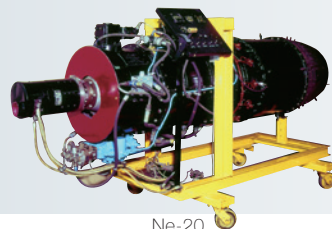


LM6000 POWER PLANT SOLUTIONS



IHI JET ENGINE EXPERIENCE

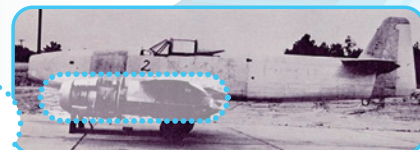
IHI manufactured the first Japanese jet engine Ne-20 in 1945.



Ne-20



Nakajima Kikka



IHI has participated in international collaborative projects on jet engines with GE, Pratt & Whitney and Rolls Royce.



V2500



GE90

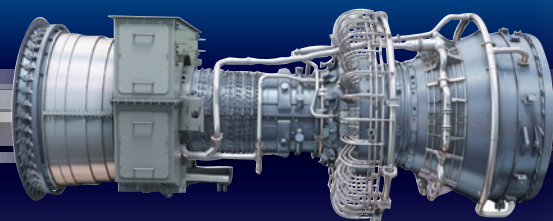


CF34



GEnx

LM6000



AERODERIVATIVE
GAS TURBINE

FEATURES OF LM6000

The LM6000 is derived from the jet engine CF6-80C2 which is installed in Boeing 747 and Boeing 767 aircrafts. Therefore, the LM6000 is very light and compact but powerful.



Boeing 747



Boeing 767



CF6-80C2



LM6000

MULTI PURPOSE

- Peak cut operation
- Daily start and stop/Weekly start and stop operation
- Base load operation

-More than 1,200 units shipped and 33 million hours operated

-Most experienced machine among aeroderivative gas turbines greater than 40MW

As of year 2015

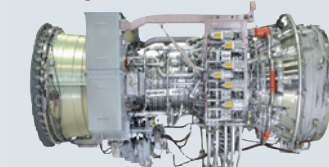
IHI BUSINESS WITH LM6000

LM6000
Part Manufacturer



Compressor Rear Frame

IHI



LM6000

IHI manufactures a key part of every LM6000

LM6000
Authorized
Packager



IHI is an LM6000 OEM Packager

EPC
Contractor



IHI



EPC Contractor

Provide GT Package

OR

IHI

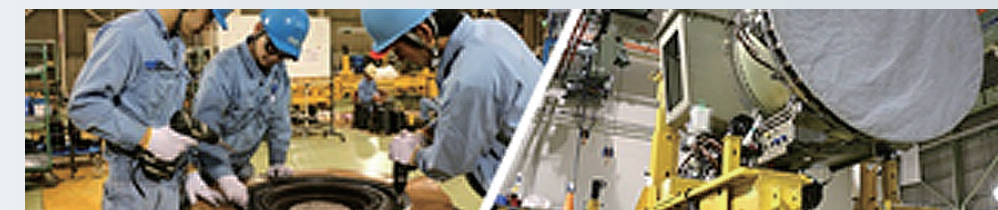


IHI Subsidiaries
(*JEL / *IEA)

Provide Total EPC Solution

*JEL (Jurong Engineering Ltd.) *IEA (IHI Engineering Australia Pty Ltd.)

Maintenance
Service
Provider



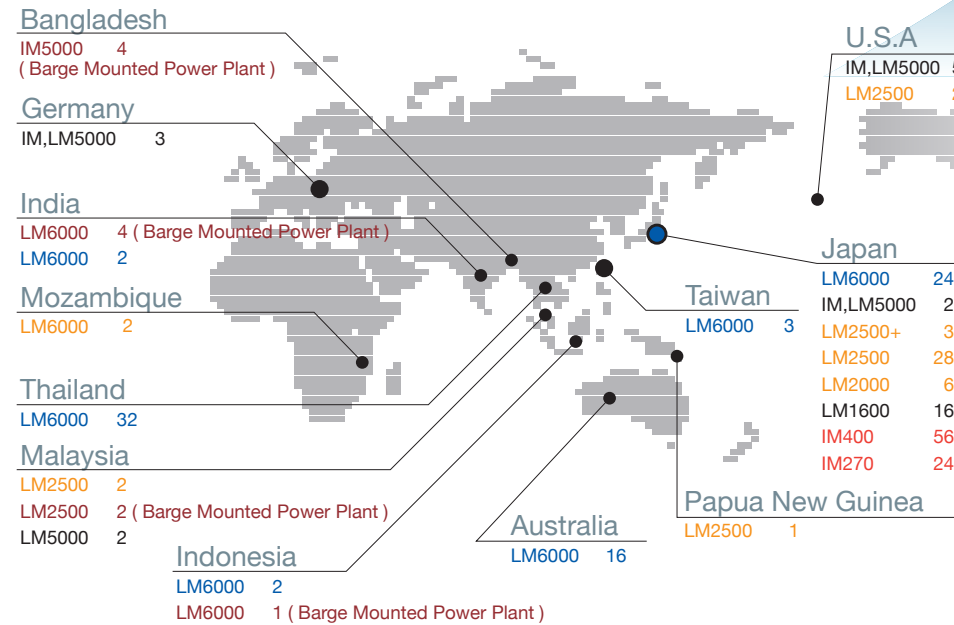
IHI has service centers both in Japan and globally



