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«Northern Interindustry Company
«The Alternative» Ltd
For the attention of Chief Engineer
V.I. Manykovsky

Conclusion
on the results of RAH heat exchange elements replacement in power generating unit
No.3 during major repair period in 2007

As the result of carried out works boiler gross efficiency has increased by:

$$_\Delta \eta = 91.97 - 91.23 = 0.74\%.$$

Boiler efficiency was increased due to the lowering of heat loss with flue gases q_2 according to the following parameters:
- lowering of the cold air inleakage
- lowering of the temperature of flue gases
- increasing of the hot air temperature

The positive parameters after RAH repair in 3B boiler body where CMKA® heat exchange elements produced by Northern Interindustry Company «The Alternative» Ltd were installed are as follows:

   - lowering of aerodynamic resistance that led to auxiliary power consumption reduction,

   - increasing of regeneration coefficient by 2% that led to lowering of the temperature of flue gases by 12 °C and rising of the hot air temperature by 12-13 °C.

Enclosure: Table 1 «List of the main technical and economic indices of PK-41 boiler No.3 at Konakovo SDPP before and after major repair period in 2007».

Deputy Chief Engineer for Repair   A.A. Kazansky

Table 1

List of the main technical and economic indices of PK-41 boiler No.3, at Konakovo SDPP before and after major repair period in 2007

Parameter	Dimension	before repair on June 26, 2007				after repair on January 30, 2008			
		A	B	C	D	A	B	C	D
Electrical load (not fixed)	MW	302.39				314.73			
Gas temperature before RAH	°C	340.57	344.71	331	340	335.17	338.01	335.5	339.07
Gas temperature behind RAH	°C	169	190	154.29	162.86	149.06	144.53	125.88	147.59
Air temperature behind RAH	°C	290.57	289	285	282	284.07	280.46	292.64	298.08
Air temperature before RAH	°C	31	33.29	30.29	30.29	32.45	33.14	33.3	33.92
Device gas consumption	m³/hour	37170		38270		34423		34370	
Fixed gas consumption	m³/hour	41425.37		42509.35		40664.37		40538.14	
Oxygen content in flue gases before transition zone taking into account thermal aerodynamic coefficient	%	2.4	2.02	1.875	2.067	1.60	1.56	2.30	1.32
Excess coefficient	-	1.116129	1.095785	1.088235	1.098257	1.0742268	1.072222	1.110695	1.060366
Oxygen content in flue gases behind smoke exhaust	%	7		7,27		7		7	
Excess coefficient	-	1.45		1.476547706		1.45		1.45	
Flue gases vacuum behind RAH	кgf/m²	286	283	287	284	252	250	263	258
Flue gases vacuum before RAH	кgf/m²	184	174	178	185	167	160	165	168
Air pressure before RAH	кgf/m²	205	212	257	230	187	189	209	210
Air pressure behind RAH	кgf/m²	127	120	143	144	119	120	121	123
Air inleakage into furnace	%	14.1		13.2		10.4		13.2	
Heat got by steam per the boiler drum	кcal/hour	305292661		320516726		309966865		306238004	
Combustion heat	кcal/m³	8015				7993			
Temperature of flue gases behind smoke exhaust	°C	166.57		158		153.45		147.56	
Air suction into gas duct	%	29.2		36.1		34.06		33.6	
Boiler efficiency (actual)	%	91.6		91.85		92.24		92.54	
Boiler efficiency (fixed)	%	91.09		91.37		91.82		92.13	