

The new Technology of Wasteless Ash Processing at Thermal Power Stations

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Abstract

The technology of wasteless ash processing at thermal power stations is a new step in helping to solve the problem of supplying some branches of the industry with specific materials using alternative sources of raw material. This technology was put to use at a power station in 1998. A treatment plant, working in conjunction with the power station, subjects ash waste (20% of carbon) to separation and other treatments. The technology provides regulation for phase and chemical compositions, form of particles, their density, dispersion, melting point, absorption and other properties.

The technology stipulates the production of 3 basic products:

- carbon concentrate with low sulfur content (0.5%) and heat of combustion is more than 5,000 kcal/kg may be used for the secondary burning in the furnaces of boilers, for the thermal insulation of the metal mirror during the process of casting, etc.;
- aluminosilicate raw material with carbon content of 2-4% to produce various building materials;
- cenospheres - it is a component for different composite materials and products. The cenospheres, extracted from ash, are characterized by the low volume mass of 350 kg/m³, high strength, spherical form, high thermal insulation, and non-combustibility.

The goal of the process is also to avoid the necessity of creating new dumps. The plant capacity is up to 500,000 t/year. Carbon concentrate is delivered to power stations, metallurgical plants and others for use in special technologies. Volume of possible supply is about 100,000 t/year. The technology avoids harmful effects on the environment.