The plant is controlled by CSI-III+ and remotely monitored 24/7

IHI GAS TURBINE BUSINESS EXPERIENCE

IHI EXPERIENCE IN THE WORLD



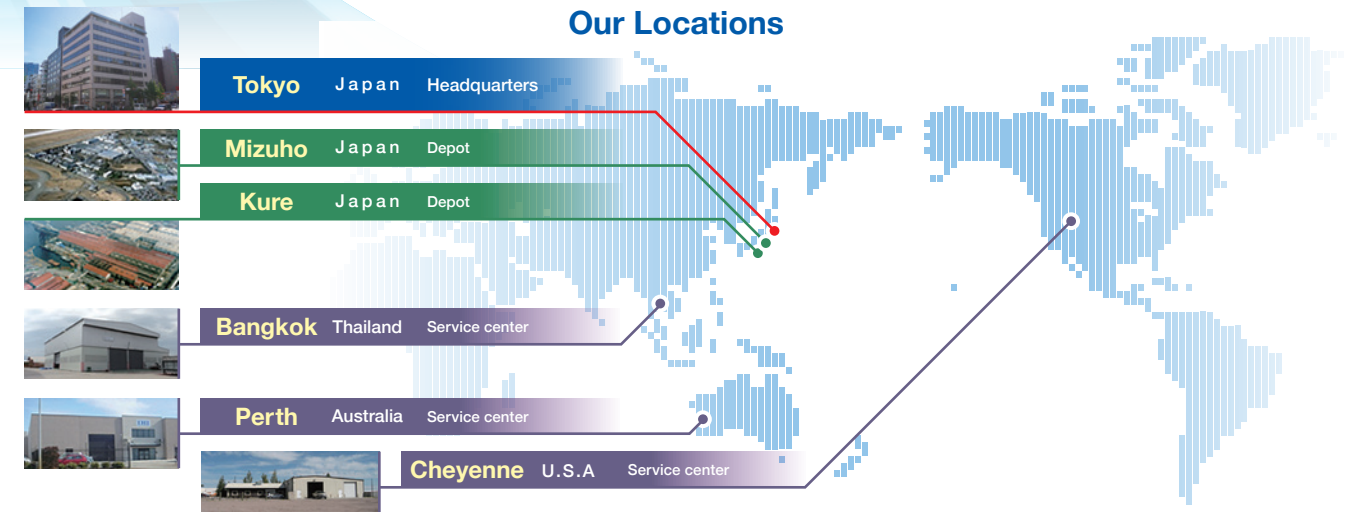
Total:

LM6000	86
IM,LM5000	16
LM2500+	3
LM2500	35
LM2000	6
LM1600	16
IM400	56
IM270	24

As of March 2023

MINIMIZING PLANT DOWN TIME AND MAXIMIZING THE LIFE OF LM6000

Our Locations



JAPAN SERVICE CENTER

Kure Depot: Level 3 (Authorized by GE)
Mizuho Depot: Level 4 (Authorized by GE)

OVERSEAS SERVICE CENTER

IHI Power System Thailand Service Center: Level 2
IHI Engineering Australia Perth Service Center: Level 2
IHI INC. U.S.A Cheyenne Service Center: Level 2



Major overhaul
Hot section repair/exchange
Module repair
Parts repair
LM6000 commissioning test etc.



