1 General Data of Plant / RAPH

Location and country of installation	Šoštanj, Unit 6, 1 x 600 MW – Power Island, Šoštanj / Slovenia
Owner	TES TERMOELEKTRARNA ŠOŠTANJ
Client	ALSTOM Power Systems GmbH Augsburger Str. 712 70329 Stuttgart / Germany
APS Project No.	1.48315
Order No. / Order Date	20-4500057783 / 28.09.2010
TPER-Job-No.	130 4559
Type of RAPH	LCVZB 31.5 / 1800
Quantity of RAPHs	2
Serial Nos.	2229, 2230
Boiler fuel	Lignite
Cross sectional division flue gas / air ratio	50 % : 50 %
Arrangement	cold side at bottom
Weight per RAPH	approx. 410 t

2 Technical Data and Analysis Values (Design Load Case: 100 %

(according to Document, Identification No. 1.48315/00 010-7031 Rev. A)

1.48315/11
Sostanj Unit 6 600 MW
EB-TDE / Por
16.03.2010

Manufacturer	ALSTOM Power Energy Recovery GmbH
Product / Type	Bi-Sector RAPH / LCVZB 31.5 / 1800
Calculation No.	A100DC--GV-F-A0_R00_V00
TPER No.	156000

2.1 Data per Boiler

Data per Boiler	Value	Unit
Load No.	**1**	
Boiler Load	100	%
Steam mass flow	1515	t/h
Number of mills in operation	7	
Number of RAPHs in operation	2	

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2.2 Design / Operation Data

Design / Operation Data	Value	Unit
Mean atmospheric pressure	970	hPa
Altitude of plant	360	m a.s.l.
Water content of the air	6,20	g water/kg dry air
Air intake	inside	inside / outside

2.3 Technical Data

2.3.1 Fuel Data

Fuel data	Value	Unit
Type of fuel	Lignite	
	Design Coal = P	
LHV	10,500	MJ/kg
Ash	16,300	% a.r.
Moisture	37,800	% a.r.
Carbon	29,200	% a.r.
Hydrogen	2,350	% a.r.
Oxygen	12,300	% a.r.
Nitrogen	0,690	% a.r.
Sulfur	1,360	% a.r.

2.3.2 Flue Gas Data

Flue gas data	Value	Unit
CO_2 at RAPH inlet	16,95	Vol.% dry
CO_2 at RAPH outlet (expected)	15,95	Vol.% dry
CO_2 max.	19,18	Vol.% dry
H_2O at RAPH inlet	19,27	Vol.%
SO_2 at RAPH inlet	0,29	Vol.% dry
SO_3 at RAPH inlet	0,0051	Vol.% dry
N_2 at RAPH inlet	80,33	Vol.% dry
O_2 at RAPH inlet	2,43	Vol.% dry
Ash mass flow in flue gas total	16,63	kg/s
Excess air at RAPH inlet	13,0	%
Excess air at RAPH outlet (expected)	20,0	%
cp_m flue gas at RAPH inlet[1)]	1,164	kJ/kgK
[1)] related to total amount of flue gas (incl. dust heat)		

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2.3.3 Mass Flow

Mass flow (total)	Value	Unit
Flue gas mass flow at RAPH inlet	581,1	kg/s
Flue gas mass flow at RAPH outlet (expected)	612,2	kg/s
Max. velocity flue gas in RAPH	11,0	m/s
Standard density of flue gas (moist) before RAPH	1,271	kg/m³
Fly ash mass flow at RAPH inlet	16,63	kg/s
Air mass flow downstream FD fan (expected)	487,9	kg/s
Air mass flow at RAPH inlet	480,5	kg/s
Air mass flow at RAPH outlet	456,8	kg/s
Air mass flow at RAPH outlet to furnace (excl. hot air recirculation)	456,8	kg/s
Standard density of air	1,2881	kg/m³

2.3.4 Temperatures

Temperatures	Value	Unit
Flue gas RAPH inlet	347,3	°C
Flue gas RAPH outlet (uncorrected)	150	°C
Flue gas RAPH outlet (corrected)	145,0	°C
Air RAPH inlet	40,0	°C
Air RAPH outlet	327	°C

2.3.5 Pressures

Pressures	Value	Unit
Pressure of flue gas RAPH inlet (static)	-15,1	mbar
Pressure of air RAPH outlet	17,5	mbar
Pressure drop flue gas part (expected)	10	mbar
Pressure drop air part (expected	5,5	mbar
Pressure drop at cold end of RAPH	48,1	mbar

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2.3.6 Leakages

Leakages	Value	Unit
Total leakage	24	kg/s
Total leakage	5,0	%
Entrained leakage	8,8	kg/s
CO_2-Decrease (expected)	1,00	Vol.% dry
CO_2-Decrease (achieved)	0,80	Vol.% dry
O_2-Increase	0,88	Vol.% dry

2.3.7 Temperatures

Temperatures on heating surfaces		Values	Unit
at the Hot End	mean / lowest	287 / 275	°C
at the Cold End	mean / lowest	104 / 83	°C
at the parting line	mean / lowest	174 / 148	°C
Heat output		135.000	kW

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