Power Barge Rigel I

Low Hour Fully Refurbished 48 MW 50/60 Hz Siemens Westinghouse Gas Turbine Power Barge

The 48 MW power barge Rigel I was designed by our power barge Siemens Westinghouse Joint Venture and built under Siemens Westinghouse supervision in 1997. It ran on condensates for less than 30K hours and fully overhauled and upgraded in 2011/12. Parent company went into bankruptcy and trustee placed power barge in hot layup until sold (2004 to 2008). 2008 a UK hedge fund acquired the power barge with PBC along with three other sister power barges. In 2019 the fund shut in the SPV with Rigel I acquired by PBC (PBLLC).

Acquired by PBLLC (owned by PBC) 2019. PBC kept the maintenance/security team of 11 on the payroll, keeping the unit in top condition. Only 20 test hours (full speed no load testing) since the overhaul.

Power Barge Basic Information

Barge name: Rigel I

ISO Output: 48 MW Natural Gas/46 MW Distillates
Turbine: SW251B11/12

Hull classification: American Bureau of Shipping (layup mode)

Type of construction: Steel hull (non-propelled)
General dimensions:
Length: 64.36 meters
Breadth : 18.28 meters
Draft: ~2 meters
Gross tonnage: 2,876 tons

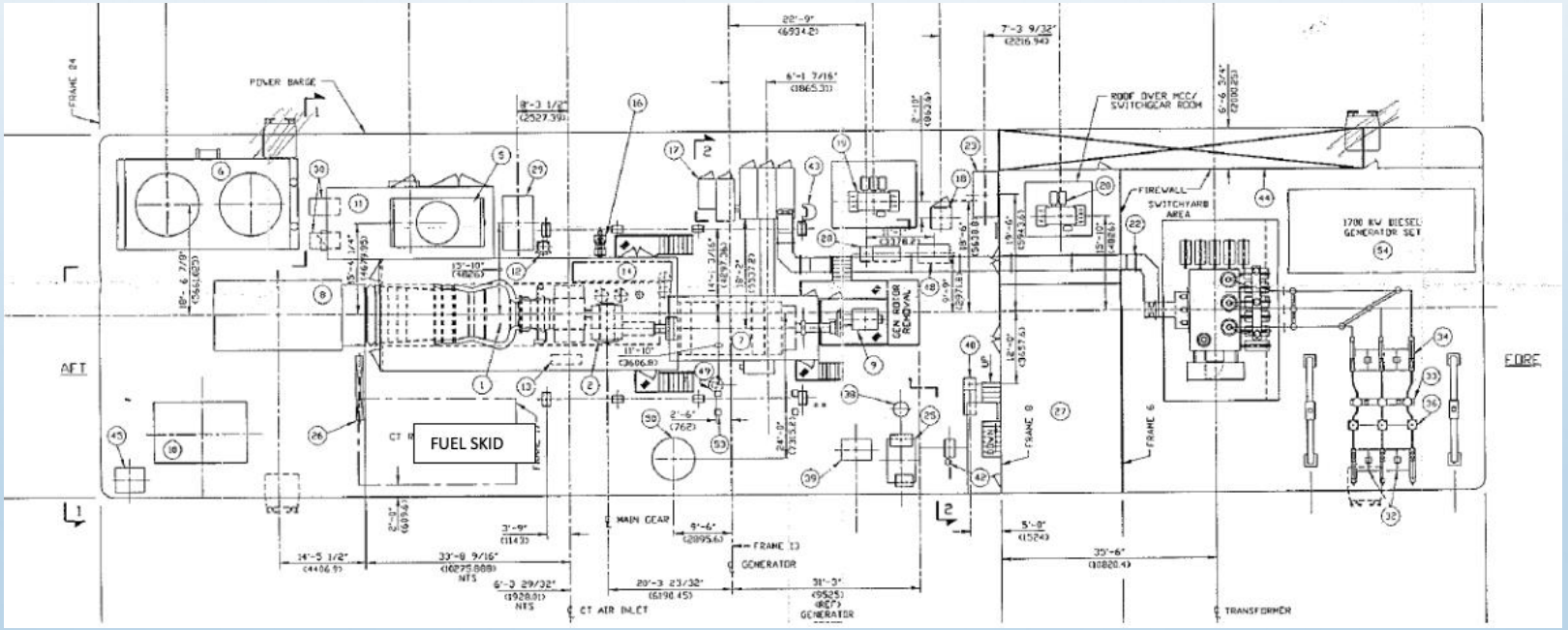
General Data

- Frequency
  - Currently in 50 Hz configuration. The geared industrial gas turbine that can be re-geared to change frequency from 50 to 60 Hz. The generator is rated for both 50 Hz and 60 Hz
- Fuels
  - The gas turbine (internal) is set to run on distillates, natural gas or propane. Current configuration is distillates.
  - Natural gas or propane will require additional piping and a gas control skid.
  - Natural gas/propane conversion would take around 3 to 4 months (order gas skid)
  - The power barge can operate during this conversion.

