

## 新興科技於虛擬儀表量測技術之探討與分析

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### 摘要

本研究主要針對虛擬儀表量測技術進行探討及分析，主要研究目的包含：(1)探討虛擬儀表量測技術之基本原理；(2)探討虛擬儀表量測技術之應用實例；(3)探討虛擬儀表量測技術之未來發展趨勢。為達成上述研究目的，本研究除採用文獻探討法做為理論之依據外，且在文獻探討中明確指出虛擬儀表量測技術之原理、應用實例以及其未來發展趨勢，以求參考文獻之正確性。在資料分析方面，本研究針對各種虛擬儀表開發軟體、資料擷取系統進行縝密地分析與探討。本研究經由文獻探討與資料分析後可獲得結論如下：(1)建置成本低廉，使用者可以較低成本設計所需之虛擬量測儀表；(2)完善的擴充性，只需更新電腦或測量硬體即可改進整個系統；(3)強大的整合性，虛擬儀表幫助使用者輕鬆地將多個測量設備整合為單一系統。本研究分析目前虛擬儀表量測技術之問題，給予建議如下：(1)虛擬儀表量測技術可配合教育政策發展適性教材；(2)虛擬儀表量測技術可配合產業發展需求；(3)虛擬儀表量測技術之發展仍需加強。

關鍵字: 虛擬儀表; 量測技術; 發展趨勢

### Abstract

The purpose of this study is to analyze and probe into virtual instruments measurement technology. The main objective include: (1) To investigate the fundamental theories of VIs. (2) To investigate the application examples of VIs. (3) To investigate the further development of VIs. This study not only adopts literature review, but also indicates the fundamental theories, application examples and further development of VIs. This study also investigates the development software of Vis and data acquisition system carefully. After the literature review and data analysis, obtain the conclusions as follows: (1) Cheap construction cost, users can design necessary virtual measurement instrument with lower cost. (2) Complete expansion, only need to upgrade the computer or measurement the hardware for improving the whole system. (3) Strong integration, the virtual instruments helps users to combine many measurement equipments into the single system easily. This study analyzes the problem of the virtual instruments measurement technology presently, give some suggestions as follows: (1) Virtual instruments measurement technology can develop teaching materials with educational policies. (2) Virtual instruments measurement technology can cooperate with the demand for industry's development. (3) The development of virtual instruments measurement technology still need to strengthen.

Key words: Virtual instrument; Measurement technology;  
Development trend; LabVIEW