



Seminar on Joint Crediting Mechanism (JCM) Implementation in Mexico

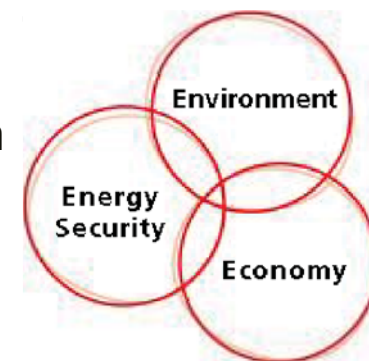
Feb. 5th, 2020

Mitsubishi Hitachi Power Systems de México,
S.A. de C.V.

MHPS Corporate Message

Powering A Sustainable Future through world-leading generation technologies

The 3 pillars of
energy production
& MHPS' role
to achieve
these standards



The 3 pillars	The role of MHPS
Environment	Contribute to environmental conservation by advancing low-carbon energy with leading-edge clean power generation technologies. (GTCC, IGCC, USC, AQCS, CCUS, biomass, geothermal, fuel cells, hydrogen etc.)
Energy Security	Provide a stable supply of electricity by adapting to various fuels such as natural gas and providing output adjustment functionality to handle rapid load change as well as other means.
Economy (Economic Growth)	Enhance economic efficiency in power generation and positively contribute to social development by providing highly efficient and extremely reliable power generation systems and optimizing operations and maintenance with AI and ICT.

GTCC : Gas Turbine Combined Cycle

IGCC : Integrated Coal Gasification Combined Cycle

AQCS : Air Quality Control Systems

AI : Artificial Intelligence

ICT : Information Communication Technology

USC : Ultra Super Critical

CCUS : Carbon Capture

Utilization and Storage

Products

Power Plants



Gas Turbine Combined Cycle (GTCC) Power Plant



Steam Power Plant (Boiler & Turbine, Generator)

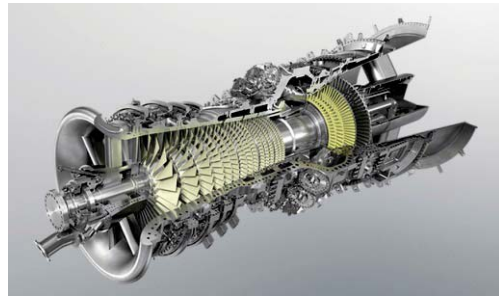


Integrated coal Gasification Combined Cycle (IGCC)