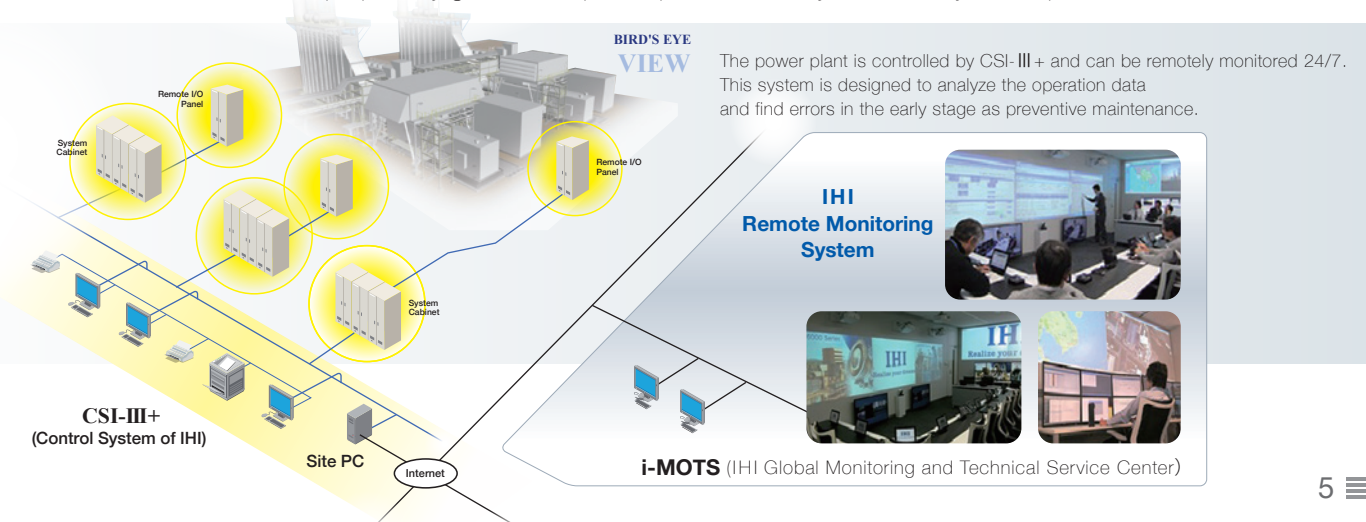
On-site internal/external maintenance
Hot section/combustor exchange
HPC/LPC B/V repair & exchange
Internal parts exchange
Spare parts in stock
Lease engine
Stationed service engineers etc.

We have two depots in Japan and global service centers in Thailand, Australia, and U.S.A.
We promise to provide world-class maintenance and repair services to our customers with Japanese craftsmanship.



IHI CSI-III+ & REMOTE MONITORING SYSTEM

CSI-III+ is IHI's proprietary gas turbine power plant control system, wholly developed in-house.



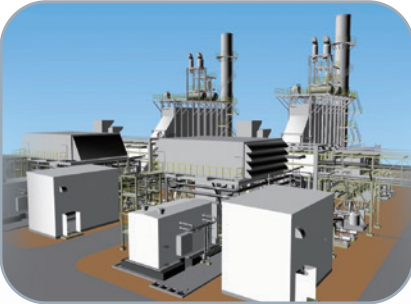
IHI LM6000 LINEUP & SPECIFICATION

Product Specifications

LM6000 Series		PC	PC SPRINT	PF	PF SPRINT	PF+	PF+ SPRINT
Combustor Type		SAC	SAC	DLE	DLE	DLE	DLE
Output at Gen. Terminal (kW)	50Hz	43,850	49,260	43,220	47,330	51,430	55,240
	60Hz	44,360	49,510	43,550	47,620	51,430	55,240
Heat Rate (kJ/kWh)	50Hz	8,960	8,920	8,690	8,700	8,640	8,700
	60Hz	8,870	8,840	8,610	8,620	8,640	8,700
Thermal Efficiency (%)	50Hz	40.2	40.4	41.4	41.4	41.7	41.4
	60Hz	40.6	40.7	41.8	41.8	41.7	41.4
Exhaust Gas Flow (kg/sec)	50Hz	128.7	133.8	126.1	132.4	136.1	144.6
	60Hz	128.4	133.2	125.4	131.7	136.1	144.6
Exhaust Gas Temp. (°C)	50Hz	439	450	455	449	492	478
	60Hz	440	451	456	450	492	478

Base load rating, gas fuel, without inlet/outlet duct losses

Combined Cycle (GT×HRSG×ST)



