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Wear analysis of swash plate/slipper pair of axis piston hydraulic pump**Jiming Ma¹, Juan Chen¹, Jia Li², Qilin Li³, Chunyu Ren³****1. Department of Mechanical Engineering and Automation, Beihang University, Beijing****100191, China****2. Xi'an Flight Automatic Control Research Institute, Xi'an 710065, China****3. Jincheng Nanjing Electrical and Hydraulic Engineering Research Center, Nanjing****211140, China****Abstract**

The paper presents a method on the basis of Elasto Hydrodynamic Lubrication (EHL) model to analyze the wear behavior of swash plate/slipper pair. Based on the analysis of film thickness, the associated internal factors affecting the wear behavior are identified by considering comprehensively parameters of structure, working conditions and material properties. The comparison of the wear masses of theoretical analysis and wear tests verifies the proposed method. The relationships between wear rate of the friction pair and associated parameters are analyzed. Research results can be utilized to compile the accelerated test load spectrum and contribute to optimizing the pump design.

Keywords: Piston hydraulic pump; slipper friction pair; wear behavior; Elasto Hydrodynamic Lubrication model

1. Introduction

Wear is one of the main failure mechanisms for piston hydraulic pump, which may cause pump efficiency declining, increasing leakage and shorten its service life. Due to unavailable

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