SEGREGATION OF COAL PARTICLES DURING CHARGING INTO COKING TOWER

Koval V.[1], Miroshnichenko D.[2], Avdeyuk I.[2], Miroshnychenko M.[2], Nedbailo S.[2], Ryschenko I.[2]
[1]State Enterprise "Ukrainian State Scientific Research Institute of Coal Chemistry (SE UKHIN)", Kharkiv
[2]National Technical University "Kharkiv Polytechnic Institute," Kharkiv

Objective:

To examine coal segregation by particle size and quality in real industrial conditions at PJSC "ACP."

Relevance:

Provides practical insights from actual plant operations, unlike previous lab-based studies.

Methods:

Standard sampling and analysis techniques (ISO, DSTU) were used for proximate, petrographic, and granulometric analysis.

Setup:

Sampling was conducted over six hours in a two-section coal tower at batteries No. 7 – 8, from rows 1, 4, and 5.

Key

Findings**:** Uneven ash content distribution across particle sizes. The 25 – 50 mm fraction shows the highest variability in ash content (6.8 – 32.1 %). Stable technological properties and granulometric composition during loading, but significant deviations observed in the coal tower's rows. Peripheral rows show greater variability in particle size, volatile matter, and ash content.

Conclusions:

Segregation affects coke quality. Measures are needed to ensure uniform coal charge distribution and improve preparation processes.

Keywords:

coal segregation, ash content, particle size, coal quality, coking plant, industrial conditions.

References:

1. Y. Zhao, X. Yang, Z. // Luo, et al, Progress in developments of dry coal beneficiation, Int. J. Coal Sci. Technol., **-** 1, **-** 2014, 103–112.

2. G. L. R. Silva, E. Destro, R. F. Bueno, J. L. de R. Oliveira, R.D. // Assis, Chemical, physical and metallurgical characterization of the granulometric fractions of the coal mixture from Gerdau Açominas, Iron Ore and Raw Materials Reduction Seminar and 10th Brazilian Iron Ore Symposium, Ouro Preto: - 2009, ISSN: 2594-357X. DOI 10.5151/2594-357X-15521, (in Portuguese).