



Deep melt treatment with plasma gas reagent media

Process is used for the refining, modification and alloying of molten metal in ladles, mixers or melting units. The developed technology makes it possible to: make the most use of the heat supplied to the deep layers of the melt with plasma; reduce metal overheat in melting units; decrease the content of gases, nonmetallic inclusions and harmful impurities in the metal; average the temperature and chemical composition of the melt by stirring the latter by a heated gas in the process of treatment; increase the degree of assimilation of refining and modifying reagents and reduce their consumption by introducing additives in a high-reactional state into the melt.



Melt treatment is effected by means of inert and active gases or their mixtures. Powder materials are fed into a deeply introduced high-temperature steam by hard particles feeders, lump materials, with the aid of special dosing reagents. In this case the gas flow rate is 0.3 to 0.6 m³, electric power consumption being 10 to 15 kW/h per one ton of treated metal.

The developed technology ensures the effective refining of aluminium and copper alloys from hydrogen and nonmetallic inclusions, as a result, the quality of cast products is improved: the alloy structure becomes finer, the mechanical properties and plastic characteristics of metal are at the level of vacuum-treated one.

Content of gases, non-metallic inclusions and dimensions of blocks of coherent dispersion atoms in atoms in melt that is treated by different streams

№	Method of treatment	Mass part, %		Average value of blocks
		H ₂ · 10 ⁻⁵	Al ₂ O ₃	L, мм
1	Without treatment	60	0,046	27,3
2	By cold stream	32	0,037	19,6
3	By plasma stream	14	0,026	17,2

Please forward your proposals and suggestions to:

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