

NEW AWD CHASSIS DYNO



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Stage one of the Transportation Research Center Inc. (TRC Inc.) Emissions and Fuel Economy Laboratory upgrades are underway. In December 2005, the state-of-the-art AVL All Wheel Drive (AWD) Chassis Dynamometer will be ready for testing. Once installed, this platform will allow TRC Inc. to test virtually any light- or medium-duty vehicle platform on the road. These new test cell capabilities will include, but are not limited to:

- Environmental Protection Agency (EPA), California Air Resource Board (CARB):
- Federal Test Procedure, Highway Fuel Economy Test, US06, Cold-CO Emissions testing
- Gasoline and diesel gaseous and Particulate Matter (PM) emissions system development
- Cold and hot temperature driveability and powertrain evaluation

TRC Inc. is currently scheduling test cell programs starting in the first quarter of 2006. This dynamometer will be an excellent research tool for hybrid powertrain development, diesel PM and NO_x aftertreatment evaluation, OBD-II system validation and emissions durability/certification. Concurrent with the AWD installation, a new, dedicated motorcycle/ATV emissions test cell is also being introduced. Stay tuned for upcoming announcements regarding enhanced PM sampling, bag mini-dilutor emissions and state-of-the-art mobile and laboratory grade emissions analyzer upgrades.

The TRC Inc. lab provides engine-based and chassis dynamometer-based exhaust emissions and fuel economy testing, hydrocarbon speciation, and PM to any SAE, EPA, CARB or

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(New AWD Chassis . . . continued)

other industry standard. Types of equipment tested and additional testing capabilities include:

- Gasoline, diesel, and alternative fuel engines and vehicles
- Light-duty vehicle, motorcycle and all-terrain vehicles
- Compliance Assurance Program 2000 (CAP2000) related vehicle procurement and in-use emissions
- Lawn and garden utility to heavy-duty diesel engine stand testing
- Exhaust and evaporative emissions certification: EPA; CARB; and Mine Safety and Health Administration (MSHA)
- Fuel, additive, lubricant and after-market parts validation
- Evaporative systems integrity and permeations
- Intake valve and port fuel injector deposit testing Evaporative systems integrity and permeation
- Fuel blending, storage, and dispensing
- Fuel and lubricant analysis
- SAE highway and lab fuel economy testing



From October 24-27, 2005, we will have an exhibit at the **SAE Powertrain & Fluid Systems Conference & Exhibition** in San Antonio, Texas. This conference will assemble powerplant design engineers and engine fluid experts in an open forum to exchange technical information, share ideas, and address challenges. The cutting-edge technical program will feature more than 200 papers and presentations by top policymakers.

From October 27 - 29, 2004, we will be displaying an exhibit at **Automotive Testing Expo North America 2004** in Novi, Michigan. This show is extremely significant for testing engineers, as this is the only show in North America that attracts over

INTERNATIONAL ENHANCED SAFETY VEHICLE CONFERENCE

Transportation Research Center Inc. (TRC Inc.) was at the 19th International Technical Conference on the Enhanced Safety of Vehicles Conference (ESV) in Washington, D.C. in June 2005. The United States was the host government, with the National Highway Traffic Safety Administration (NHTSA) serving as the conference organizer. The North Atlantic Treaty Organization created the ESV Conference in 1970 to create a forum for motor vehicle safety research.

The participating countries agreed to develop experimental safety vehicles to advance the state-of-the-art technology in automotive engineering and to meet periodically to review progress. In 1996, the program was expanded to include the study of biomechanics, advanced offset frontal crash, pedestrian safety, vehicle compatibility, intelligent transportation systems, and recently side impact protection. The

TRC INC. ON THE ROAD

300 companies that specialize in automotive testing.

From November 1-3, 2005, we will be exhibiting at SAE Commercial Vehicle Engineering Congress and Exhibition in Chicago (Rosemont), Illinois. This Congress and Exhibition is the place where international truck, bus and off-highway industry executives come together with representatives from government and academia to present points of view and discuss cutting edge technologies and business issues. Teri Elliot, Jeff Sprague and Brad Bean will be involved chairing committee meetings and technical sessions, and Ken Webster will serve as a session panelist. Papers that were co-authored by TRC Inc.'s. Scott Zagorski, Richard Hoover and Ashley

cooperative work of several of TRC Inc. staff members was presented in NHTSA's review, including:

"NHTSA's Crashworthiness Rollover Research Program", by Stephen Summers, Don Willke and Lisa Sullivan of NHTSA, and TRC Inc. Inc.'s Stephen Duffy and Michael Sword.

