传感技术学报
中国微米纳米技术学会
全国高校传感技术研究会 主办



# 电容式电磁流量计信号处理新方法研究*

作　者：卢国峰，王保良*，杨丽明，罗元国，黄志尧，李海青

单　位：工业控制技术国家重点实验室　浙江大学控制科学与工程学系

基金项目：

摘　要：

电容式电磁流量计采用电容耦合的方式检测流量信号，其信号微弱、易受干扰、信噪比低，使得流量信号检出难度较大。对此，本文在信号处理中引入了互相关检测技术，设计了一种适合矩形波励磁下的电磁流量计信号特点的旋转电容滤波方式，采用的滤波器具有很高的信噪比，并且实现简单。在此基础上研制了一套原理样机，实验结果表明，该方法是有效的。

关键词：电磁流量计；　互相关检测；　旋转电容滤波；　电容

# Research on Signal Processing in Capacitively-Coupled Electromagnetic Flowmeter

**Author's Name:** Lu Guofeng, Wang Baoliang, Yang Liming, Luo Yuanguo, Huang Zhiyao, Li Haiqing

**Institution:** State key Lab. of Industrial Control Technology, Department of Control Science and Engineering, Zhejiang University

**Abstract:**

Capacitively-coulped electromagnetic flowmeter detects the flowrate signal with the capacity coupled mode. It’s difficult to detect the weak signal which is under strong noise background. In this work, the cross-correlation detection technology is introduced to the signal processing unit of the flowmeter, and a rotary capacitor filter which has high signal-to-noise ratio is adopted, whose filtering mode is adjusted to the signal characteristics of the electromagnetic flowmeter with rectangular wave excitation. The experimental results of the prototype flowmeter indicate that this method is effective.

**Keywords:** electromagnetic flowmeter; cross-correlation detection; rotary capacitor filter; capacitance

投稿时间：**2010-04-27**

查看pdf文件