NDT IN FUNCTION PREVENTION OF LOSS INTEGRITY OF STRUCTURES LARGE DIMENSIONS

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ABSTRACT

The paper presents examples of the loss of structural integrity due to large induced defects in welded joints occurred during the time of preparation of construction or during operation, which are not detected in time or not at the time repaired, and can be attributed to inadequate prevention in system maintenance.

Daily visual inspection should be provided in order to monitor the behavior of structures in exploitation, and if necessary, NTD method of testing the most loaded parts of the structure should be applied. This approach may be applied to other types of similar construction, and its application in preventive maintenance would help extend the life of structures of large dimensions.

Keywords

NTD, Prevention, Integrity Loss, Large-Scale Structures

1. INTRODUCTION

Large-scale structures, such as various types of excavators and reloading bridges, which are used in the production processes of abstraction, transport and disposal of coal, ash and slag or open cast mines and power plants require specially organized monitoring of behavior of structure during operation and maintenance. Continuous mining in very harsh environmental conditions can lead to relatively frequent failures of these structures. During the exploitation of large-scale structures under the effect of variable amplitude loading leads to unexpected failures. These failures other than direct material damage, could jeopardize the safety of personnel. In addition, unanticipated delays in exploitation cause the damage, which is often much higher than the direct damage. High place among the causes of these failure takes inadequate exploitation and maintenance.

2. EXAMPLES OF INTEGRITY LOSS

Dragline excavators that are used in our open cast mines are mainly produced in Russia and work on loading the slag in bunker. Dragline excavators are working on our open pit mines are mostly made in Russia and working on loading overburden into the bunker ECS (Excavator-Conveyor-Stacker) system. The whole construction is exposed to low cycle dynamic loading. This load caused fatigue failure on observed excavator. The fatigue failure was spotted on one of the welded joints and emergence of a large number of initial cracks on the other welded joints of pipe and excavator, fig.1.

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