
ANALYSIS OF THEORETICAL PRINCIPLES AND PRACTICAL SOLUTIONS FOR COKE OVEN GAS PURIFICATION FROM IMPURITIES UNDER PRESSURE

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The article analyses the theoretical foundations and practical solutions for the purification of coke oven gas from impurities under pressure. It is shown that increasing pressure is a rather powerful factor in intensifying the processes of hydrogen sulfide, hydrogen cyanide, naphthalene and benzene hydrocarbons recovery, improving gas purification. However, at the moment, the processes of coke gas purification from impurities under pressure have been studied insufficiently, are selective in relation to a particular pollutant component, often do not take into account the economic component in terms of comparing the economic benefits of capital and operating costs, etc. Therefore, further study of the processes of coke oven gas purification from impurities under pressure, search for optimal technological solutions, and use of appropriate advanced equipment is a necessary task for the development of coke oven gas processing technologies.

Examples of practical implementation of technical and technological solutions for coke oven gas cleaning under elevated pressure are given. The basic principles of selection of equipment for coke gas compression are indicated. It is shown that coke oven gas cleaning under pressure can help reduce operating and capital costs. In particular, the paper presents the basic flow diagrams and indicators of the technological mode of one- and two-stage purification of coke oven gas from naphthalene under pressure; the industrial process of hydrogen sulphide recovery from coke oven gas with ammonia-saturated water under pressure is considered in detail.

The results of the preliminary analysis performed by "SE GIPROKOKS" show that gas purification under elevated pressure is highly profitable at large unit capacity plants equipped with centrifugal compressors and especially when using a gas turbine drive. It is noted that "SE GIPROKOKS" has developed new technical solutions for cleaning coke oven gas from impurities under elevated pressure.

Keywords: coke production, coke oven gas, impurities, purification, naphthalene, ammonia, hydrogen sulphide, capture, efficiency, high pressure, compression, compressors.

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