Axial Flow Pump Characteristics and Reliability Analyses at Different Frequency Rotation

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This paper focused on axial flow pump high operation, reliability, and long service life at different frequency of rotation (DFR). The efficiency of an axial pump varies considerably depending upon the conditions under which it must operate. This article concentrates methods related to the reliability analysis of pumping system operation by a frequency converter. Initially, it is focused to analyze the behavior of individual characteristic curves of the axial pump to find how can be applied for the determination of the most efficient frequency of rotation. Axial flow pumps are often controlled by adjusting their rotational speed, which affects the resulting flow rate and output pressure of the pumped fluid. In addition, the head and flow of fluid transported at different frequencies of rotation, to produce a map of reliability characteristic curves to verify the similarity rules for pumps recommendable operating region are discussed. The results showed that the recommendable operating region for a different revolution per minute of axial pump can be determined with efficiency. If the axial flow pump is driven outside its operating region, the efficiency decreases, and the reliability and long service life may be affected.

Keywords: axial pump, reliability, characteristics, DFR

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