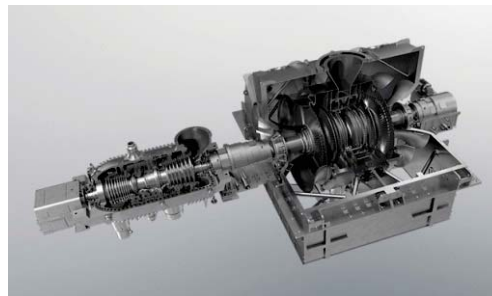


Geothermal Power Plant

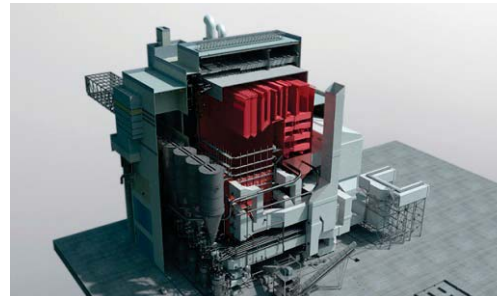
Products



Gas Turbines



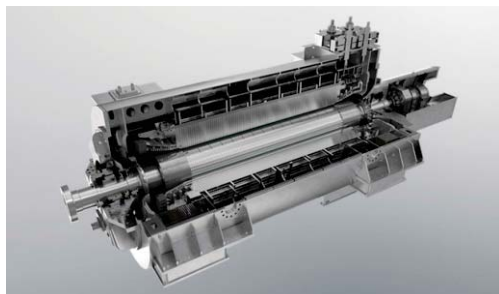
Steam Turbines



Boilers



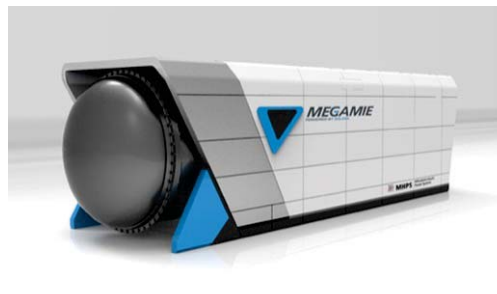
Environmental Equipment (SCR/ESP/FGD)



Generators



Control Systems



Fuel Cells (SOFC)



Others

World Highest Performance J-Series Gas Turbine

M701JAC: 440-560MW / M501JAC: 330-420MW
Combined Cycle 1on1, 2on1: 480MW- 1,230MW

Combined Cycle Efficiency > 64%

65% is within reach

New "T-Point" Verification Plant is
already under construction.



MHPS **Hydrogen (H2) Gas Turbine** will contribute to Hydrogen Society

Now, we are about to obtain CO2-free combustion technology that will turn into energy that supports society.

- MHPS Achievements: *Tests Large-scale High-efficiency Gas Turbine Fueled **by 30% Hydrogen Mix***
- MHPS remain dedicated to achieve **100% hydrogen thermal power generation with DLN Combustor**



Fuels H2 infrastructure development

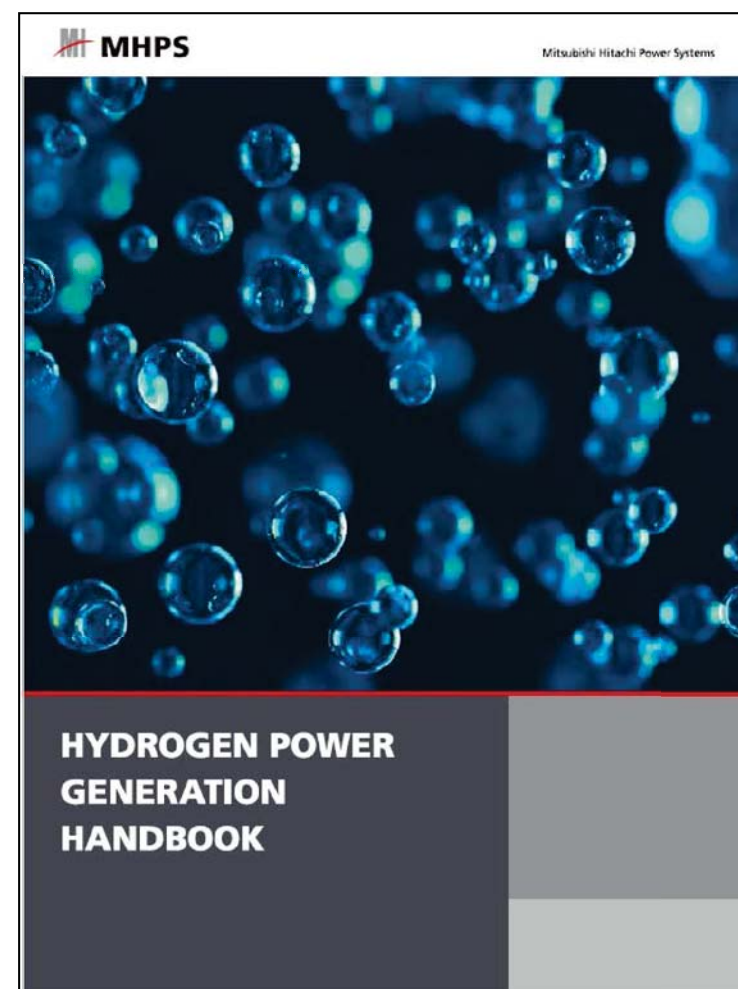
- Large H2 demand for power generation
- Gas Turbine can be fueled by H2 transported by Ammonia / MCH / LH2

Reduce CO2 at large scale

- Large CO2 reduction
(1 CCGT (440MW) \approx 2,000,000 FCVs)

Hydrogen Society

Please read QR code and access!



