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Basic Concept of Pump Selection: Bridging the Gap Between Theory and Practical

Muhammad Nihal Naseer*, Ibrar Ullah

Department of Mechanical Engineering, National University of Sciences and Technology, Islamabad, Pakistan

Abstract:

In this modern era of industrialization, installation of turbomachines in industries has got excessive attention due to increasing engineering demands. A sustainable and reliable operation of pumping system along with optimum efficiency and longevity demands suitable pump selection method. Selection of appropriate pump, that meet the intended characteristics, is an integral part of an industrial growth. This scientific report represents and clarifies step by step method of pump selection to meet optimal desired requirements of a pumping system. The report is categorized into topics including classification of pumps on different basis, decision making for pump selection and integration of pump in the system. To make pump selection an unhectic process, a detailed description of material selection for piping system, as per international standards of WHO, is also included. Mathematical investigation of head losses, frictional losses, minor losses is elaborated in detail accompanying calculation for appropriate pump performance and pipe size. Finally, a glimpse into the manufacturer's provided performance curve of pump, efficiency of pump and NPSH is outlined to find best efficiency point and performance point. The critical analysis of pump selection process results in a cavitation free and hydraulic shocks free pumping system of 61% efficiency.

Key Words: Centrifugal Pumps, Concept of Pump operation, Pump Selection, Pump Sizing, Water supply line.