New Car Dynamic Movement Measurements

Skoda, the Czech auto maker, has selected Ashtech ProFlex 500 GNSS receivers to measure the dynamic movements of its new models as they accelerate through high-speed tight test maneuvers here at the company's development facility.

As a test driver executes a sequence of close loops at high acceleration and speed, two on board ProFlex 500 GNSS receivers receive and transmit continuous observations of the dynamic transverse movement of the vehicle. Each receiver is connected to its own rooftop mounted GNSS antenna, which is precisely orientated along the car's longitudinal axis. In order to provide real-time centimeter accuracy positioning, the GNSS receivers are also connected via UHF to a third ProFlex 500 GNSS reference station that broadcasts instant real-time corrections. The Ashtech receivers were integrated in an intricate high technology testing system, using complementary sensors such as inertial gyroscopes and speed indicators on each wheel of the vehicle.

During the tests, the driver goes to the limits of the car, executing a sequence of tight loops at high acceleration and speed. The accurate plot of the car trajectory can only be obtained with a high rate of position output. An efficient way of sustaining this high position fast output rate was to provide the two on-board ProFlex 500 receivers with base corrections in compact AshTech Optimised Messaging (ATOM) format through a UHF radio link. Through its integrated UHF receiver, Ashtech ProFlex 500 delivers position updates at 20Hz (20 measurements per second). Few GNSS receivers are able to perform this highly demanding capabilities and data reliability on the market today. Ashtech's proprietary compact ATOM format ensures the data is delivered speedily with no memory buffer overflow. In addition to the fast update delivery rate, Skoda selected the ProFlex 500 for its drop-out free stability, precision and rugged construction. Technical support for GNSS hardware tuning and integration was provided by Ashtech and Geoobchod, its local dealer.