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Brass scrap recycling: experimental research decomposition of Cu-Zn alloy

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Permanent development of technology causes creation of a significant amount of the secondary raw materials which are increasingly used as the raw material base for many metals. Due to the fact that large amounts of metal are concentrated in waste materials with their high content, a great attention is given to this subject and, numerous technologies are developed on the world stage today for recycling of this waste. Natural deposits of these metals are increasingly poorer so that the deposits of Cu-Zn alloys represent a significant potential for valuation the basic metals. This work presents the results of laboratory and pilot studies of brass decomposition in order to produce the basic metals (Cu and Zn) from brass scrap, because it is an important raw material base for production of these metals. The pilot plant consists of a rotary smelting furnace, capacity of 5 t, and special plant for gas treatment. The aim of this experiment was to remove zinc and accompanying metals by processing of these alloys and to produce copper. The produced copper has the following chemical composition: 99.03% Cu, 0.45% Zn, 0.46% Pb and 0.04% Sn. The amount of removed slag is 2-2.5% of the amount of charged material, and slag has the following chemical composition: 27.5% Cu, 38.92% Zn, 2.93% Fe, 6.03% SiO₂ and 4.35% Cu (oxide).

Biography

Milorad Cirkovic was a Chief Engineer for two decades in the primary production of copper in RTB Bor. In the Mining and Metallurgy Institute, he works on the projects for development of technologies for recycling of the polymetallic scrap, electronic waste and environment protection. He is the author of more than 100 scientific papers and 3 patents.

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