GENERAL DESCRIPTION

MODERATELY USED, 50 Hz, 90 MW OUTPUT BIOMASS OR PEAT FIRED POWER PLANT FOR SALE

Type:
Biomass or Peat Fuelled Steam Power Plant

Location:

Western Europe

This thermal power plant was constructed for both biomass (wood chips) and peat firing, with successful mixed-load tests on both. The use of lignite coal is also deemed feasible. When using a new boiler, this plant may also be run with hard coal.

The unit, commissioned in 2003 and commenced with commercial production in 2004, is designed ideally for base-load or medium-load operations with feed-in into the 50 Hz public grid.

This plant will have to be shut down by end 2020 due to the early termination of the current operating permit. Due to its moderate use (ca. 110.000 operating hours only) and its continuous supervision and maintenance it is still in excellent condition.

The flue gas filter technology comprises bag-filter dedusting as well as additive injections and fulfils the latest environmental standards. Additional flue gas denitrification is available, too.

Offering

item / type / layout	complete steam turbine-generator power plant with CFB type boiler; for sale with all installed auxiliary systems
typical usage	ideal for base load to medium load electricity production
special features	circulating fluidised bed type boiler with tri-fuel capability: - solid biomass (e.g. wood chips) - peat (fuel storage to be modified) and/or - lignite coal (fuel storage to be modified)

SATEL ELEKTRİK ÜRETİM A.Ş

Merkez / Headquarter
Bahçelievler mh. Çalışlar cd.
Ihlamur Sk. No:1 D:8 Bahçelievler/İstanbul
Tel/Fax : +90 212-441 39 18
Cep : +90 532- 296 10 18
E-mail : durmusm@ttmail.com

Almanya Büro / Germany office
Defreggerstr. 1a - 85521 Ottobrunn
Tel: +49 894363674
Mob: +49 1781830931
Mail: info@satel-consulting.de

Küçükyalı V.D.
Vergi Nr: 7520054155
İstanbul Tic.Sic.Nr: 372156

status	currently in operation; to be mothballed by end of 2020
availability for dismantling	as of early 2021, subject to sales contract and approved dismantling concept
sales prices	Euro Mio. for all re-usable components (as these are and where these are on site)
new build cost (for comparison)	Euro from 160 to 200 Mio. (approx., European base cases for an entire new plant) total EPC contract cost in 2002: Euro 150 Mio. total (with Euro 120 Mio. equipment only)
new build time (for comparison)	2 years (approx., European base cases with new items purchased)

Key Figures

main fuel type	any fuel type fitting the CFB steam generator / boiler preferably wood chips, peat or similar
electrical output	90 MW_e net capacity (approx.)
thermal output	not foreseen; no CHP configuration
efficiency	35,5 % (approx., depending on fuel and boiler configuration) 256 MW fuel-in gives 91 MW electr. exported-out
flue gas filter technology	- SOx max. 200 mg/m^3 - NOx max. 200 mg/m^3 - fly ash max. 26 mg/m^3 - outdoor noise 55 / 45 dB(A)
grid connection	110 kV, 50 Hz

plant size	30,000 m^2 total surface (approx., depending on new boiler) 300 m x 100 m approx. incl. fuel yard
year of commissioning	2003 commissioned / 2004 commercial operation
last overhaul	major: 2017 (amongst others turbine cover lift)
major upgrades / events	none / reliable commercial operation from 2004 until 2020

Operating Figures

max. generation capacity	91 MW_e net (approx., at full load)
min. generation capacity	32 MW_e net (approx., at min. load)
cold start time:	12 hours (to reach max. capacity) 4 hours (from grid synchronization to full load)
fuel quality	various low calorific, solid fuels are possible, e.g. lower heat value range: 5 - 15 MJ/kg total ash content range: 2 - 10 % moisture content range: 20 - 65 % volatiles range: 60 - 70 % Sulphur content range: 0.11 - 0.25 % Chlorine content range: 0.01 - 0.12 %
fuel consumption at full load	approx. 120 t/h at maximum load to boiler (if firing on 7.7 GJ/t fuel)
fuel consumption at min. load	approx. 47 t/hr at minimum load (if firing on 7.7 GJ/t fuel)
fuel storage capacity	included / approx. 5.500 t solid fuel

type of cooling	river water circulation
amount of cooling water	3,500 kg/s

Technical Figures of Main Components

This power unit for sale comprises a 280 t/h circulating fluidised bed steam generator, a 100 MW condensing steam turbine, a 121 MVA generator, related components of the water / steam cycle, all transformers and all installed auxiliary systems.

fuel handling	1x coal / biomass handling yard by European manufacturers 1x lorry weighbridge from 0 to 60 t 3x lorry unloaders (in parallel configuration) 2x rail wagon tipplers (for 2 wagons each) 1x belt sampler (automated) 3x belt weighers 4x rotating screws (for reclaiming fuel from stockpile) 1,000 meters conveyor belts
boiler	1x CFB type boiler, 110,000 operating hours by European manufacturer life steam flow: 78 kg/s steam data: 140 / 33 bar; 560 / 560 degree C supplementary fuel supply for the boiler: gas Propane ignition system light fuel oil system (Diesel system) light fuel oil tank & Diesel pumps fresh air supply for the boiler: 1x primary air fan 1x secondary air fan 1x recirculation fan
steam turbine	1x 100 MW nominal, HP extraction type steam turbine by Japanese manufacturer

generator	1x 121 MVA generator with circuit breakers by Japanese manufacturer 3000 rpm (50 Hz) 11,5 kV
water / steam cycle and cooling system	amongst others: condenser main boiler feed pumps main condensate pumps main cooling-water pumps, in 50% configuration HP stop / control valves for turbine HP feedwater valves
transformers and electrical supply	1x 120 MVA main step-up transformer from 11.5 to 110 kV by European manufacturer approx. 10x various step-down transformers multiple 6.6 kV and 400 V operation unit boards
control and communication system	1x DCS by European manufacturer
auxiliary systems	1x LFO-fuelled auxiliary boiler 1x 650 kVA Diesel engine generator 1x compressed air supply system 1x water treatment plant (for demin. water and for condensate) 1x 55 t main hoist crane 1x 8.5 t aux. hoist crane selected workshop equipment

Additional Information

spare parts	extensive spare parts for all plant items included orig. purchase price was Euro 3.78 Mio.
Documentation	- extensive engineering and construction documentation included

	- user manuals fully available and included - maintenance records partly available and included
marketing service fee	will be paid by the seller
dismantling of unit	shall be borne by buyer; technical assistance by seller negotiable dismantling to be carried out under safety supervision by seller

Impressions

plant side view – fuel-feeding system in front of the boiler house

plant inside view – steam turbine / power generator set

Disclaimer:

Although the statements and technical information contained herein are believed to be materially accurate, no representation or warranty is given as to the accuracy of any of the information provided.

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