Renewable Energy: “Earth Heat to Energy”

- MHPS Geothermal Turbine Record -

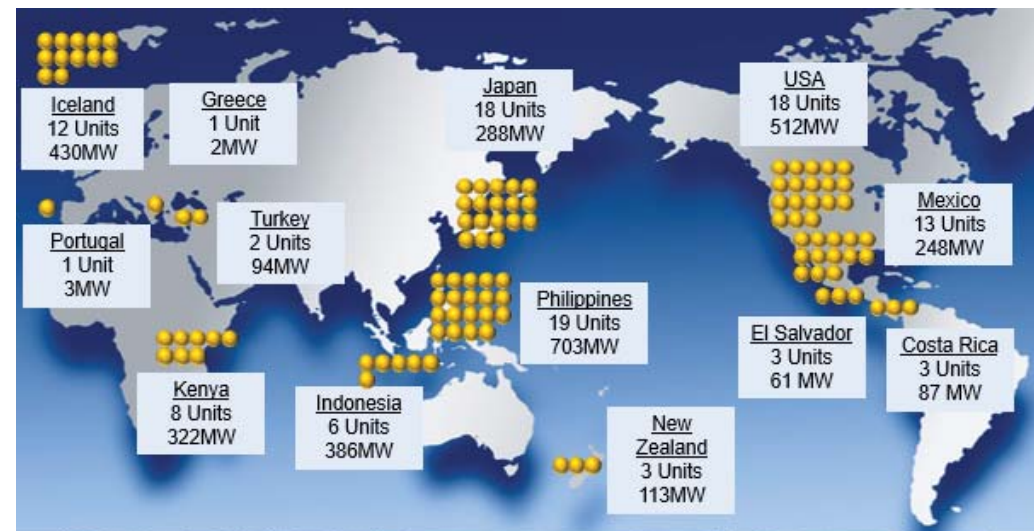
Geothermal

- MHPS has wide line up and lots of supply records of geothermal power plant.
- MHPS solves your energy issue as the leading company of geothermal power plant manufacturer.

