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«Northern Interindustry Company  
«The Alternative» Ltd  
For the attention of Director  
I.M.Salmanova

21 Karl Marx St.  
164500 Severodvinsk  
Arkhangelsk Region, Russia

## **Appraisal report on RAH heat exchange elements usage.**

In 2008, at our enterprise during major repair period at TГM-84Б boiler No.3 the heat exchange elements of hot and cold ends in two regenerative air heaters PБИ-54 that had been used over their service life were replaced by heat exchange elements manufactured by «Northern Interindustry Company «The Alternative» Ltd. Heat exchange elements with packages of exceeding height of 685 mm were chosen for the replacement.

The results of carried out tests concerning rated steam capacity and rated conditions (the temperature of feed water equals 230°C and the temperature of cold air equals 30°C) after repair were as follows:

- the temperature of released gases has got 120°C (138°C – before modernization);
- heat loss with released gases  $q_2$  has got 4.84 % (6.32% – before modernization);
- boiler gross efficiency has got 94.71% (92.96 – before modernization);
- the difference in «air temperature after RAH» - «gas temperature before RAH» 25/35°C (70°C – before modernization);
- RAH resistance A/B, mm of water column, gas side 125/135, air side 135/140 (standard values are 105 and 117 respectively).

RAH operating efficiency due to the application of the CMKA® heat exchange elements produced by «Northern Interindustry Company «The Alternative» Ltd is obvious. The preliminary period of recoupment makes up 1.9 years.

The possibility of chief engineer supervision for service quality while RAH is modernized with heat exchange elements can be considered.

We express our gratitude to you and your colleagues and are looking forward to further cooperation.

Chief Engineer

I.I. Galiev