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

基于电感传感器的玻璃浮子流量计测量模型研究

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基金项目：国家自然基金

摘　要：
为实现玻璃浮子流量计的信号远传，本文采用玻璃锥管内嵌铁芯，锥管外缠绕漆包线的方法设计一电感线圈，利用电感传感器原理来检测浮子位移的变化。然后在钟罩式气体流量标准装置上对自制电感传感器进行了实验研究,通过对实验数据拟合分别得到浮子刻度与线圈电感的近似线性关系和线圈电感与气体流量的函数关系即流量测量模型，并对此模型进行了验证，其精度优于2.5级。

关键词：玻璃浮子流量计；电感传感器；温压补偿；数据拟合；测量模型

Study on Measuring Model of Glass Tube Variable Area Rotameter Based on Inductance Sensor

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Abstract:
To achieve the signal distant transfer of glass tube variable area rotameter , inductance coil was designed by iron core embedded in the Cone tube and enameled wire winded exine of that. The sensor detected the displacements of floater by the variation of inductance value. Then experimental studies on self designed inductance sensor was made by bell gas flow standard installation. The approximate linear relation between calibration of floater and inductance value was obtained and the functional relation between inductance value and gas flow rate was presented. Finally, the model of measuring gas flow rate based on inductance sensor was verified, the results showed that the measuring accuracy was superior to 2.5%.

Keywords: glass tube variable area rotameter; inductive sensor; temperature & pressure compensation; data fitting; measuring model

投稿时间：**2011-11-16**

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