

MITSUBISHI MW-701D  
GAS TURBINE SPECIFICATION



1. Major Items for Gas Turbine Power Station

(1) Gas Turbine

Type : Open Simple Cycle Single Shaft  
MW-701D

Speed : 3,000 rpm

Capacity : 144,000kw

Design base ;

Inlet Air Temp : 5 ° C

Atmospheric  
Pressure : 1,033 kg/cm<sup>3</sup>abs

Relative Humidity : 60%

Fuel : Light Oil or City Gas

\*Light Oil  
Specific Gravity: 0.83  
HHV: 10,800kcal/kg

\*City Gas  
Specific Gravity: 0.847 (kg/m<sup>3</sup>N)  
HHV: 11,000kcal/kg

NOx Control : Water Injection + High Temp. Nox Denitration  
NOx Limited Value  
G/T Outlet : not more than 50ppm (at O<sub>2</sub>-16%)  
Denitration Outlet : not more than 20ppm (at O<sub>2</sub>-16%)

(2) Generator

Type : Cylindrical Rotating Field Type Three Phase Synchronous  
Generator

Rating Item:

Apparent Output : 160,000KVA (at 5 ° C)

Power Factor : 90%

Relative Output : 144,000kw

Terminal Voltage : 15,000V

Frequency : 50Hz

No. of Pole, Speed : 2 pole, 3,000rpm

Cooling Method : Open Air Cooling

Insulation : Class F

Excitor : Brushless Type using Silicon Rectifier and AC excitor Coupled  
with the Generator

- (3) Main Transformer :160,000KVA, 14.7KV/66KV
- (4) Starting Method:  
 Starting Device : Three-phase Induction Motor  
 Motor  
 Starting Motor : 1,450kw  
 Synchronous Speed : 1,500rpm
- (5) Starting Time : Within 57min. (including gas compressor)
- (6) Annual Operating Patern:  
 Annual Utilization Factor : 10%  
 Starting : Everyday
- (7) Control : Operation and monitoring from local control panel or remote control panel

## 2.Major Items for Gas Turbine

- (1) Air Compressor  
 Type : Axial Flow Reaction Type  
 Compression Ratio : approx.14  
 No. of Stages : 19  
 Inlet Guide vane : Variable
- (2) Combustor:  
 Type : Cannular Type  
 Number : 18  
 Ignition Method : Electric Spark Method x 2
- (3) Turbine:  
 Type :Axial Flow Reaction Type  
 No. of Stages : 4  
 Forced Air Cooled Blade : Stationary Blade 1, 2 Stage  
 : Moving Blade 1,2 Stage  
 Speed :3,000rpm  
 Emergency Governer :Mechanical (ejector type) and Electrical

### 3.Design Performance and Environmental Performance of the Type MW-701 D Gas Turbine:

Table 1. Guaranteed Output Capacity and Thermal Efficiency

Ambient Temp.(° C)		5	15	33
Generator Out-Put (MW)	Extent of mixed combustion of light oil and city gas	144	136	121
Thermal efficiency at Generator Terminal	50 % mixed combustion of light oil and city gas	---	more than 29.9	----

(note 1) Atmospheric Pressure :1.033ata Relative Humidity: 60%

(note 2) Fuel Characteristics :according to"Chapter 1,Section 4, Design Criteria"

(note 3) Light Oil : HHV/LHV=1.062

City Gas : HHV/LHV=1.104

(2) Auxiliary Power Ratio:

50% mixed combustion of light oil and city gas at 15 ° C

Auxiliary Power Ratio at the Power Station : less than 3%

(3) Environmental Performance:

NOx , SOx and Dust at the outlet of chimney:

Table 2: Environmental Performance

Item		Emission Dencity	Emission Volume	Remarks
NOx	G/T Outlet	50ppm	80m3N/h	equivqlent at 16%O2
	Denitration Outle	20ppm	32m3N/h	equivalent at16%O2 and less than 10ppm leak ammonia
	SOx	29ppm	37m3N/h	
	Dust	5mg/m3N	8kg/h	equivalent at 16%O2

### 4.History of Inspection:

(1) Commencement of Operation : July,1992

(2) Official Inspection;

1st Official Inspection :April,1993

2nd --- " ---- : May,1995

3rd --- " ---- : March,1998

(3) Measure Overhaul:

To change G/T 1st Stage Stationary Blade (27pcs out of 60pcs)

: 1995

(4) Measure Accident: None

