

ABSTRACT

The purpose of this study was to determine the effect of misalignment distance of Cooling Tower drive shaft on normal stress and shear stress. Tensions that occur on the shaft continuously for a long time cause the shaft to experience fatigue. The greater misalignment distance will not only damage the shaft but can damage other components. For this reason, the misalignment of the cooling tower shaft is very important to study. This study uses a simulation method by first making a design drawing of the cooling tower drive shaft. Determine the material of the shaft and coupling, then perform simulations and analyze the results. The results of the Von Misses test at the highest and lowest voltages did not show a significant difference this was caused by the voltage difference that was not too far away. The shaft bears varying loads, causing stress along the shaft which results in rapid fatigue. These characteristics are associated with increased load and all indicate that misalignment reduces the life and reliability of the motor and its components. Based on the results of the Von Misses test and the lowest risk displacement that occurs to the effect of this misalignment is the misalignment distance ($md = 1 \text{ mm}$), the higher the md value, the greater the risk that occurs to the cooling tower drive shaft.

Keywords: *Misalignment, Cooling Tower, Normal Stress, Shear Stress.*