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B. Rumyantsev [(1)], associate professor, c.t.s.
N. Yakubin [(2)], chief of laboratory
K. Leventsova [(1)], student

INCREASE OF EFFICIENCY FOR NEUTRALIZATION OF COMBUSTION PRODUCTS IN TERMS PAJ «ZAPOROZHCOKE»

[(1)] Zaporozhe state engineering academy
[(2)] PAJ «Zaporozhcoke»

A method for increasing the efficiency of disinfection of aromatic hydrocarbons in the conditions of PJSC «Zaporozhcoke», which is the use of ozone for intensification and reduce energy consumption at the catalytic neutralization of toxic emissions into the atmosphere.

Keywords: production of coke, aromatic hydrocarbons, catalytic cleaning, ozone

Presently in Ukraine by one of basic sources of atmosphere pollution is metallurgical industry. Chemical recovery production serves by one of constitutive constituents of this industry. Gases which appear at the production of coke in coal-tar processing partitionable of chemical recovery plants at «breathing» of capacity equipment have multicomponent composition. Unfortunately, the existent level of technological processes does not allow fully to use these chemical compounds.

Thus, the task of increase of efficiency for gas-cleaning units is actual enough for the decline of level atmospheric air pollution by emissions of chemical recovery production.

In this work the questions of decline of energy intensity of the existent systems of the catalytic neutralization of combustion products for resin distillation section of PAJ «Zaporozhcoke» at maintenance of existent efficiency of cleaning are considered.

The catalytic method of gas cleaning allows to transform toxic emissions in relatively harmless or easily deleted from gas compounds. The feature of this method is catalytic processes flow of the small concentrations of the deleted admixtures and high efficiency of cleaning. But, unfortunately, such variant of cleaning is an expense enough and energy intensity on account of high price of catalyst and heavy costs of electric power (13.5 kW for the o'clock of work) on heating of gas in a tubular electro-heater before the layer of catalyst.

At the use in the reactor of alumo-palldium catalyst a temperature of neutralization of toxic admixtures consists is 400-450 °C, but, in connection with small like cycle and high cost this type of catalyst is an expense enough decision.

A necessary for the conduct of process temperature is arrived at by means of tubular electro-heater. It consists of three sections: power og two makes 7.0 kW each, power of the third section – 45.0 kW. For maintenance of stationary temperature in a reactor electro-heaters work, as a rule, by turns. On the average a consumption of electric power by one setting of catalytic afterburning is 320-350 kW in twenty-four hours, depending on the type of catalyst.

As a result for analysis of gas-cleaning unite work we are offer the improvement of the system of neutralization of combustion products due to the use

chemically active ozone. Ozone is more powerful oxidant as compared to oxygen that allows effectively to carry out neutralization of toxic constituents of gas emissions even at the temperature of surrounding air.

Coming from existent composition of emissions for their complete neutralization, according to the fulfilled calculation, it is necessary on the average a 896.0 g of ozone/hour, here ozone is suggested to get in ozonizers, working with the use of barrier discharge.

As marked higher, application of ozone will allow to eliminate the existing presently electro-heating of gas mixture before the layer of catalyst. Thus the economy of consumable energy will make about 5 kW for the o'clock of work of gas-cleaning unite. Thus, during a year the energy consumption of one setting will diminish on 43800.0 kW, that in a money equivalent will make ~70000 hrn./year.

Thus, modernization of the system of gas-cleaning equipment of section of distillation of resin allows to degrade prime cost cleaning at efficiency of neutralization of phenol harmless 96 %, benzol - 94 %.