



Influence of the Reclaim from the Cordis Technology on the Core Sand Strength

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Abstract

The investigation results of the mechanical reclamation of spent moulding sands from the Cordis technology are presented in the paper. The quality assessment of the obtained reclaim and the influence of the reclaim fraction in a matrix on the core sand strength is given. The reclaim quality assessment was performed on the basis of the determination of losses on ignition, Na_2O content on reclaim grains and pH values. The reclaim constituted 100%, 75% and 50% of the core sand matrix, for which the bending strength was determined. The matrix reclamation treatment was performed in the experimental rotor reclaiming RD-6. Spent sands were applied in as-delivered condition and after the heating to a temperature of 140 °C. Shaped samples for strength tests were made by shooting and hardening of sands in the warm-box technology.

Keywords: Core sand, Matrix recycling

1. Introduction

Higher and higher ecological requirements concerning moulding materials cause the necessity of introducing into the foundry market new technologies, allowing to obtain more environmentally friendly materials. From the point of view of the rationalisation of the moulding materials circulation, moulds preparation and liquid metal pouring as well as castings knocking-out, one of the most important features is the reclaiming ability, which decides on the binder and moulding sand modernity. The possibility of management of spent moulding and core sands by recycling of used in them matrices is especially important from the point of view of the technology, ecology, environment protection and economy, being of great importance in the properly functioning foundry plant. The Cordis technology belongs to the group of modern and ecological technologies of inorganic binders, in which a core (moulding) sand is shot into the core box heated to a temperature: 120 – 160 °C and is there thermally

hardened. The hardening process can be significantly accelerated by an additional blowing hot air through the thickening core. This technology is currently being introduced, mainly in automotive foundry shops, where its technological properties and the environment influence are investigated, while the detailed tests in an aspect of the matrix recycling are not performed.

The aim of the hereby paper is the presentation of the results of the performed investigations of the mechanical reclamation of spent moulding sands from the Cordis technology, ways of quality assessments of the obtained reclaim and analyses of the reclaim fraction in the matrix on the prepared core sand strength.

2. Investigations proceedings

Spent sands from the Cordis technology, supplied by the foundry plant were crushed, deprived of metallic contaminations and preliminarily dedusted. The appropriate reclamation treatment