Model	Type	Net Plant Output (kW)	Net Plant Efficiency (%)	Heat Rate (kJ/kWh)	GT Power (kW)	ST Power (kW)
LM6000PF+	1 × 1	67,200	55.0	6,545	50,240	18,230
	2 × 1	135,020	55.3	6,515	100,480	37,200
LM6000PF+ SPRINT	1 × 1	71,230	53.8	6,686	54,110	18,460
	2 × 1	143,020	54.0	6,661	108,220	37,600

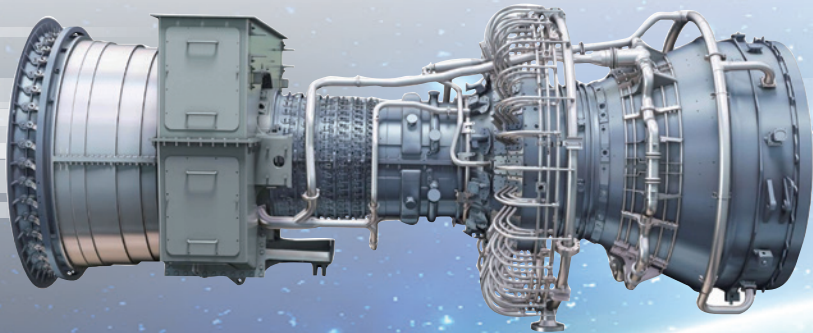
Base load rating, gas fuel, including inlet/outlet duct losses

Performance is based on the following conditions:

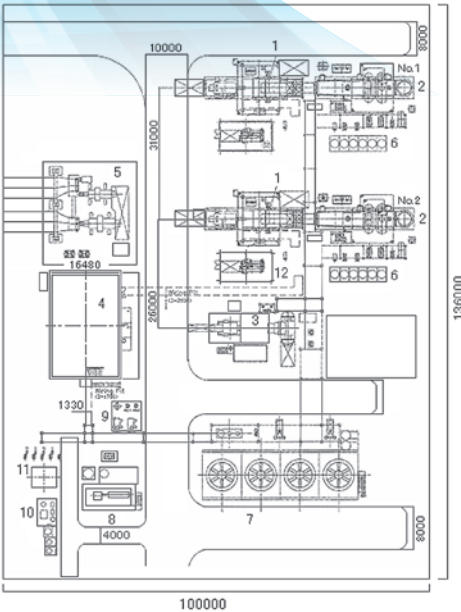
- 15°C ambient temperature
- 0m above sea level
- 60% relative humidity
- Efficiencies are based on LHV of fuel
- PC : 42ppm NOx (Water Injection)
- PF : 15ppm NOx
- PF+ : 25ppm NOx

All specifications are for reference only, subject to change without notice

DLE: Dry Low Emission
SAC: Single Annular Combustor (Conventional type)
GT: Gas Turbine
HRSG: Heat Recovery Steam Generator
ST: Steam Turbine
SPRINT: SPRay INtercooling
By injecting water between the low pressure compressor and the high pressure compressor, output can be increased by at least 10%.



IHI LM6000 CCPP LAYOUT (2x1)



No.	Name
1	Gas turbine generator
2	Heat recovery steam generator
3	Steam turbine generator
4	Electrical room/Control room
5	Transformer yard
6	Gas turbine cooling tower
7	Cooling tower
8	Fuel gas compressor
9	Air compressor
10	Water treatment unit and clean water supply unit
11	Deionized water tank
12	Chiller for inlet air cooling

LM6000 ADVANTAGES

LOW MAINTENANCE COST

⇒ Maintenance interval is calculated by actual running time and is not affected by start&stop cycles unlike heavy duty type.
Therefore, maintenance costs are low especially when the gas turbine is operated as daily or weekly start&stop mode.
(Major Overhaul: Every 50,000 hours / Hot Section Repair: Every 25,000 hours)

ECO-FRIENDLY MACHINE

⇒ Minimum 15ppm NOx emission level (O₂=15%)

MINIMIZING PLANT DOWN TIME

⇒ Customers can use one of our lease gas turbines during the overhaul period to minimize down time.
The gas turbine can be replaced in 48 hours.

PARTIAL LOAD FLEXIBILITY

⇒ The LM6000 can maintain high efficiency even in partial load by modulating SPRINT, while other heavy duty gas turbines need to be throttled in partial load, which lowers efficiency.

WE BRIGHTEN THE WORLD

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- Note that specifications, dimensions and appearance contained in the catalog may be changed without notice for improvement.
- Note that the color tone of the product on the catalog may appear different from that of the actual product for reasons attributable to printing.
- Note that the addresses may be changed.