

## Concrete Pavement Monitoring

Dept.: International Sales

A monitoring system of concrete pavement's response to aircraft at CKS international airport in Taipei was one of the most challenging applications made with imc equipment. The imc partner in Taiwan, System Access, and the Civil Engineering Department at National Taiwan University installed an imc CAN-bus measurement system.

The purpose of this monitoring system is to study the long-term physical behavior of the concrete pavement. This instrumentation system is being utilized to measure the response of concrete pavement structures to aircraft traffic and to measure changes in environmental conditions. The acquisition of response data is performed in real-time. Data collection will be continued for a further three years to study the field performance of concrete airport pavements.



*The sensors signals are transmitted via CAN-bus*

Due to the distribution of sensors all over the runway's landing point, a decentralized measurement system was required. The data transfer between the individual measurement boxes (CANSAS) and the data receiver (busDAQ) uses the reliable CAN-bus technology.



*More than 70 sensors are placed inside the runway*

In order to understand the stress-strain behavior of the concrete pavement, 79 sensors of different types involving temperature sensors, moisture sensors and strain transducers are embedded in the concrete plate before grouting.

The acquisition system itself includes 25 sets of CANSAS Bridge-2 modules, 4 sets of CANSAS G12 and a busDAQ with TCP/IP Ethernet protocol. The whole system is placed at the field side while an ADSL modem can be used to transfer real time measurement data and online calculated statistics to the remote PC at NTU.



*Several groups of CANSAS measurement systems are near the runway*

Finally, inside the CAN-bus receiver busDAQ, a special online application is set up with the help of the Personal Analyzer. Online functions not only help to reduce the tremendous amount of data, but also in evaluating the required statistics and other online results.

