

NATC offers design and test support for developing advanced technologies

NATC applies and evaluates state-of-the-art technologies in a broad spectrum of vehicle types, from integration of design improvements for existing vehicles to the development of “clean sheet of paper” concepts. We offer engineering and design support for active and semi-active suspension, anti-lock braking systems, traction control systems, central tire inflation systems, and collision warning and avoidance systems. In addition to validating system applications, NATC can provide accurate warranty predictions based on real-world data.



Computer controlled autonomous vehicle in operation at WesTrack

ITS and Collision Warning Systems

NATC's knowledge in vehicle dynamics, environmental conditions, and man/machine interface parameters allows concentrated evaluations of Intelligent Transportation Systems and collision warning systems over the full range of operational environments. Through computer simulation and measured on-vehicle data, the shock and vibration inputs to the sensors are predicted and defined in order to ensure reliable operation of the system. Environmental effects are simulated utilizing full vehicle-size test chambers to confirm that adequate performance is achieved throughout the range of climatic conditions to which the system may be exposed.

Vehicle Network Applications

NATC is experienced with SAE J1939 Control and Communications Network specifications applications and uses it as well as SAE J1587, SAE J1708 and SAE J1850 data specification standards in vehicle design applications. NATC also utilizes the emerging SAE passenger car CAN network specification.

Active and Semi-Active Suspension

NATC provides test services and engineering support for development of active and semi-active suspension systems and their applications. Activities include test and evaluation of existing systems over courses designed to simulate worldwide conditions. NATC has developed and integrated active suspensions for heavy trucks and off-highway vehicles using both computer simulations and test course evaluations.

Adaptive Cruise Control (ACC)

Adaptive Cruise Control can “look” at traffic conditions and potentially reduce the number of accidents and improve traffic flow by optimizing vehicle speed and reducing the traffic “accordion effect.” NATC engineers have designed, developed and optimized systems to improve the dynamic response of the cruise control modules in automobiles and commercial vehicles. Integration of this technology can reduce reaction time and improve system safety.

Highway design, traffic management, human factors engineering and vehicle design must be integrated. Proper validation tests can be developed when these variables are recognized. NATC engineers familiar with congested highways, RF interference, sensors and systems can properly evaluate systems which employ ACC and make recommendations for potential improvements.

Traction Control and Anti-Lock Braking Systems

NATC has developed computer simulations and a fleet of instrumented vehicles to support analysis of the design and performance of TCS and ABS. NATC performs traction tests to determine the coefficient of friction which can be developed by tire systems on a variety of single and split-coefficient surfaces. NATC has the ability to determine appropriate time constants and control algorithms for TCS and ABS, as well as for integration of electronic engine controls, transmission controls, engine exhaust brakes, and automatic transmission retarders.

Advanced Vehicle Electronics

NATC works with vehicle manufacturers to integrate and validate advanced systems ranging from on-board diagnostics to differential global positioning. Using resources that include environmental and EMC/EMI test chambers, accelerated life cycle test methodology, and real-world use testing, NATC can provide independent, quantifiable data on the performance of route guidance systems, automatic vehicle identification, drive-by-wire systems, and multiple-technology synergy within a total vehicle package.



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