

# *ABB Stal-Laval Gt200 80 Mw 50 Hz Light Oil Gas Turbine Generator*



- *UNIQUE Gas turbine GT200 80 MW HIGH Thermal Efficiency 34.4%*
- NEW in 1980 and used a total of 1070 hours since New. MINT Condition under Power.
- **Critical Spare part supply over 200+ tons for 20+ years of operation** (include. On e New Gas-Generator weight 95 tons)
- Magnificent Maintenance under Government Program. AS NEW TODAY.
- History: Used as Emergency or Peak Load PowerStation, now Fuel LFO, can be converted for Gas
- Unmanned REMOTE OPERATED over net.
- Can be configured for Natural Gas at extra cost.

**Manufacturer:**

ABB Stal-Laval

## *Turbine*

- |   |                          |
|---|--------------------------|
| • <i>Hig Pressure Turbine</i>               |                          |
| • Number of steps                           | 1                        |
| • Low Pressure Turbine                      |                          |
| • Number of steps                           | 1                        |
| • Power Turbine                             |                          |
| • Number of steps                           | 2                        |
| • Power Coupling to Electric-Generator      | Fixed Clutch             |
| • Electric Generator                        | ASEA GTA 1500 EV         |
| • Voltage (Gridtransformer 15/130 kV incl.) | 15 kV+- 5%               |
| • Power                                     | 120 MVA                  |
| • Speed                                     | 3000 rpm                 |
| • Frequence                                 | 50 hz                    |
| • Exiter                                    | AC wi Rotating Rectifier |
| • Generator Power                           | 87,4 MW                  |

## *Compressor*

- Low Pressure Compressor
- Number of steps 7
- High Pressure Compressor
- Number of steps 10
- Combustion chambers 8 pcs
- Number of fuel Nozzles per Combustion Chamber 8 pcs
- Light Oil Quality 01

## *Operational data*

- Light Fuel Consumption at Max Power 5,93 kg/sec
- Specific fuel Consumption 244 gr / kWh
- Thermal efficiency 34,4 % (Gas)
- Pressure after Compressors 1,45 MPa(e)
- Pressure after Gas-Generator 0,20 MPa(e)
- Temperature after Power Turbine 400 C
- Speed of Low Pressure Rotor 3466 rpm
- Speed of High Pressure Rotor 4012
- Speed of Power Turbine 3000
- Maintenance Program, Major Overhaul after 60,000 to 80,000 hours depending Fuel used.

## *Shipping details*

- Weight of complete Power station incl. building 652+ tons
- Shipping volume 1,385+ m3
- Built in Modulated form to ease transportation.
- Can be delivered within 3 month from binding Order. Turn-Key possible.
- *-Specifications herein are assumed correct but are not binding in detail.*

## Fuel measuring Test made for GT200.

**Total Operational Time since Commissioned New is 1070 hours.**

Background to demonstrate thermal efficiency and compare with

### New Gas turbines today

#### 1. Conditions for test run

Metered Output Power average value Nact:	87.139 MW
Correction for Transformer and Instrument Error N1:	0
Correction for deviation for from refers value on power factor and	
Generator voltage N2:	-0.304 MW
Actual Outside temp:	-2.69 C
Actual outside air pressure Po act:	984.8 mbar
Actual Air humidity:	78.75 %

Correction for humidity Cf:	1 Cf
Correction for outside temp N3:	-4.6 MW
Correction for Auxiliary help power N4:	-0.3432 MW
Corrected Output Ncorr:	84.37834 MW
Ncorr = ((Nact + N1 + N2)*Poref/Poact) + N3 + N4:	Equals
84.37834245 MW	
Poref:	1013 mb
t ref:	5 C
Humidity ref:	60 %

## 2. Actual Fuel Measuring procedure registered

Action:	Symbol test B Unit
Metered Fuel flow:	Q1 418.5 Lit/min
Metered fuel temperature:	t 8.9 dgr C
Corrected Q1 to + 15 C:	Q1corr 420.6762
Lit/min	
Metered fuel flow day tank:	Qd -0.376 Lit/min
Metered temperature day fuel tank:	t 11 dgr C
Corrected Qd:	Qdcorr -0.3773
Lit/min	
Metered fuel flow leakage fuel tank:	Ql 0.349 Lit/min
Metered temperature day tank:	t 21.25 dgr C
Corrected Ql to +15 dgr C:	0.3472 Lit/min
Fuel Consumption:	Q 420.6461 Lit/min
Fuel density 15 dgr C:	0.8385 kg/Lit
Fuel Calorimetric value:	42.82 MJ/kg(net)
Actual Power Output less help power = Nact+N1+N2-N4	86.4918 MW
Actual specific Heat consumption:	Wact 10477.14
MJ/MWh	
Correction for deviating Air temperature	W1 0.1047
MJ/MWh	
Correction for specific fuel consumption	Wcorr 10477.25
MJ/MWh	
Efficiency calculated from above actual test run:	34.3605 %

Today 2004 General Gas Turbines as per catalogue data.

### Generator Power Output ISO Conditions

Model	MW	MJ/MWh	Thermal Efficiency	
PG7121	(EA)	87.22 11550	31.16 %	Liquid fuel
PG7121	(EA)	84.36 11054	32.56 %	Gas fuel
MS6001FA		75.9 10300	34.9 %	Gas Fuel

ABB-STAL		86.49 10477	34.36 %	Liquid fuel
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Rmk.

From above test and catalogue data we can compare a new GE machine today and find

GT200 has higher efficiency.

If GT200 was operated on Gas Fuel Efficiency could be expected to be even higher.

GT200 had the Highest Efficiency in the World and still among the Highest Simple Cycle Gas Turbines.

The Spare part support included with this machine is good for 20 years or more.

One complete New Gas-Generator Set included as well in spare part package.