



## 论文摘要

中南大学学报(自然科学版)

ZHONGNAN DAXUE XUEBAO(ZIRAN KEXUE BAN)

Vol.41 No.4 Aug.2010

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文章编号: 1672-7207(2010)04-1348-06

### 单相交流液压系统设计及特性分析

丁问司<sup>1</sup>, 巫辉燕<sup>1</sup>, 陈丽娜<sup>1</sup>, 熊勇刚<sup>2</sup>

- (1. 华南理工大学 机械与汽车工程学院, 广东 广州, 510641;
2. 湖南工业大学 机械系, 湖南 株洲, 412008)

**摘要:** 对管道中液体脉动特性进行研究, 获得管路谐振频率、管路传递矩阵、负载特性、系统传动效率等主要参数的计算表达式。据此对新设计的交流液压实验台各参数进行计算。研究表明: 这些参数的计算值与实测值相近, 且变化趋势相同; 管道特性和负载特性决定着单相交流液压系统的振动特性及传动效率; 优化系统负载特性是交流液压系统设计的关键。该研究结果可为同类型单相交流液压机械的设计提供理论依据。

**关键字:** 交流液压; 振动特性; 效率

### Design and characteristic analysis of single-phase pulsating flow hydraulic system

DING Wen-si<sup>1</sup>, WU Hui-yan<sup>1</sup>, CHEN Li-na<sup>1</sup>, XIONG Yong-gang<sup>2</sup>

- (1. College of Mechanical and Automotive Engineering, South China University of Technology, Guangzhou 510641, China;
2. Department of Mechanical Engineering, Hunan University of Technology, Zhuzhou 412008, China)

**Abstract:** The computational expressions of major parameter such as resonance frequency of pipeline, transfer matrix of pipe, load characteristic and transmission efficiency of the system were obtained by studying the characteristics of fluid pulsation in pipeline. According to new designed pulsating flow hydraulic experiment table, a series of parameters were calculated. The results show that the simulation results of these parameters and computed results are respectively approximate and they have the same varying trend. The vibration characteristic and transmission efficiency of single-phase pulsating flow hydraulic system are decided by the characteristic of pipe and load. Optimum load characteristic is the key to design a pulsating flow hydraulic system. The research results can provide theoretical basis for the design of the similar single-phase pulsating flow hydraulic machinery.

**Key words:** pulsating flow hydraulic; vibration characteristic; efficiency

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地 址：湖南省长沙市中南大学 邮编： 410083

电 话： 0731-88879765 传真： 0731-88877727

电子邮箱： zngdx@mail.csu.edu.cn 湘ICP备09001153号