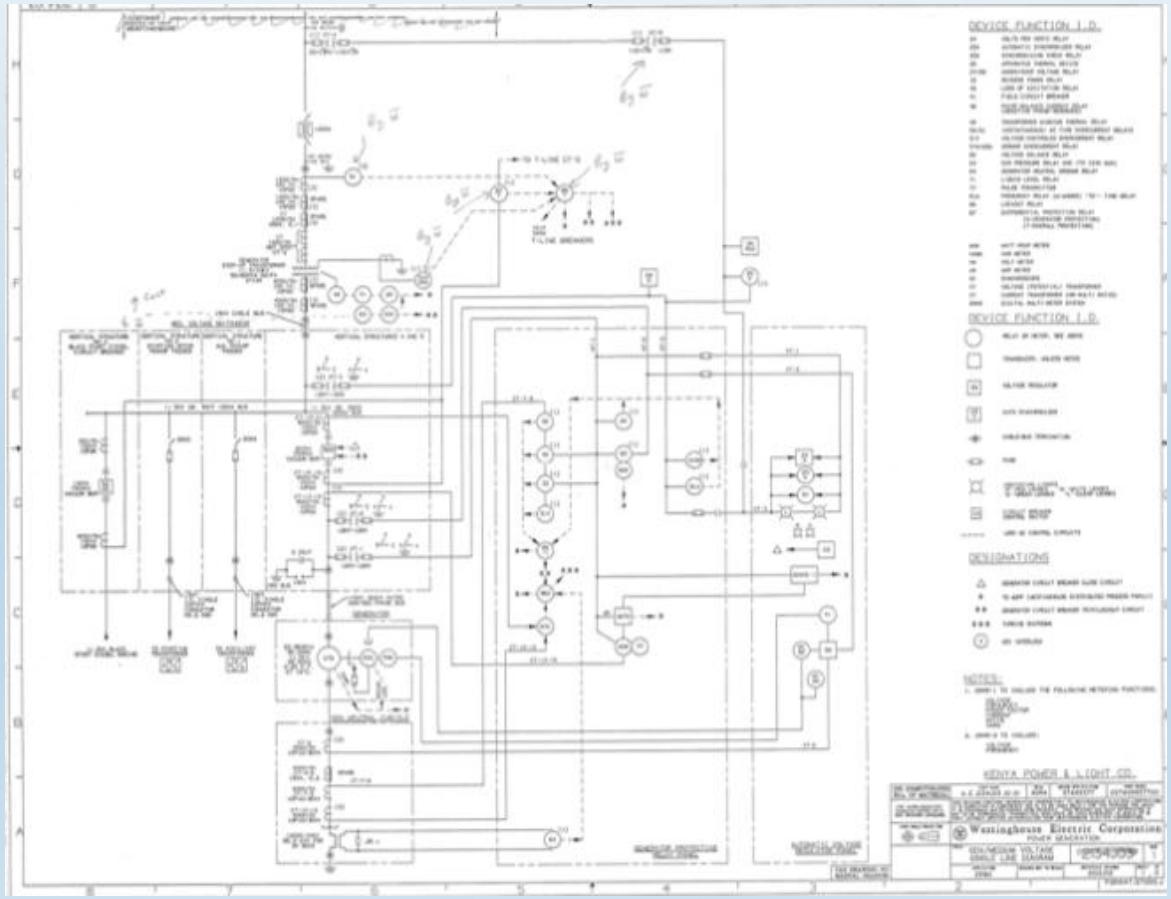
Rigel I Reconditioning Program

- In 2008 various BOP reconditioning services were conducted and a combustion turbine component inspection was performed by TurboCare (Siemens).
- December 2010 the turbine blades were removed to conduct a rotor evaluation.
- 2011/12 the barge was dry docked and a complete hot gas path inspection was done . All the major hot section parts were replaced including turbine blades, stationary vane segments, transition pieces and combustor baskets. Torque tube and compressor section were inspected, and new compressor diaphragms were installed on rows 8 to 11. Turbine journal and thrust bearings were also checked and cleaned. All pertinent clearances and readings were taken and checked according to OEM recommendations. Works were completed by 2012.
- Turbine controls were replaced with a modern and versatile Allen Bradley PLC based system.
- The final phase of the reconditioning project was completed in July 2012 with a 2-hour Full Speed No Load test.
- Further FSNL tests were conducted in 2014 and 2016.

