
ASSESSMENT OF THE COST OF COKE PRODUCTION FROM THE PROCESSING OF MIXTURES WITH VARIOUS CO-PRODUCTS OF COAL PROCESSING© Ye.I. Kotlyarov¹*Research Centre for Industrial Problems of Development of the National Academy of Sciences of Ukraine, 1a Inzheneryi lane, Kharkiv, 61166, Ukraine***O.L. Borysenko², I.V. Shulga³***STATE ENTERPRISE 'UKRAINIAN STATE RESEARCH INSTITUTE FOR CARBOCHEMISTRY (UKHIN)', 61023, Kharkiv, 7 Vesnina St., Ukraine*¹ *Kotlyarov Yevhen Ivanovych, Ph.D. in Economics, Associate Professor, Head of the Energy Security and Energy Conservation Sector, e-mail: ekotlarov@i.ua*² *Borysenko Oleksandr Lyudvikovich, Ph.D. in Technical Sciences, Senior Researcher, Acting Director, e-mail: zd@ukhin.org.ua*³ *Shulga Igor Volodymyrovych, Ph.D. in Technical Sciences, Associate Professor, Senior Researcher, Head of the Coke Department, e-mail: ko@ukhin.org.ua*

Our previous research has shown that adding a number of coal processing by-products to the coal charge has a positive effect on coke quality: coal enrichment waste, coke fines and coal tar. A technical and economic analysis has shown that adding coal processing by-products (except for coal tar) to the charge reduces the production cost of coke. At the same time, this reduction is greater than the increase in coke costs in blast furnace production. Therefore, the results obtained confirm the need for a technical and economic justification of the quantity and composition of coal processing by-products that are added to the charge and do not lead to an increase in costs in blast furnace production.

An assessment of changes in the technical and economic indicators of coke production when adding certain coal processing by-products to the charge allows us to conclude that the most economically attractive options are those in which coal enrichment waste and/or coke fines are added to the coal charge. According to this direction, further research should focus on optimising the modelling of coal charge composition for coking with the addition of coal processing by-products, which does not lead to an increase in the cost of pig iron production. In this case, the most attractive option is the combined addition of coke fines and coal enrichment waste to the charge. The presence of a certain caking ability in the latter, assessed using the Roga method, allows a synergistic effect to be achieved, thanks to which both the yield and the quality of the coke obtained are simultaneously improved to the greatest extent.

The results obtained can be used primarily in the work of metallurgical plants, which, according to clause 2.2 of PTE-2017, include coke chemical production.

Keywords: coke chemical production, by-products, coke quality, coke yield, coke consumption in blast furnace production.

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