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EFFICIENCY OF THE SUB-ECONOMISER INSTALLATION IN THE CDCP BOILER HOUSE

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One of the issues that is to be solved by means of modernization of coke dry cooling facilities at coke oven and by-product plant of one of the foreign enterprises was ensuring the required temperature level of cooled coke in case coke production capacity is increased. In order to increase the efficiency of coke cooling, SE "GIPROKOKS" has analyzed different methods of temperature reduction for circulating gases at the outlet of the cooling chamber. The most optimal is the installation of a sub-economizer, which, if installed in the coke dry cooling plant (CDCP), allows increasing the energy efficiency of the CDCP units (heating the return water from 70 to 110 °C gives the possibility to have an additional amount of heat (more than 3000 Gcal/year) for the energy supply system of the enterprise, which allows to reduce the amount of steam at the enterprise respectively)) and increase their productivity in terms of cooled coke by approximately by 10 % while maintaining the required temperature and quality of the produced coke. As part of the research and development of scientific and technical documentation, an analysis was made of the validity of the sub-economizer installed in the CDCP boiler house.

It is shown that for the mentioned project, the cost of heat generation at the enterprise will be 44,4 % of the capital investment, the non-discounted pay-back period for capital investment will be 3,7 years, and the simple annual internal rate of return – 27 %. Considering the fact that the pay-back period is 16,3 years less than the period of its realization (the life cycle of CDCP is equal to the life cycle of coke ovens and according to the project makes up 20 years) and expected level for internal rate of return is 9 % higher than the normative (18 %), installation of sub-economizer in the CDCP boiler houses of coke-oven battery is not only technologically expedient, but also economically efficient for implementation.

Due to obtaining positive results from the implementation of new technical solutions of SE "GIPROKOKS" for improving the process of dry coke cooling, including improving stability and increasing efficiency, the installation of a sub-economizer in the CDCP boiler house is in increasing demand from Ukrainian and foreign coke oven and by-product plants.

Keywords: economic efficiency, payback period, simple rate of return, sub-economizer, CDCP, coke oven and by-product plant.

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