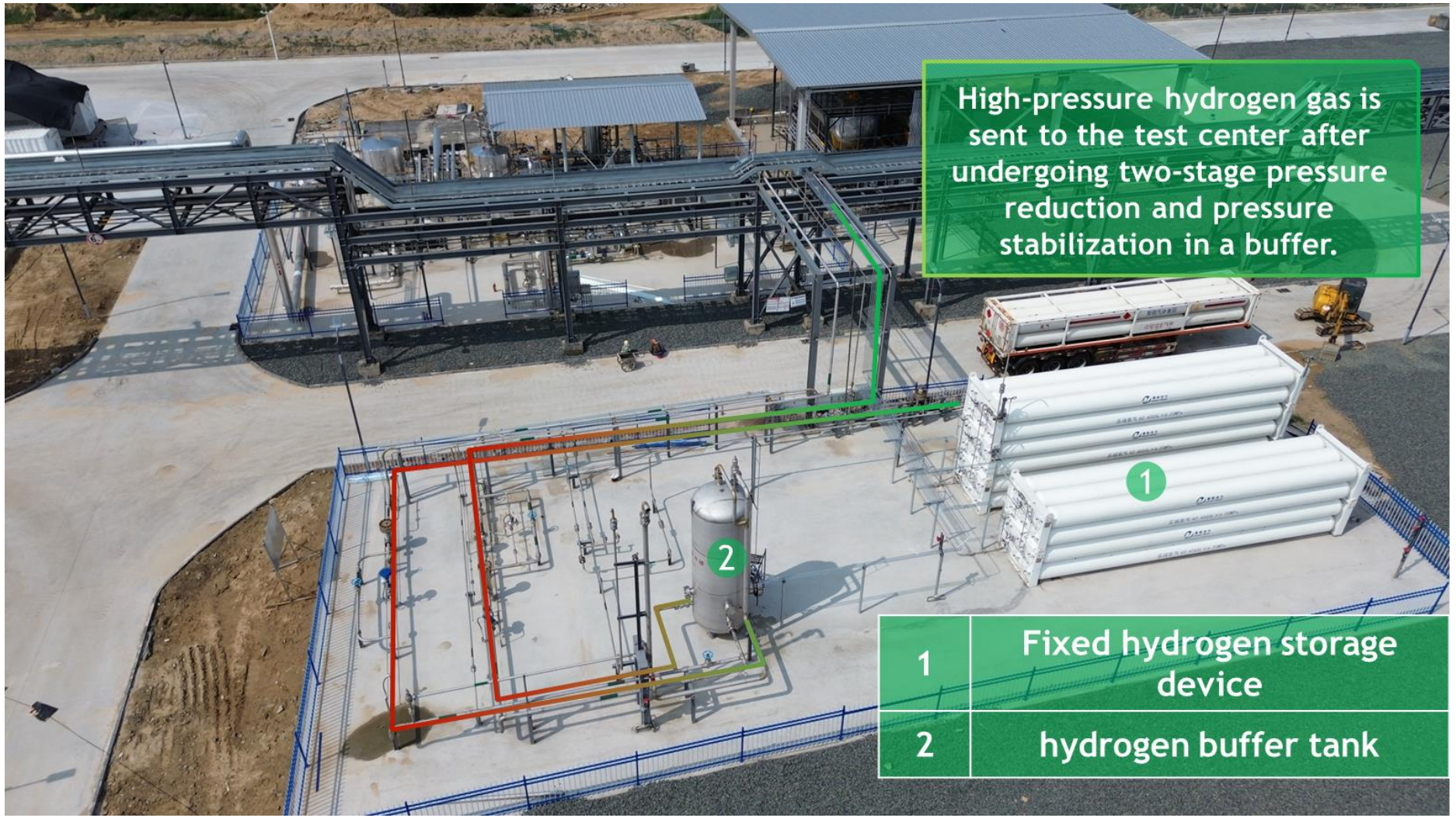
1	Liquid ammonia unloading hose
2	Ammonia compressor
3	Liquid ammonia unloading pump
4	Hydrogen unloading cabinet
5	Hydrogen diaphragm compressor