General Arrangement (as built)



Single Line Drawing



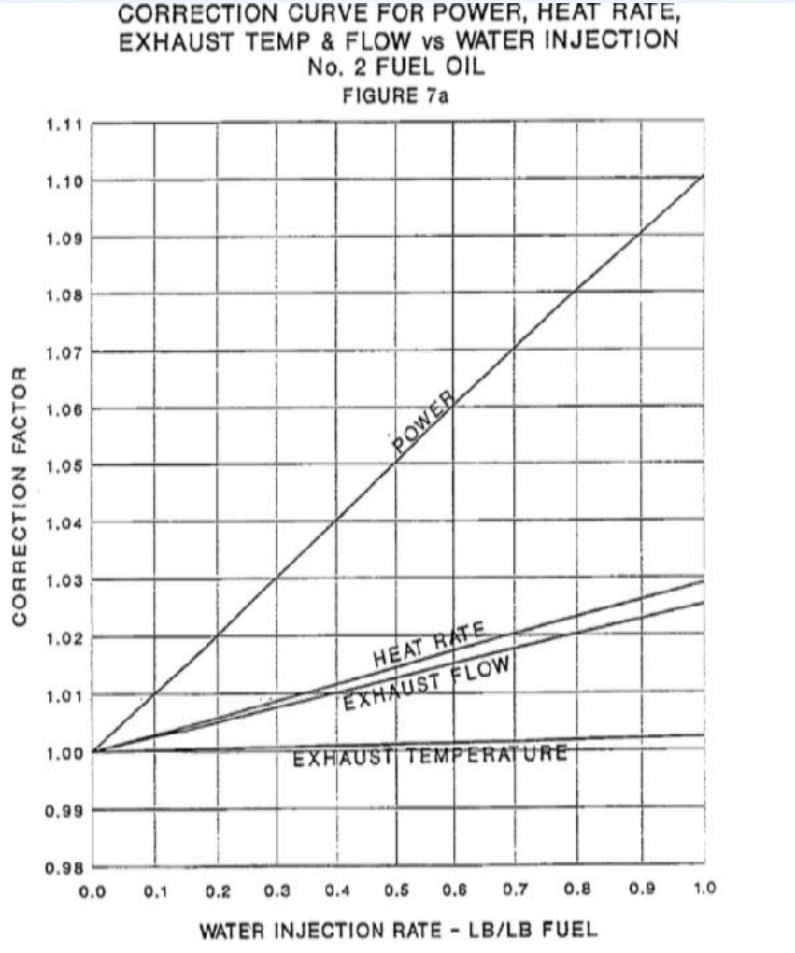
Output and Efficiency

Sea level

Temperature (oF): 59 Relative humidity (%): 60 Power Generator Factor 0.85

No. 1 Natural Gas		
net power output	Kw	48000 [3]
Heat rate	BTU/Kwh (LHV)	10600
Efficiency	%	32.2116
Exhaust flow	LB/HR	1373800
Exhaust temperature	oF	974
Fuel Flow	LB/Hr	24280
Exhaust heat	BTU/LB LHV	20960
No2. Diesel		
net power output	Kw	46400 [4]
Heat rate	BTU/Kwh (LHV)	10750
Efficiency	%	31.7621
Exhaust flow	LB/HR	1376500
Exhaust temperature	oF	975
Fuel Flow	LB/Hr	26880

Power Curves with Water Injection



Photographs

Power Barge Advantages

- Power barges can be quickly deployed quickly either wet towed with tug or dry towed on a semi-submersible
- Power barges provide both permanent and temporary power with gas turbine and medium speed engines in simple and combined cycle
- Power barges can be redeployed without significant cost when compared to a land-based plant
- Power barges are not susceptible to rising sea levels and can be designed for tidal surge locations
- Power barges are fully self-contained power plants