

Cavitation behaviour of 21TiMnCr12 steel **Comportarea la cavitație a oțelului 21TiMnCr12**

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Abstract

Nowadays technologies to improve the structure and to increase the hardness of materials are often used, which leads to the frequently use of alloy steels for manufacturing components subjected to abrasion wear and cavitation, such as drawers of hydraulic equipments and dampers valves located on penstocks circuits of hydropower systems.

The paper presents the cavitation behaviour of 21TiMnCr12 steel, determined with a standard laboratory vibrating machine from the endowment of Politehnica University Timisoara. The research was focused on determining the steel resistance to the destructive impact of microjets and shock waves generated by the bubbles implosion induced by cavitation. The tests were performed both on annealed and gas carburized samples. The evaluation of the cavitation resistance was realized based on characteristic erosion curves, mass loss, $M_{(t)}$ and mass loss speed $v_{(t)}$, by comparison with the cavitation resistance of 16MnCr5 alloy steel, known for high cavitation resistance. The results obtained recommend this steel for manufacturing of components subjected to cavitation. It was observed also a high increase to cavitation of the carburized samples.

Keywords

Cavitation, carburizing, 21TiMnCr12 steel, surface treatments