



TRACKS *newsletter*

TRC Inc. Adds THOR NT Dummy Calibration Capability

Transportation Research Center Inc.'s (TRC Inc.) Impact Laboratory remains involved in the development of new crash test dummies and new crashworthiness procedures. For several years, TRC Inc.'s Impact Laboratory has provided testing services as the National Highway Traffic Safety Administration (NHTSA) supported the development of an advanced frontal crash test dummy incorporating improved biofidelic features and significantly expanded instrumentation. The research and development resulted in a new 50% male dummy named THOR (Test Device for Human Occupant Restraint); the latest version is the THOR NT.



The THOR head's facial area is instrumented with unidirectional load cells to assess the probability of facial fracture. The THOR neck assembly includes multidirectional kinematic biofidelity, to improve head trajectories, velocities and accelerations in front, side and rear impacts. The thorax uses elliptical ribs to enhance the rib biofidelity and geometry and a thorax deflection sensor to measure the dynamic 3-D compression of the ribcage at four distinct points. An abdominal segment directly measures belt intrusion in 3-D at two distinct points. The pelvis is instrumented with a three-axis acetabular load cell at each hip joint and with belt

load sensors on each iliac notch. The THOR femur assembly includes a compliant element to improve the force transmission of axial loading through the femur into the pelvic assembly. The dummy's lower extremities provide increased injury sensing capabilities in the foot, ankle and lower leg, and an improved torque vs. angle relationship of the primary ankle rotation joints. The THOR dummy can measure over 100 data channels for injury assessment.

In addition to our existing capability to calibrate the entire current NHTSA-specified dummy family, the TRC Inc. Impact Laboratory's comprehensive Dummy Calibration Laboratory can now calibrate the THOR dummy. For more information about our calibration services, please visit: http://www.trcpg.com/impact_calibration.asp.

2011 Injury Biomechanics Symposium



Registration is now open for the 7th Annual Injury Biomechanics Symposium hosted by The Ohio State University (Ohio State) in conjunction with TRC Inc. The annual symposium is intended to stimulate and reward strong injury biomechanics research among students and recent graduates and will be held on the campus of Ohio State from May 22 through May 24, 2011.

The symposium will kick off on Sunday with the 2nd annual golf scramble followed by a welcome reception held at The Varsity Club on Ohio State's campus. On Monday, the symposium will move

to Ohio State's hotel, The Blackwell, for the research presentations and posters. This year's annual banquet will be held in the Faculty Club on Ohio State's historic ellipse. The symposium will close on Tuesday with additional presentations and posters, along with the annual Dr. Margaret A. Hines Awards.

For more information and to register visit: <http://ibr1.osu.edu/>, or call TRC Inc's marketing department at 937-666-2011.

Feature Facility

Durability Courses

Transportation Research Center's (the Center) expansive facilities offer a variety of durability test courses to help validate designs and certify test components. Test miles can be accumulated within our proprietary and independently-operated facilities and drive cycles can be duplicated or developed for chassis, powertrain, emissions, or corrosion testing over a wide variety of terrains.

The Center's facilities for accelerated durability testing include:

- Gravel Durability Course
- Corrosion & Stone Chipping Facility
- Cobblestone Durability Course
- Paved Rough Road & Salt Bath
- Paved & Gravel Hilly Road Courses
- Profile Roads
- Brake Slope & Soak Courses
- Bus & Truck Durability Course

For more information about TRC Inc's durability testing capabilities, please visit: <http://www.trcpg.com/servicesdurability.asp>.



PACE Awards

The winners of the 17th annual Automotive News PACE Awards (Premier Automotive Suppliers' Contribution to Excellence) will be announced during the annual SAE World Congress on April 11, 2011, at a special ceremony held at the Max M. Fisher Music Center. Thirty-five finalists will compete for the coveted award in the categories of product, process, and information technology.

Organized by Automotive News, and sponsored by TRC Inc. and Ernst & Young, the annual award celebrates automotive suppliers who have embraced innovation or adapted and reinvented themselves to meet the demands of the original equipment manufacturers. This award sets the standard for excellence and is recognized around the world. Every year hundreds of automotive suppliers around the globe submit their ideas to win this distinguished award.

A select panel of industry experts have reviewed each entry and conducted site visits to determine which of the finalist companies will become Automotive News PACE Award winners. Additional information can be found at <http://www.autonews.com/pace>.



Engine Dynamometer Test Capabilities



The Emissions Lab at the Center has several engine dynamometers capable of measuring horsepower from less than one and up to three hundred and twenty horsepower. These engine dynamometers meet emissions dynamometer requirements as stated in 40 CFR Part 90 and Part 1065 and are used for engine emissions tests, underground mining equipment evaluations, and durability aging as well as custom, non-standard testing. The test cells have full emissions measurement capabilities including equipment to record standard emission gases, particulate matter, aldehyde emissions, ethanol emissions, and emissions from diesel or biodiesel engines. The aldehyde and ethanol emissions are collected and measured in the Center's fuel lab, which contains both a Shimadzu Liquid Chromatography and Gas Chromatography analyzer. The particulate sampling system has been upgraded to meet the requirements in 40 CFR Part 1065 including a new balance and static control equipment.

Each test cell has a dedicated National Instrument data acquisition and control system that allows for full automation of durability or long-term tests while recording data and monitoring test conditions. Each data acquisition system is extremely flexible, allowing for additional input and output channels to be added quickly as needed for each test or aging program. Each test cell is fully equipped with engine support equipment such as coolant and oil cooling systems, fuel conditioning systems, and remote throttle operation. These systems tie into the National Instrument control system and allow accurate control of engine coolant temperature, engine oil temperature, fuel pressure and temperature, as well as throttle position. TRC Inc's computer programmer has extensive experience in writing control logic for these systems and can develop a custom computer control and data acquisition system to suit any test requirement or standard. In addition, TRC Inc. can provide technician staffing twenty-four hours a day, seven days a week, to fully monitor durability tests.

This range of flexibility allows us to meet or exceed the requirements for standard engine emissions tests as well as develop custom tests or aging programs to suit our customers' needs.

INDUSTRY EVENTS

2011

SAE 2011 World Congress

The SAE 2011 World Congress will be held from April 12-14, 2011, at the Cobo Center in Detroit, Michigan. The event will include professional development seminars, technical sessions, innovation forums, booth exhibitions, and much more.

ESV Conference

The ESV (Enhanced Safety Vehicles) Conference will be held in Washington, DC at the Gaylord National Hotel and Convention Center June 13-16, 2011. The program is a global opportunity for exchanging innovative vehicle safety research technologies and real world data to help save lives, prevent injuries, and reduce vehicle-related crashes. This event is one of the world's premier conferences in the field of vehicle safety research.

For a full list of TRC Inc's 2011 industry events visit our website at: <http://www.trcpg.com/events.asp>.

TRC Inc.'s Digital Transition



TRC Inc. is proud to present our digital newsletter, along with several social media applications, to expedite the exchange of information with our customers. This new initiative is an effort to reduce paper while continuously providing information and updates about our facilities and capabilities.

This newsletter will be the final paper copy. If you have already received the digital copy via email, your subscription will continue unless you opt-out. However, if you did not receive the digital newsletter and you would like to continue to receive our newsletter, please visit: http://www.trcpg.com/newsletter_signup.asp.

In addition to the digital newsletter, we have launched a Facebook page, Twitter, blog feed, and YouTube channel. Be sure to friend us on Facebook, follow our Tweets, read our blog, and watch our channel.

TRC Inc.'s new digital newsletter front page, Facebook page, Twitter page, & blog.

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