应用电导探针技术识别气液两相流流型方法及电导波动信号噪声的辨识

作　者：周云龙1 张学清2 孙斌1

单　位：(1 东北电力大学能源与机械工程学院 吉林 吉林132012， 2 东北电力大学自动化工程学院 吉林 吉林132012)

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摘　要：

针对垂直上升管的气液两相流流型的识别，提出了一种多电导探针测量系统，该测量系统由3个电导探头组成电导传感器，在此基础上利用INV306型数据采集卡实现了电导波动信号的数据采集。由于各种生产过程的参数进行测量时不可避免地信号中存在噪声信息，通过对信号的小波分解和自相关函数的分析发现电导波动信号为低频信号，且其频率一般不会超过128Hz。又通过对信号进行了小波去噪和傅立叶变换去噪之后发现利用小波分析进行信号的消噪可以很好的保存原信号中的有用部分，其有着傅立叶分析不可比拟的优点。

关键词：气液两相流；噪声辨识；电导探针； 自相关函数；

A Method for Identifying Gas/liquid Two-phase Flow Patterns Using Conductance Probes Technique and Noise Recognition of Conductance Fluctuating Signals

Author's Name: ZHOU Yun-long1, ZHANG Xue-qing2, SUN Bin1

Institution: (1 School of Energy and Mechanical Engineering, Northeast Dianli University, Jilin Jilin 132012;2 School of Automation Engineering, Northeast Dianli University, Jilin Jilin 132012)

Abstract:

For the identification of gas/liquid two-phase flow in vertical upward pipe ,a kind of measuring system with multiple conductance probes was presented ,of which conductance sensors was composed by three conductance probes. Owing to measuring the parameters of different kinds of production ,signals inevitably presented noise information ,conductance fluctuation signals was supposed to low frequency signals ,of which the frequency was not over 128Hz , by means of wavelet decomposition and the analysis of auto-correlation function .After eliminating noise with wavelet analysis and Fourier transform ,we found the useful signals were well preserved by wavelet analysis ,which had more merit than Fourier transform.

Keywords: gas/liquid two phase flow; noise recognition; conductance probes; auto-correlation function;

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