



TESTING OF METALS IN THE FUNCTION OF DETERMINING THE FAILURE OF TURBINE SHAFT – METHODOLOGICAL APPROACH

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Summary: This paper presents a methodological approach of testing of metals in the function of determining the cause of failure and failure analysis of turbine shaft. The analysis was conducted on the example of damage of the turbine shaft in hydropower plants. This approach may be applied to similar types of turbine shaft, and its application in preventive maintenance would help extend the life of turbine shaft.

Keywords: turbine shaft, testing, crack, analysis

1. INTRODUCTION

A new industrial revolution, that occurred due to the discovery of the transmission and the practical application of electricity, has led to capital investment in the construction of large dams, and thus the idea of the different turbines, Fig. 1, that will best exploit the energy in given circumstances.

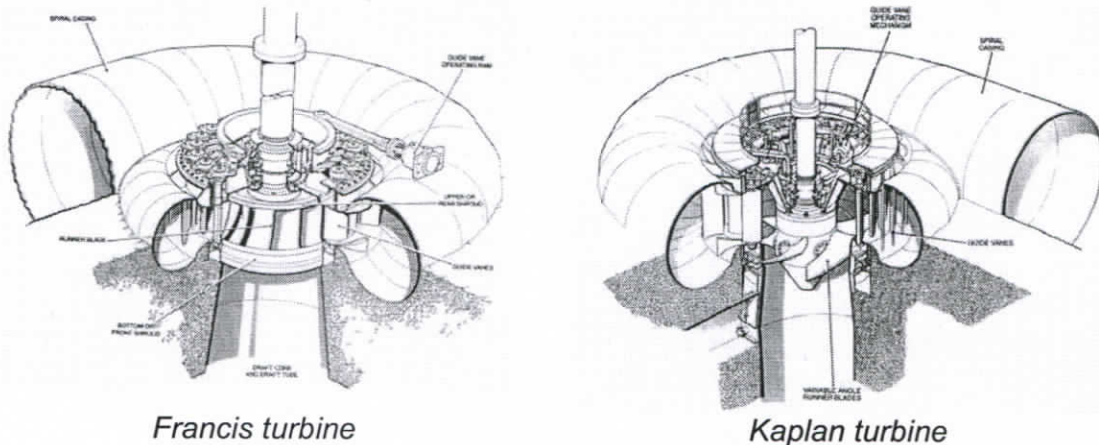


Fig. 1 Different concepts of hydro turbine with vertical shaft [1]

The hollow shaft units of power plants [2], are vital parts that connect the turbine and generator providing hydropower conversion into electricity. Fig. 2 shows

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The continuous exploitation in the very difficult working conditions can lead to failure of turbine shaft. High place among the causes of these failures take errors made by the designers – errors in the stress analysis, modeling, and inadequate operation and maintenance.

The methodological approach to testing the turbine shaft in the function of determining the causes of failure and undergoing rehabilitation shaft [5] in this case proved to be entirely correct, both technical and qualitative, but also from an economic point of view.

Acknowledgement

The paper was done within the project TR 35011, "The integrity of the pressure equipment with the simultaneous action of fatigue load and temperature," founded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

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