

GUNCRETING PARTS OF BLAST FURNACE LININGS

N. D. Sergienko

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At the Magnitogorsk Metallurgical Combine the guncreting of blast furnace linings during repairs was first tried for the restoration of the lining of the cupola of the furnace. The following body composition was proposed: 65% asbestite, 25% aluminous cement, and 10% chamotte powder.

The blast furnace had operated for more than three years, and the guncrete layer form the outside appeared to be "not bad," although it contained a large quantity of cracks. In three places at the cupola the guncrete layer had laminated into sections about 0.2 m².

After careful examination of the cupola it was decided to apply repeat guncreting, that is, to eliminate the existing cracks and flaking, and to increase the layer of guncrete body to 20-25 mm thick. During the first guncreting of the cupola with a guncrete body (75% chamotte powder, 25% aluminous cement) stakes had been driven in three places at the perimeter of the shaft near the sixth row of cantilever coolers. As a result of this the lining of the shaft in the furnace above the sixth row of cooler and the protective segments had lasted for another campaign (3-3.5 years). From an examination of the places where the stakes had been driven into the guncrete body, it was not possible to observe any deepening in the brick lining.

It was decided that it would be necessary to guncrete the shaft of the blast furnace regardless of whether the old lining with the pretreatment of the surface was to be restored, or a new layer of lining applied using guncreting with preliminary welding to the housing of the shaft of armatures made from wire of diameter 6-8 mm.

During many years' repair work on the linings of the flue channels and the pipes of metallurgical furnaces the following procedure has been adapted. If the pigs (horizontal flues) and the nozzles of the flue pipes are made from refractory concrete or reinforced concrete, then the surface during repairs was treated with pneumatic hammers, after which the surface was slightly scratched; if the damage was greater than permitted, then the surface was concreted. The lining of the flue pipes was restored with firebrick since the temperature of the flue gases in the chimney reaches 400°C.

In 1970 the engineering workers at the Magnitogorsk Building Commission of the Uraldonaremont Trust proposed a body of the following composition: 75% asbestite and 25% aluminous cement for guncreting the lining of the flue pipe, and the composition: 60% chamotte powder and 40% aluminous cement for guncreting the walls of the flue pig and the nozzle of the flue pipe. These bodies were used for the first time for guncreting the pigs and nozzles of the flue pipes during the repair of blast furnaces at the Magnitogorsk Metallurgical Combine in April and June, 1970.

Recently, workers at the Magnitogorsk Building Commission have selected and tested guncrete bodies for guncreting the walls of soaking pits and heat-treatment furnaces, and also the ascending and descending gas ducts of blast furnaces.

During guncreting of the cupola, the shaft, the pigs and flue pipes of blast furnaces it is recommended that machines be used for shutterless guncreting designate SB-67 and BM-60.

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