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OPTIMISATION OF THE COAL BLEND TAMPING PROCESS AND HEATING REGIMES FOR COKING CHAMBERS AT THE COKING PLANT OF PJSC 'ARSEALORMITTAL KRYVYI RIH'

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It has been shown that the tamped-charge coking technology was developed with the aim of expanding the raw material base for coke-chemical production and improving the efficiency of coal resource utilisation. Its implementation has made it possible to utilise significant volumes of low-coking-grade and fine-grained coal in the coking process, which are unsuitable for traditional bulk charging technology in coke ovens. Thanks to the pre-compaction of the blend, a stable coal cake is formed, which facilitates a uniform coking process and the production of coke with high strength characteristics.
As a result of Russian aggression, problems have arisen with the coal supply base for coking, forcing the company to reorient its raw material sources and, instead of low-caking coal, introduce coal concentrates into the blend, normally used in conventional top- charging coke production.
Irregularities in the supply of coal concentrates and fluctuations in their grade composition compelled the plant's staff, in collaboration with the team at the the State Enterprise "Ukrainian State Research Institute for Carbochemistry (UKHIN)", to carry out regular studies of coal characteristics and to develop optimal blend compositions for producing coke using the tamping process. Thus, for the first time, significant quantities of gas coal, coking coal and fat coal – which differ considerably in terms of their tampability – began to be introduced into the tamping charge. To prevent the coal cake from collapsing, the plant's workforce, drawing on their many years of experience and professionalism, developed improved software recipes governing the tamping process in the tamping-loading-pushing machine (RLPM). These programmes make it possible to compact the charge even when its composition changes, thereby adjusting the energy consumption required for this process.
This article presents a calculation of the optimal heating regime for coking chambers, aimed at reducing coke oven gas consumption for heating and ensuring stable coking process conditions, which ultimately contributes to the production of high-quality finished coke with minimal energy consumption.

Keywords coke, coal blend, tamped-charge coking technology, coal cake, strength, density, tamping ability, heating regime, coke oven gas.

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