

Application of Subversion Analysis in the Search for the Causes of Cracking in a Marine Engine Injector Nozzle

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Abstract : Subversion analysis is a tool used in the TRIZ (Theory of Inventive Problem Solving) methodology. This article introduces the history and describes the process of subversion analysis, as well as function analysis and analysis of the resources, used at the design stage when generating possible undesirable situations. The article charts the course of subversion analysis when applied to a fuel injection nozzle of a marine engine. The work describes the fuel injector nozzle as a technological system and presents principles of analysis for the causes of a cracked tip of the nozzle body. The system is modelled with functional analysis. A search for potential causes of the damage is undertaken and a cause-and-effect analysis for various hypotheses concerning the damage is drawn up. The importance of particular hypotheses is evaluated and the most likely causes of damage identified.

Keywords : complex technical system, fuel injector, function analysis, importance analysis, resource analysis, sabotage analysis, subversion analysis, TRIZ (Theory of Inventive Problem Solving)

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