» RECEIVER DESIGN

Hemisphere GNSS Releases Next-Generation GNSS RTK Engine

Hemisphere GNSS has released Athena, its next-generation GNSS engine. Offering significantly enhanced performance, Athena provides Hemisphere with a new, future-oriented foundation providing strong performance, flexibility and reliability, according to the company.

Athena has yielded outstanding performed in virtually every environment where high-accuracy GNSS receivers can be used, the company stated. Hemisphere customers have tested Athena's performance in long baseline, in open-sky environments, under heavy canopy, and in geographic locations experiencing significant scintillation.

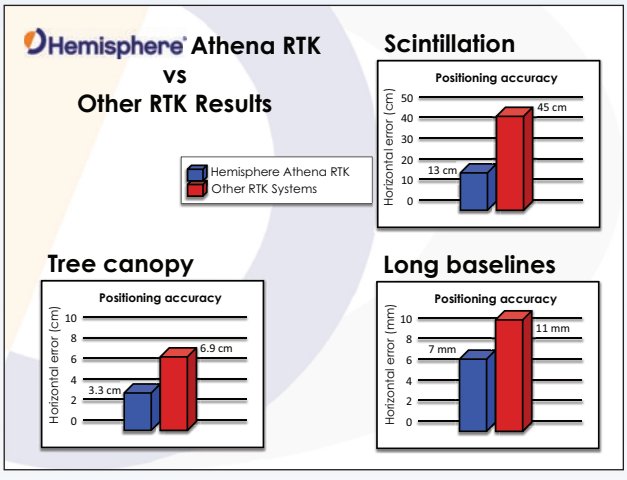
Hemisphere has designed its new core engine to excel at the rigorous GNSS requirements in multiple market segments, supplying its customers in machine control, survey and GIS with a design for now and in the future, Hemisphere said in a statement.

The release of Athena is a significant milestone for Hemisphere, which promises another new product entry into the market in the coming months.

Features of Athena include these capabilities:

- **Initialization time.** A reliably consistent initialization performance, less than 15 seconds at better than 99.9 percent reliability.
- **Robustness in difficult operating environments.** Extremely high productivity under the most aggressive of geographic and landscape-oriented environments for GNSS, while delivering up to 50 percent better performance in user tests matched against competitive systems.
- **Performance on long baselines.** Position stability for long baseline applications, with position quality often exceeding the performance of other RTK systems on the market.
- **Performance under scintillation.** Sustained accuracy under ionospheric scintillation activities, providing one of the most reliable means to work with GNSS in scintillation-affected areas.

Rodrigo Leandro, Hemisphere's director of engineering, GNSS Positioning Systems, described the design process. "Development of Athena started shortly after I came to Hemisphere in August of 2013. The company has been a leader in RTK solutions for many years. During those years, we focused in certain specific market segments such as agriculture, and under new leadership we determined there was a need to address a wider spectrum of market segments, with very high accuracy and feature rich capabilities built on the strong legacy platform we had already established. So, working with Mike Whitehead, company CTO, we identified the goal of reengineering our RTK engine to match the needs of RTK for the next 10 years, and to provide a foundation for future product development."



Leandro continued, "As part of this, we made a decision to build an expanded, world-class software development team, pulling great talent from around the industry to create a group of 11 totally focused on what we should do to move GNSS technologies forward — looking at all types of positioning techniques, not just RTK. Athena is just the first result of that work to become publicly available — you will see plenty more coming from the team over time.

"Looking at Athena specifically, we did a complete review, touching every part of the engine — from how we deal with the atmosphere, quality-control of the data, modeling the clock of the receiver, and so on, through to how to do external corrections, whether single-based or network-based. We even looked at and modified the receiver system, improving the multitasking architecture to more actively use the CPU for our computational work," Leandro said.

"I'm proud to say that the results of all that work match up to what we envisioned. RTK is a pretty mature technology at this point, so improving on what is available in the industry is a tough ask. However, our extensive competitive testing shows that the engine performs really well in terms of initialization, accuracy and stability across a range of different environments. Overall, we have seen excellent accuracy coming out of this engine compared to legacy as well as others in the marketplace."

» SURVEY/CONSTRUCTION/GIS

CHC Introduces LT500 Handheld

CHC has launched the LT500 series of handheld GPS receivers. The LT500 series LT500N /LT500T/LT500H covers three accuracy ranges from sub-meter to centimeter accuracy and is a cost-effective full GNSS positioning solution for survey, construction and GIS professionals, CHC said.

Powered by the Windows Embedded Handheld 6.5 operating system, the LT500 is accurate, rugged and versatile, CHC said. User productivity is enhanced with the built-in gyroscope, an innovative laser plummet for positioning the accurate handheld receiver over a point, an E-compass for showing the direction and G-sensors for leveling.

The LT500 series comes bundled with software including SurvCE, DigiTerra and MapCloud. The LT500H has120 channels (GPS L1/L2/L2C, GLONASS G1, G2, BeiDou B1 and Galileo E1), the LT500T has 220 channels (L1, G1, B1), and the LT500N has 12 channels (L1).

» CONSUMER OEM

Apple Buys Coherent Navigation

Apple has acquired Coherent Navigation, a Bay Area GPS firm founded in 2008 by engineers from Stanford and Cornell. One of its areas of focus was high-integrity GPS (IGPS), an enhanced version of GPS that uses both normal, high-altitude GPS satellites and lower-altitude voice and data satellites from Iridium to increase the accuracy of a consumer's GPS reading from the ground.

The acquisition seems to be Apple's latest efforts to bolster its mapping capabilities.

» TIMING

Forsberg Acquires StarLink Products

Forsberg Services Ltd. has acquired the StarLink product line from Raven Industries. StarLink includes inline amplifiers, coaxial down/up converters and fiber-optic link systems to enable and support extended cable runs for GNSS in navigation and time synchronization applications.

▲ **THE STARLINK** GPS down/up converter.

» OEM

Trimble Module Combines GNSS, MEMS

Trimble has introduced the Trimble BD935-INS module that features precision GNSS with an integrated 3D Micro-Electro-Mechanical Systems (MEMS) inertial sensor package. The compact module augments real-time precise positioning with 3D orientation. Its simple connectivity and configuration capabilities allow system integrators and OEMs to easily add GNSS and attitude to specialized or custom hardware solutions, Trimble said.

IFEN Adds Functions to Software Receiver

IFEN has launched v3.0 for its SX3 GNSS Software Receiver Generation, offering real-time P-code generator and P-code aiding for GPS L1/L2 cross-correlation; full dual-antenna support for SX3 Black Edition; KML file output for Google Earth real-time visualization; better performance through switch from 32-bit to 64-bit version; and support of new SX3 RF front-end with up to 12 IF streams.