

TGT 1-3 units replacement project in thermal power plant Brestanica

JOSIP GAŠPARINČIĆ, Dr. ALEŠ ŠTRICELJ
Termoelektrarna Brestanica
CPB 18, Brestanica
Slovenia

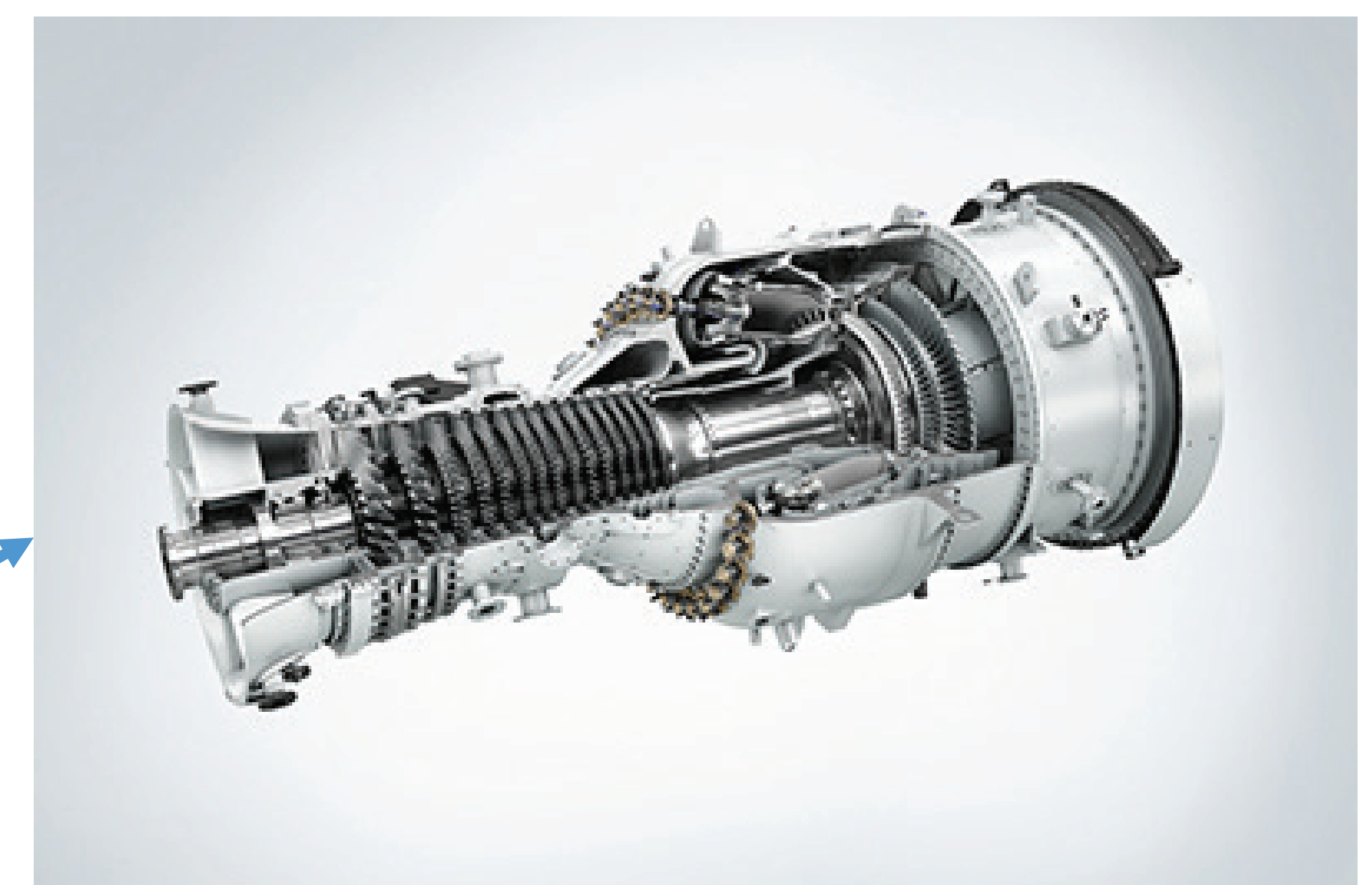
Gas turbines GT 1-3 description	
Manufacturer	AEG Kanis
Turbine type	PG 5341
Number of compressor stages	17
Compression ratio	10,5 : 1
Number and type of combustion chamber	10, radially fitted
Number of turbine stages	2
Nominal rotation speed	5120 min ⁻¹
Nominal load fuel consumption	Fuel gas: 8894 Sm ³ /h Fuel oil: 4054 kg/h
Generator	
Nominal output	32 MVA
Nominal voltage	10,5 kV
Nominal speed	3000 min ⁻¹
Frequency	50 Hz
Nominal cos φ	0,8
GT Unit	
Nominal output	23,1 MW
Nominal efficiency	26 %
Start-up – normal time	< 15 min



GT Units PB1-3

Phase 1a and 1b

SIEMENS SGT - 800



Gas turbine SGT-800 data

Type of compressor	Axial flow
Number of compressor stages	15 stages total (3 stages with variable guide vanes)
Number of compr. extractions	5 (3rd, 5th, 8th, 10th and 15th stage)
Pressure ratio	21:1 (at ISO and N.G. fuel)
Nominal output (net)	50,5 MWe (at ISO and N.G. fuel)
Nominal heat rate (net)	9400 kJ/kWh (at ISO and N.G. fuel)
Nominal efficiency (net)	38,3 %
Nominal exhaust flow	134 kg/s (at ISO and N.G. fuel)
Nominal exhaust temperature	553 °C (at ISO and N.G. fuel)
Type of turbine	Axial flow
Number of turbine stages	3 (Stage 1: Film cooled; Stage 2: Convection cooled; Stage 3: Non-cooled)
Turbine inlet temperature	1230 °C (average thermodyn. mixed gas temp.)
Rotor weight (including blading)	7200 kg
Rotor construction	Electron beam welded compressor, bolted turbine discs
Nominal rotor speed	6600 rpm
Thrust bearing type	Tilting pad (forced lubrication)
Journal bearing type	Tilting pad (forced lubrication)
Nominal thrust load	200000 N
Type of combustor	Single, annular combustion chamber Low emission variant, dry
Number of burners	30
Burners type	Single fuel or dual fuel