H_2/NH_3 fuel supply system

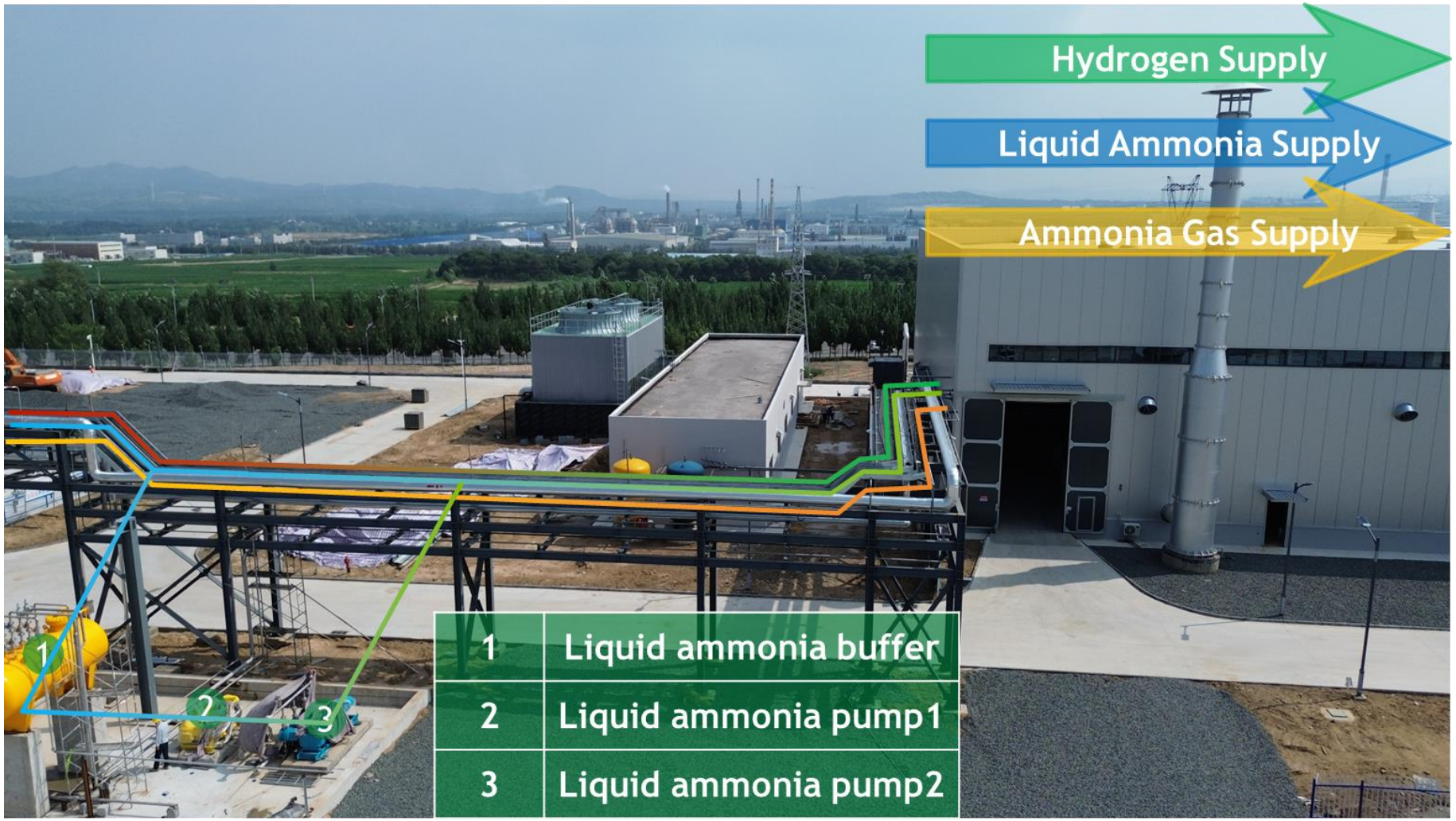
H_2/NH_3 fuel supply system

1	Liquid ammonia storage tank
2	Ammonia vaporizer 1
3	ammonia vaporizer 2
4	Ammonia buffer tank
5	Liquid ammonia buffer

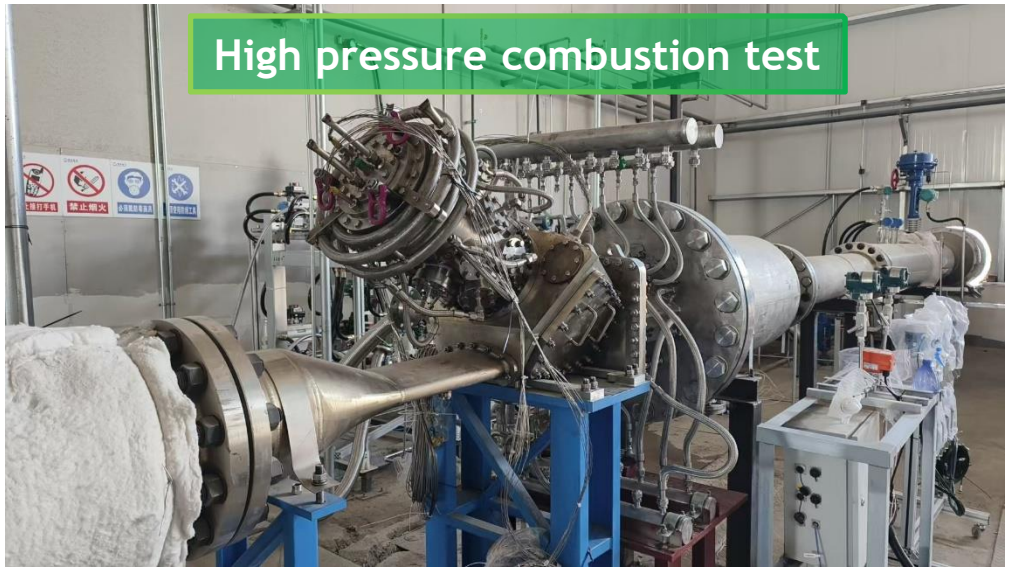
H_2/NH_3 fuel supply system

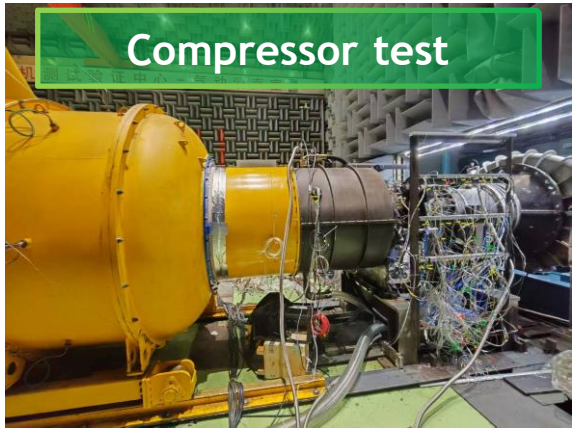


H_2/NH_3 fuel supply system



Chifeng GT Test Center





Development of Ammonia GT Technology

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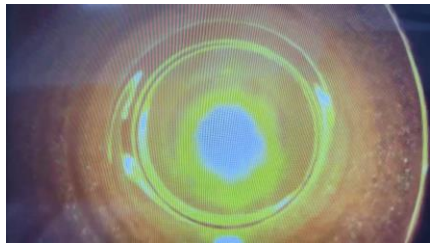
Stable ammonia flame



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Ammonia micro gas turbine full load

2025.03

MGT8000 gas turbine combustion test reaches full load for both H2 and NH3

2025.07

MGT8000 GT performance test on-going
liquid ammonia combustion succeeded

Projects on-going

Ultra long duration energy storage

- 8MW / 160 MWh
- H2 / NH3 dual fuel

Emergency back up for IDC

- 8MW
- NH3 only

Ultra long duration energy storage

- zero-carbon industry park
- 8MW / 224 MWh
- H2 / NH3 dual fuel

Combined heat and power generation

- H2 / CH4 dual fuel


Thank you !
HYDROGEN
H2