"NHTSA's Light Vehicle Handling and ESC Effectiveness Research Program", by NHTSA's Garrick Forkenbrock, and TRC Inc.'s Devin Elsasser and Bryan O'Hara.

"Kinematically Based Whiplash Injury Criterion", by NHTSA's Shashi Kuppa, James Saunders, Jason Stammen and TRC Inc.'s Ann Mallory.

"Component Leg Testing of Vehicle Front Structures", by NHTSA's Jason Stammen, Transport Canada's France Legault, and TRC Inc.'s Ann Mallory.



Dunn include: "Comparison of ABS Configurations and their Effects on Stopping Performance and Stability for a Class VIII Straight-Truck", "Air Disc and S-Cam Brake Stopping Performance and Stability Comparison for Class VIII Tractor and Trailer Combinations", and "Comparison of Heavy Truck Foundation Brake Performance Measured with an Inertia Brake Dynamometer and In-Depth Analyses of Brake Output Responses to Dynamic Pressure Input". Ashley Dunn will also give an oral presentation on "NHTSA's Heavy Truck Electronic Stability Control Research Program."

Please mark your calendar for these important industry events.



FIRST INJURY BIOMECHANICS SYMPOSIUM A SUCCESS

The Ohio State University (Ohio State), in conjunction with Transportation Research Center Inc. (TRC Inc.), hosted the first Injury Biomechanics Symposium from May 19, 2005 through May 21, 2005. Industry partners for this event also included Honda Research Americas, National Highway Transportation Safety Administration's Vehicle Research and Test Center, and Columbus Children's Hospital Center for Injury Research. Our first year's registration and performance goals were achieved. Representing several countries, a full complement of attendees from 15 universities and various industries were on hand to view the 15 posters and eight (8) oral presentations. The symposium kicked off with a welcome reception at The Varsity Club on Ohio State's campus, then moved to an on-campus hotel for the presentations, followed by an awards banquet at the Buckeye Hall of Fame Café, and concluded with a tour of Ohio State and the test facilities at TRC.

A peek at current and future research was the topic of the keynote speech delivered by Dr. Albert King of Wayne State University. The main focus of the symposium was the eight oral presentations ranging in topics from: Child Dummy Development,

Shaken Baby Syndrome, Modeling of the Human Spine and Brain, Pedestrian Impact Testing, Thoracic Impact Testing, Knee Injury, and Whiplash. Each speaker was allotted 30 minutes along with a question and answer period from the audience. Additionally, 15 posters were presented that may evolve into oral presentations at future symposiums.

An additional highlight was the awards presentation of the Dr. Margaret H. Hines Award (plaque and monetary award) given to the best oral presenter and best poster presentation. Dr. Hines initiated the injury biomechanics research program at The Ohio State University over 15 years ago and was conducting research on shoulder trauma when she passed away in 2004. Two students were recognized at the awards banquet for their efforts. Eno Yiniemi, from the University of Washington, in conjunction with the Air Force Research Laboratory, won the Award for Best Oral Presentation titled, "Dynamic Tensile Neck Injury Tolerance." Toshin Ali of the University of Virginia, Center for Applied Biomechanics, won the Award for Best Poster titled, "An Analytical Study of the Material and

Geometric Changes in the Rib Cage of an Aging Human."

The Symposium is an extension of Ohio State's collaboration with TRC Inc. to create a nationally recognized center for trauma research. The new initiative is comprised of faculty of Ohio State's Injury Biomechanics Research Laboratory and their Center for Automotive Research, along with Children's Hospital of Columbus, Ohio, and TRC Inc. Dr. John Bolte IV, assistant professor of anatomy, is leading this effort for Ohio State's laboratories. Equipped with state-of-the-art support are TRC Inc. laboratories, including calibration for measurement instrumentation and test dummies, along with full-scale crash testing, and the HYGE impact simulator facilities. Additional information can be found at:

<http://medicine.osu.edu/ibrl/>

The second annual Injury Biomechanics Symposium will be held at Ohio State May 17-19, 2006. Questions regarding attendance and presentations should be directed to Dr. John Bolte at bolte.6@osu.edu. An official announcement regarding the date and a call for abstracts will be released in the Fall.



