

Leica Geosystems Solution

Digital City Concept Kunming: GPS Reference Station Technology implemented



■ *Horsrace branch station of Kunming GPS Reference station Network*

With the latest technology from Leica Geosystems AG, Kunming is implementing the digital city concept by establishing a spatial positioning infrastructure - Continuously Operating GPS Reference Station Network for serving multiple applications and social needs of the whole city region by providing highly accurate and reliable spatial information to general public continuously.

Kunming Surveying and Mapping Institute 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 center operating with network RTK software and a tailor-made data communication network. The whole system was completed in May 2005.

- when it has to be **right**

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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.

Most outstanding project in China

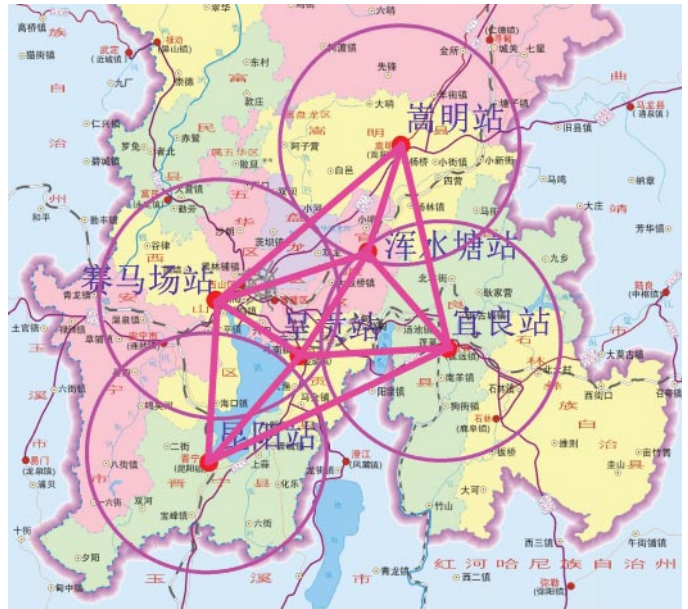
The City Planning Bureau of Yunnan Province organized a system evaluation and acceptance test of this network by a professional system evaluation committee grouping by 11 GPS experts and professors in China on 9th July 2005. The committee commented that the Leica Geosystems GPS reference station network system fully satisfied with the defined goals and some of the performance indicators even exceed the designed requirements. The system operation is very stable and continuously delivering high and consistent positioning accuracy. The VPN data communication strategy being used in this project is innovative. Thus, the committee concluded that this is one of the most outstanding GPS reference station network projects in China.

GPS data anytime anywhere

The Kunming GPS network is operated by Leica Geosystems GPS reference station technology and GPS SpiderNET solution covering approximately 6000km² 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.



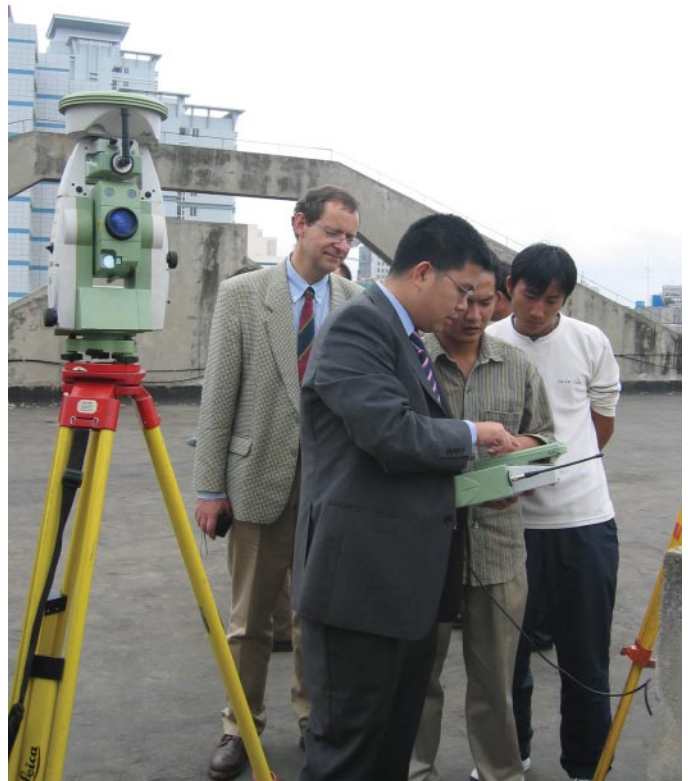
■ *KMKC station of Kunming GPS Reference Station Network*



■ *Kunming GPS Reference Station Network*

Innovative approach for fast data communication

It is the first GPS network project in China using the latest Leica network RTK technology - Master-Auxiliary concept (MAX) in Leica GPS SpiderNET software and deliver net-



■ *Leica Geosystems' GPS reference station experts were demonstrating SmartStation to customers.*

work RTK messages to GPS rovers via an official international standardized RTCM V3.0 data format. Besides, the system can compute and deliver individualized 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.

Completed service package for reliable GPS network systems

Leica Geosystems' GPS reference station team is fully committed for the development of the GPS network and structural monitoring market in China, we can provide the whole completed service package including system design and proposal, station construction, system installation, commissioning, data communication, technical support and training. Leica Geosystems also offers strong technical guarantee and the consistent after-sales services in order to ensure a reliable GPS network system in operation continuously.



■ Academician Liu Jingnan, headmaster of Wuhan University (chief of the assessing team) was announcing the assessment of the construction of Kunming Continuously Operating GPS Reference Station Network.



■ The operating status of the Leica SmartStation at Kunming GPS Reference Station Network - Horseshoe branch Station



■ Group photo of tech experts attending the Report on the construction of Kunming GPS Reference Station Network from different places throughout the country

Whether building a house or a bridge, an office complex or a new road, you need reliable measurements. So when it has to be right, professionals can trust Leica Geosystems Surveying & Engineering to help them collect, analyze, and present spatial information.

With a long heritage of technology leadership in pioneering solutions to measure the world, Leica Geosystems Surveying & Engineering is best known for its broad choice of products and services including TPS total stations, GPS global positioning systems, levels, construction-site lasers, and machine guidance systems, through to comprehensive, integrated solutions for infrastructure and deformation monitoring.

Those who use Leica Geosystems products and solutions every day trust them for their reliability, the value they deliver, and the superior customer support. Reliability, value and service from Leica Geosystems.

When it has to be right.

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