Appendix 1 TD

TECHNOLOGICAL DATA FOR THE COOLING WATER SYSTEM

Hot water temperature (behind; see Appendix 2 TD):

Cold water temperature (in front of capacitor; see Appendix 2 TD):

eat flow: 637 MW
Cooling water flow — total: 61,000 m3/h
Pressure losses in pipelines and pumps on the route: condensor - effluent at the spray level HS; 26.5m

The concentration factor is approx. 3.

Assembly and protection of the COOLING SYSTEM AND CAPACITOR PIPELINE

Coating type	Application thickness /µm/
Pipeline DN3000 / DN2200, cooling tower - capacitor	
Protection of internal surfaces	
SIGMACOVER 805 - two components epoxy polyamide with high dry matter content - pigmented	2x150
Protection of external surfaces	
Primer SIGMACOVER 256 -two components epoxy polyamide with high dry matter content	35
Base coating SIGMACOVER 456 - two components epoxy polyamide with high dry matter content	75
Final coating SIGMADUR 550 - aliphatic acrylic polyurethane	60
Pipeline DN3000 / DN2000, capacitor - cooling tower	
Protection of internal surfaces	
SIGMACOVER 805 - two components epoxy polyamide with high dry matter content	2x150
Protection of external surfaces	
Primer SIGMACOVER 256 - two-component epoxy polyamide with high dry matter content	35
Base coating SIGMACOVER 456 - two components epoxy polyamide with high dry matter content	75
Fin coating SIGMADUR 550 - aliphatic acrylic polyurethane	60

Condensate pipes material: X2CrNiMo17-12-2 (1.4404).

THERMOHYDRAULIC DATA

- Heat load 637 MW
- Cooling water flow 61,000 m3/h
- Hot water temperature 42.2°C
- Cold water temperature 12.0 °C
- Cooling level 9 K
- Estimated cooling value 9,5 K

- Wet thermometer temperature 8.4°C
- Dry thermometer temperature 10,6°C
- Relative humidity of air: 75%
- Air pressure 971 mbar

WATER LOSS

- Evaporation loss (% flow)1.1%
- Loss from mechanical water cleaning (in % of flow) < 0.005%

MAIN DIMENSIONS OF THE COOLING TOWER

Levels relating to the top of the pool

Level ±0.000 365,000 n.m.

- Pool bottom depth- 2.0 m
- Air input height 8.2 m
- Elevation of the spray axis height 10.9 m
- Total cooling tower height 162 m

Diameters:

- Diameter of the pillar system 100 m
- Outdoor pool diameter 96.6 m
- Process diameter 92 m
- Neck diameter 56.2 m
- Internal diameter at output 56,2 m
- External diameter at output 59.4 m

Water levels in the pool

- Normal water level in the pool (under the pool edge) -0.3 m
- Maximum water level in the pool (under the pool edge) -0,2 m
- Minimum water level in the pool (under the pool edge) -1.5 m

Limit values

- Water flow, maximum 120 %
- Maximum hot water temperature for 15 min. 60 °C

INVENTORY OF CONSTRUCTIONS AND EQUIPMENT

COOLING TOWER

Distribution channels and hot water lift shaft	
Material	*Reinforced concrete*
The hot water lift shaft is designed to allow the flow of water past the spray area into the basin in winter and separate water supply to the hot water curtain pipeline	
Hot water distribution pipelines	
Material	*PP or GRP tubes*
Pipe diameter	*DN 300/250/200*
Mass	*20,700 kg*
Cooling fill media	
Material	*PP*

Flow of nozzles	*2.8 l/s*
Permissible amount of suspended substances in water	*100 mg/l*
Mass	*1,600 kg*
Cooling fillers	
Material	*PVC*
Mass	*86,900 kg*
Fill Height	*1800 mm*
Total area	*6439 m^2*
Number of layers	*3*
Permissible amount of suspended substances in water	*100 mg/l*
Lead pipe – water curtain	
Material	*GRP*
Mass	*5,200 kg*
Pipe diameter	*DN800*
Number of peripheral pipes	*4*
Droplet cutters	
Cutter type	*Wavy*
Number of layers	*1*
Maximum droplet carryover at the outlet	*0.005% water*
Material	*PP/ PVC*
Mass	*48,300 kg*
Cleaning grille with rubber transporter	
Number	*1*
Water flow	*61,000 m^3/h*
Distance between grilles	*15 mm*
Material	*Stainless steel*
Smoke tunnel	
Diameter	*8 m*
Length	*115 m*
Intersection	*50 m^2*
Material	*FRP*
Mass	*184 tons*

PUMPING POINT AND COOLING SYSTEM PIPELINES

Kineta	
Material	Reinforced concrete
Cooling water pipes are installed in the pipe tranchto power the capacitor	
Cooling water pipeline	
Material	S 235 JR
Pipe diameter	DN 3000/2200/2000
AKZ protection	external and internal surfaces of the pipeline
Technological pipelines	
Material	S 235 JR
Pipe diameter	DN 500/300/200/150/100
AKZ protection	External protection
Butterfly valves on the cooling water pipeline	
Number	2XDN2200, 2XDN2000
Nominal diameter and pressure	DN2200/PN6
Drive Type	Electric motor
AKZ protection	external and internal surfaces
Implementation	Flange
Non -return valves on the cooling water pipeline	
Number	2
Nominal diameter and pressure	DN2000/PN6
Drive Type	Electric motor/hydraulics
Rated power	1.5 kW
AKZ protection	external and internal surfaces
Implementation	Flange
Other shut-off dampers and gate valves according to the technological scheme	
Nominal diameter and pressure	DN500/300/200/ PN10/6
Drive Type	Electric motor/handheld
AKZ protection	external and internal surfaces
Implementation	Flange
Flow meter	
Nominal diameter	DN150 DN2200
Compensator	
Nominal diameter and pressure	DN3000/2200/PN6
Implementation	Rubber/flange
Cooling water pump	
Number	2
Capacity	30,500m3/h
Pressure height	26.5m
Drive	Electric motor
Rated power	3000 kW
Implementation	Centrifugal/vertical
Submersible pump	
Number	2
Capacity	300m3/h
Pressure height	20m
Drive	Electric motor
Rated power	23 kW
Implementation	Centrifugal/vertical
Transformer cooling pump	

Number	2
Capacity	170m3/h
Pressure height	25m
Drive	Electric motor
Rated power	22 kW
Implementation	Centrifugal/horizontal
Cleaning grille	
Number	1
Material	Stainless steel
Water flow	61,000m3/h
Distance between grilles	15mm
Bridge lift	
Number	1
Deadweight	28t
Rated power	18,5kW