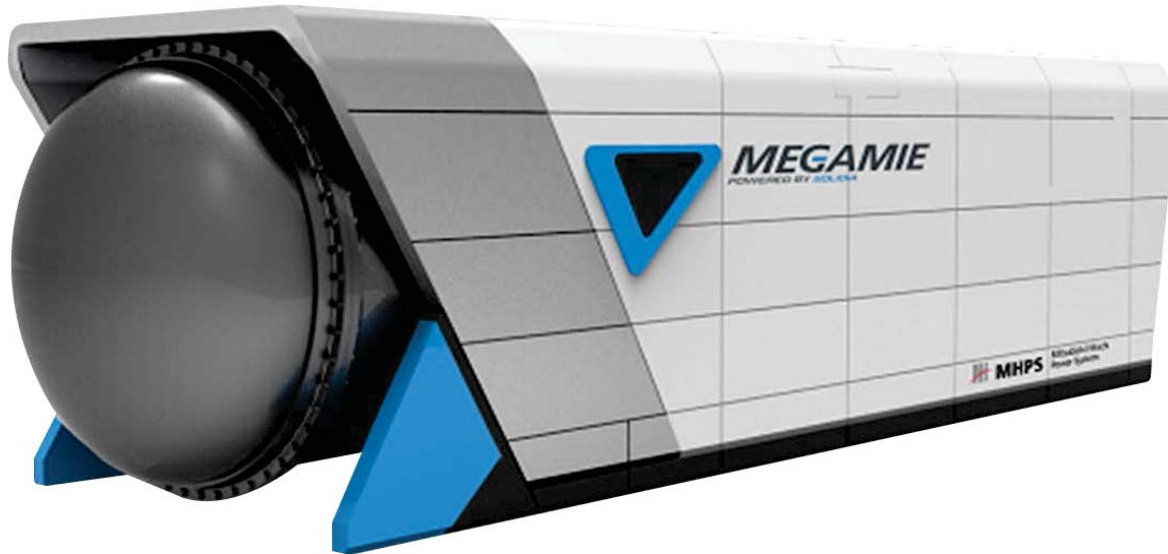


MHPS record in the World

- MHPS installed Total Capacity: Over 3,000 MW
- MHPS installed Total Unit: Over 100 Units
- Different Steam & Brine in 13 Countries+
- MHPS has supplied more than 70 units on EPC basis since 1950



250kW Class SOFC (Solid Oxide Fuel Cell, Celda de Combustible Óxido Sólido)



- High Reliability
- Low noise
- Low emission (NOx, PM)

Electrical Efficiency

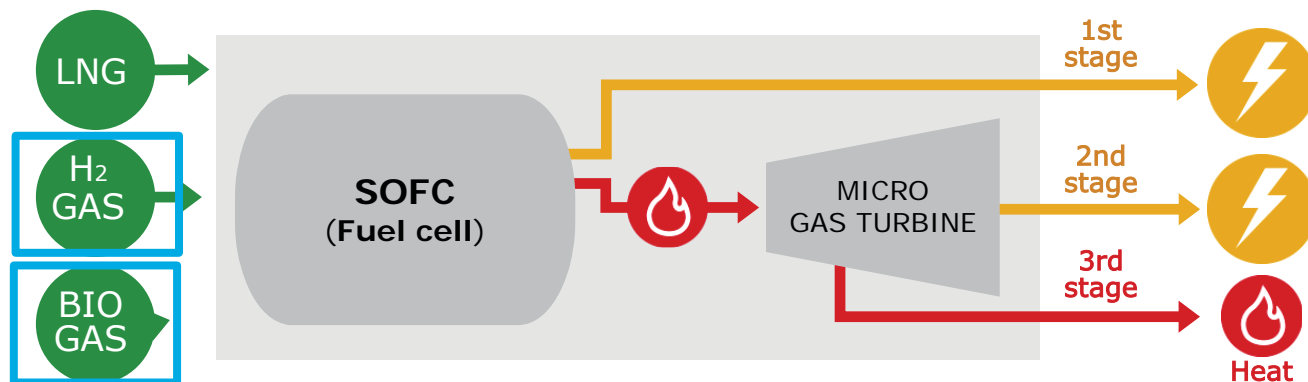
55%

Cogeneration Efficiency

73%

Fuel Flexibility

Various Gas



Variety of fuel can be applied.

Expected Specification	MHPS 250kW Class
Electrical Efficiency (LHV)	55 %
Hot water/ Steam Output	86kW/50kW
Total Efficiency (LHV) Electrical + Thermal	73%/65%
NOx (16% O ₂)	<5ppm
Unit Size	W3.2 x L9.5 x H3.3 m
Weight	37ton
Noise Level	65dB

In addition to 250kW-class,
1MW-class is under verification

250kW class

with H2 Rich Fuel

1MW class



J Power
Mono-generation



TAISEI Corp.
Co-generation/ Hot water



Tokyo gas
Co-generation /Hot water



Kyushu Univ.
Mono generation
Operation time : 23,000hrs



1MW demonstration
Mono generation



NGK Spark Plug
Co-generation/Steam



Toyota Motor
Co-generation/Steam



HAZAMA ANDO Corp.
Co-generation /Hot water



MITSUBISHI ESTATE
Co-generation/Steam

Power for a Brighter Future^{*}