CONFIDENCE THROUGH CALIBRATION

In today's automotive testing environment nothing is more important than confidence in your test data. That confidence is only gained through knowing that your instrumentation is calibrated to industry standards by an accredited laboratory, with engineers who are active in subcommittees and industry task groups. Transportation Research Center Inc. (TRC Inc.) has been performing calibrations for customers for 30 plus years. We would like to extend this opportunity to offer our calibration services to everyone that

we serve. TRC Inc. can provide timely, accurate, and cost-effective calibration services.

Our calibrations are performed in accordance with National Institute of Standards and Traceability (NIST) Standards. Additionally, equipment and test measuring devices can usually be returned to you within less than five workdays.

Current calibration services include:

• Accelerometers;

- Anthropomorphic test dummies
- Load cells;
- Pressure gauges and transducers;
- Position transducers;
- Electrical measuring instrument calibration, including digital multimeters and temperature meters; and torque wrenches.

For more information and a complete listing of our calibration services, please visit our website at www.trcpg.com/calibration.htm or give us a call.



PACEing OUR INDUSTRY

Transportation Research Center Inc. (TRC Inc.) is proud to announce that we are renewing our sponsorship of the *Automotive News* PACE™ (Premier Automotive Suppliers' Contributions to Excellence) Awards.

Now in its twelfth year, the PACE™ Award honors automotive suppliers who have embraced innovation or adapted and reinvented themselves to meet the demands of the original equipment manufacturers. This prestigious award sets the standard for innovation and excellence and has become a significant industry credential. Annually, hundreds of automotive suppliers around the globe submit their innovation to win this distinguished award.

An independent panel of judges reviews applications, selects finalists, and conducts comprehensive site visits of finalist companies to evalu-

ate both their innovations and management teams. Annually, during the SAE (Society of Automotive Engineers) International Exposition in Detroit, PACE™ Award winners are honored at a special ceremony.

TRC Inc. President Rick Gildow stated, "The PACE™ Awards are a natural tie-in for TRC Inc. Many of the innovations featured are ultimately validated at our proving ground. This also gives us the opportunity to support our customers and their efforts in the marketplace by acknowledging their hard work." Company's interested in applying for the 2006 Awards may download applications on TRC Inc.'s website at <http://www.trcpg.com/pace.htm>

Additional information on the PACE™ Awards and be found at <http://www.automotivenews.com/PACE>.

Automotive News



PACE
AWARD



REGULATORY TESTING

When you need to crash it, crush it, or stop it, Transportation Research Center Inc., (TRC Inc.) offers you a full range of Federal Motor Vehicle Safety Standards (FMVSS) and certification testing. At TRC Inc. we are experts in conducting testing in accordance with the following domestic and international government and industry compliance and certification regulations:

- FMVSS (static and dynamic)
- Economic Commission of Europe (EEC, ECE)
- Canadian Motor Vehicle Safety Standards (CMVSS)
- Federal Highway Administration (FHWA)
- SAE
- International Organization for Standards (ISO)
- California Air Resources Board (CARB)



- Department of Energy/Environmental Protection Agency (DOE/EPA)
- Military Specifications (Mil Specs)
- Japanese Type Approval Test Procedures (TRIAS)

Governmental and industry regulatory testing can be performed for engines, motorcycles, passenger cars, vans, light pickups, trucks, buses and specialty vehicles.

FMVSS tests TRC Inc. conducts:

- FMVSS 110-114
- FMVSS 118
- FMVSS 120-124
- FMVSS 135
- FMVSS 202
- FMVSS 204
- FMVSS 206-208
- FMVSS 210-214
- FMVSS 216-217
- FMVSS 219-220
- FMVSS 221
- FMVSS 223
- FMVSS 225
- FMVSS 301
- FMVSS 304
- FMVSS PART 581
- FMVSS NCAP

