OBTAINING METALLURGICAL COKE PETROLEUM COKE WITH IMPROVED ENVIRONMENTAL AND PERFORMANCE CHARACTERISTICS

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Abstract. The article provides information about the process of using coal, which is one of our natural resources that is a problem today. Coal is also very important in the metallurgical industry. The result of this is fully considered in the article.

Key words: Metallurgical industry, coal, production, extraction, technological process.

The modern economy currently consumes many renewable types of resources on such a scale that natural processes practically do not have time to restore them. From the very initial stage of its conscious existence, mankind has turned to wood material as a source of energy and a universal easily accessible energy carrier. With the development of a civilized way of life, craftsmanship also developed, where before our era mankind restored iron oxides with wood reducing agents, an era that lasted for a very long period, until the use of hard and brown coals, which gradually replaced charcoal used as an energy carrier, and as a metal reducing agent.

For the branches of the economy of the republic, the ecological and operational indicators of petroleum coke are not indifferent. It is known that in the deep processing of oil and its distillates, one of the main processes is the process of desulfurization. Sulfur compounds that occur in organic structures are formed during the combustion of sulfur oxides and are toxins for all elements of the environment. At the same time, due to the technological difficulty of implementing the catalytic hydrodesulfurization process, the heavy fraction of oil - tars and bottoms without prior purification from sulfur compounds are sent to operation, including the coking process as the main raw material. Consequently, bound sulfur, which occurs as part of a complex organic-hydrocarbon structure, during coking, due to thermal rearrangement, passes into a more

stable form of sulfur compounds, which is practically not removed by known methods and technologies. It is known that petroleum coke is used as a reducing agent for iron oxides to obtain chemically pure iron metal. Also known is the technological possibility of obtaining iron by reducing charcoal, which today has a production, environmental, technological, and generally strategic need. At the same time, the production of charcoal reducing agent was not carried out in any country in the world to meet the needs of metallurgy. To solve this problem, scientific and industrial organizations in these cases turn to the composite use of natural traditional and alternative raw materials, often with the involvement of secondary material and raw materials.

Development of a technology for producing composite coke with improved environmental and operational performance using heavy fractions of oil as a raw material compound together with wood materials, which ensures a decrease in the concentration of sulfur compounds in the final product that meets the requirements of current standards established by state standards for final products. As wood material, it will be possible to use the remains of annual plants, in particular, the stalks of the guza-pai cotton plant, the potential of which is renewed annually in October-November by at least 50-60 million tons.

It should be noted that during the pyrolysis of cotton stalks, by analogy with the technological process of coking oil residues up to 20% wt., pyrocondensate is formed, up to 17-19% wt. the original raw material is converted into a mixture of combustible gases and 35-37% of the mass. the initial loaded raw material remains in the reactor as pyrocarbon - wood coke. The rest consists of water, half of which refers to the physical moisture of the raw material and the second half is the product of the breakdown of hydrocarbons. Consequently, with the joint coking of the composite mixture of coking raw materials, the gross production of pyrocondensate increases, which naturally ensures the yield of coking gasoline, the most valuable energy carrier of our time, the main driving force of internal combustion engines. Among the main parameters that determine the quality of raw materials for coking, the most significant are the density and sulfur content. Sulfur is one of the most undesirable impurities in coking feedstock. Petroleum coke is obtained by coking the residues of crude oil refining. Raw coke obtained as a result of coking is a chemically stable and inert material, containing 88 - 95% carbon, 3 - 4% hydrogen, 1 - 2% nitrogen, 0.58 - 6% sulfur and 1 - 7% oxygen.

In contrast to the traditional method, a mixture of traditional and alternative raw materials in equal proportions were used as raw materials. At the same time, the composition of the product of thermal destruction of the second component contains substances that, due to their chemical interaction with residual sulfur, form volatile substances, which contributes to the desulfurization of the residual solid carbon mass. When using only residual petroleum feedstock in the composition of the final product,

the content of residual sulfur occurred with a concentration of up to 5.5 wt%, against the concentration of residual sulfur when using the feed compound, which had a numerical value in the range of up to 0.5% wt. Desulfurization of residual products occurs due to the leaving of the reaction chamber of new light sulfur compounds in the form of volatile substances, which enter the distillation column, where they are divided into three streams: fuel gas, liquid fuel and heavy oil products.

The practical value of the method is a new non-standard technology of conjugated processing in the composition of traditional and alternative raw materials for the production of metallurgical coke and a wide light fraction of hydrocarbons (LHF) with improved environmental performance, which is one of the most urgent problems of metallurgy, energy, production of light energy carriers , including chemical technology.

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