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ECOLOGICAL ASPECTS OF HIGH STRENGTH LOW ALLOYED STEELS AT MECHANICAL CONSTRUCTIONS

Abstract: *Mechanical properties, resistance to atmospheric corrosion, the availability of joining methods, beneficial economic and ecologic effects conditioned that this steel grade become very important from the aspect of application at mechanical constructions. But, ecologic effects of application are not simple and have complex interactions. The most important aspects are considered in order to identify possibilities for minimizing total ecological impacts of mechanical constructions to environment.*

Keywords: *high strength low alloyed steels, ecology, mechanical construction*

1. INTRODUCTION

Present mechanical constructions can analyzed from very different aspects such as properties of used material, production engineering aspects, forming and joining, fatigue, wear, surface treatments, energy efficiency, environmental effects and so on. Those constructions have many diverse functions with simultaneous increase of demands and limitations. Used materials are selected and used on the basis of large number of very diverse factors (Figure 1).

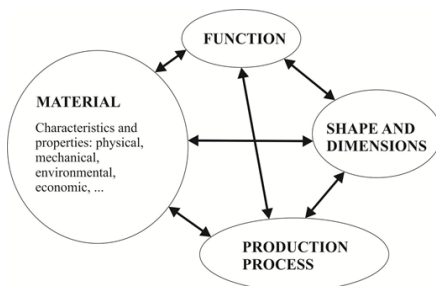


Figure 1. Selection of material at design of mechanical constructions

The used material is medium within all aspects of design, production and exploitation, so as load and environmental conditions simultaneous act. Present mechanical constructions are heterogeneous systems from the aspect of used materials. The specific needs for materials are heterogeneous, materials have be hard or soft, tough or brittle, thick or thin, or strong, easy to deform or with significant resistance to wear or fatigue, and also to have a combinations of the characteristics [1-3].

Every material has own specific environmental impacts. Those environmental impacts in relation to environmental impact of high strength low alloyed steel are in the focus of this paper. Also, those environmental impacts are put in correlations to advantages of specific material applications. The basic consideration in this paper is focused to characteristics and properties of high strength steel grades. Those characteristics and properties are analyzed from environmental aspects.

