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REAL TIME AND POST-PROCESSING MONITORING SOLUTIONS WITH THE NEW LEICA GMX901 L1 GPS RECEIVER

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Abstract: With the promises of new GNSS constellations such as GALILEO and BEIDOU, the whole GNSS industry is now mobilizing to release multi-frequency, multi-constellation GNSS receivers and antenna.

On the other hands the responsible of monitoring projects are looking for affordable low cost GPS L1 receiver but with still high accuracy performances. It has been requested many time by the professional of such projects to have for a given budget as much sensors they can. Multi-switch antenna based receiver solution has been a trial to reduce the cost of an installation based on GNSS monitoring with the inconvenient that the results are not synchronised in time and the communication link between the antennas and the multi-switch device restricted to short ranges.

Leica Geosystems AG Switzerland has released a new low cost L1 GPS equipment with antenna and receiver integrated into a smart mount. The Leica GNSS Spider software handled already only L1 measurement processing in both real-time and post-processing mode.

The authors will introduce the characteristics of this new equipment as well as the results obtained on a monitoring project hold in the area of a South African open pit mine where the Leica GMX901 has been engaged for a trial. Performances in Real Time and in Post-Processing will be presented to justify the large potential of this new solution.

For large project area and for sub-tropical regions where the ionosphere tends to restrict the range of the baselines, a network of dual frequency GNSS receivers can be used as a frame where a large number of single L1 GPS receivers can benefit of the ionosphere and troposphere mitigation deduced by the network solution. Leica GNSS Spider software has now also implemented that possibility and the authors will elaborate on that new feature with some practical examples.

Key words: GPS L1, deformation monitoring, GPS Network, processing, filtering

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