
THE DEVELOPMENTS OF SE “UKHIN” ON IMPROVING THE INDUSTRIAL TECHNOLOGY OF COKING AND THE DEVELOPMENT OF CHEMICAL-TECHNOLOGICAL PROCESSES OF CARBON COAL PROCESSING

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The article analyzes the state of the development of SE “UKHIN” on improving the industrial coking technology: improving the quality of coke, improving the operating conditions of coke ovens, solving environmental problems, energy and resource conservation. The relevance of work in the field of preparation of coals for coking, in particular, the technology of ramming the coal charge, is shown. Particular attention is paid to increasing the life of coke oven batteries. It is shown that the necessary condition for this is the correspondence of the actual mechanical loads on the refractory masonry to the calculated values. During coking of coal blends, the resulting plastic mass exerts hydraulic resistance to the movement of combined-cycle products through a coked bed. Part of the pressure is transmitted to the chamber wall. This value is called burst pressure. The burst pressure indicator of coal and coal blends is stably used in the production practice of coke plants in the preparation of blends with a safe value for the laying of coke ovens (≤ 7 kPa). The device and the principle of operation of the laboratory setup for determining the burst pressure developed in the SE “UKHIN” are given.

The results of studies of the processes of wet and dry quenching of coke, including on a laboratory physical cold 3D model of a dry coke quenching plant for studying processes in a pre-chamber and a quenching chamber.

Methods of improving coke quality indicators, in particular, its reactivity (CRI) and coke strength after reaction with CO₂ (CSR) by modifying the coal charge with non-sintering volume-modifying additives, are considered. The main results of research in the field of other coal processing processes, in particular, its gasification, are presented. It has been noted the importance for Ukraine of the development of thermal processes of chemical-technological processing of coal, it allows to produce analogs of fuels based on oil and natural gas.

Keywords: coal, charge, coking, coke quality, operating mode of coke ovens, charge compaction, ecology, stepwise heat supply, burst pressure, coke quenching, dry quenching, modification, thermochemical processing, pyro carbon, gasification.

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