

INFLUENCE OF THE CARBIDE TYPE ON TRIBOLOGICAL PROPERTIES OF THE HARD FACED LAYERS

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Abstract

This paper gives a theoretical review of carbide-forming – alloying elements and states the conditions which elements should fulfill in order to be considered carbide-forming. It primarily involves alloying elements which in the iron-carbon system can form simple, complex or special carbides, i.e. phases of interstitial and substitutional type. It also gives a review of carbide types formed during hard facing of steel parts with different types of filler materials. The paper points out tribological properties of certain types of carbides and the effect of metal matrix in which carbides are embedded. Investigations on models suggest that, besides the applied technology, the type of filler material is of decisive importance for output properties of the hard-faced layer. The most suitable filler material, i.e. hard facing technology, has been chosen, depending on the working conditions and the type of electrodes. The results of this paper point out the importance of the right choice of filler material and welding technology which mostly affect the type of microstructure and the type of carbides.

Key words: carbides, welding, abrasive wear, hardness, microstructure, filler material

Introduction

This paper gives a brief account of carbide forming elements. A special attention is paid to carbides that are formed during hard facing of steel parts with different types of filler material. It gives tribological characteristics of certain types of carbides, as well as the effect of metal matrix in which carbides are embedded. Contradictory opinions on the most suitable matrix in relation to tribological aspects can be found in the literature. Therefore, numerous experimental hard facing procedures with different filler materials

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