

# Leica Technology Helps Implementing Digital City Concept in Kunming, China

Kunming Surveying and Mapping Institute (China) has successfully established the first Leica Geosystems GPS reference station network in Kunming for pushing forward the digital city project in Kunming. This project started in March 2004 by constructing totally six GPS reference stations, a data centre operating with network RTK software and a tailor-made data communication network. The whole system was completed in May 2005. This GPS reference station network is now able to serve various applications and needs including city planning, surveying and mapping, land management, construction, structural & disaster monitoring, navigation and fleet management.

The Kunming GPS network is operated by Leica Geosystems GPS reference station technology and GPS SpiderNET solution covering approximately 6,000km<sup>2</sup> area. The average real-time dynamic positioning accuracy is 2.1cm in horizontal and 4.6cm in vertical and the effective GPS RTK baseline is at least 53km. Users can access the real-time network RTK correction data via GSM connection anytime anywhere. The system can also provide multiple accuracy level positioning services for different application needs.

It is the first GPS network project in China using the latest Leica Geosystems network RTK technology – Master-Auxiliary concept (MAX) in Leica GPS SpiderNET software and deliver network RTK messages to GPS rovers via an official international standardized RTCM V3.0 data format. Besides, the system can compute and deliver individualised network RTK (I-MAX) messages for all GPS rovers which only support RTCM V2.x at the moment. The system evaluation committee commented that the Master-Auxiliary concept is an innovative and effective approach in computing and delivering network RTK messages. The data volume is small and enables fast data communication of multiple reference stations' correction messages. It also has high compatibility in working with other GPS rover equipment.

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