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Technovations in Transportation

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NIATT'S CLEAN SNOWMOBILE CHALLENGE TEAM TAKES 3^RD PLACE AT 2011 SAE CSC

Congratulations go out once again to NIATT's Clean Snowmobile Challenge Team for winning 3rd place overall at the 2011 Society of Automotive Engineers Clean Snowmobile Challenge.

Other noteworthy accomplishments at the competition were Best Design Paper; Michigan Snowmobile Association Endurance Award (100 mile endurance run); NGK Spark Plugs Cold Start Award; Land and Sea Award for Best Performance; EMITEC Award for Best Value; Bill Paddleford Founder's Award for Most Sportsmanlike Conduct (a team member put out a fire on a competitor's sled during the endurance run and the team loaned another competitor an EMM and programmed it for them); the only sled to place in fuel economy, emissions, and sound; and second place awards in Most Practical, Best Ride, Best Design, Subjective Handling, and In-Service Emissions.

The 2011 team members who attended the competition are (back row) Dylan Dixon, Ian Lootens, Sam Smith, Austin Welch, Dallyn Lord, Jeremy Nichols, Chris Hill, (front row) Cole Bode, Alex Fuhrman, Ty Lord, and Amos Bartlow. Pictured on the right is Alex Fuhrman in the handling run. Photos courtesy of KRC/MTU.



Traffic Signal Systems Committee Meeting

NIATT hosted the summer meeting of the Transportation Research Board (TRB) Traffic Signal Systems Committee on the University of Idaho campus July 18–20, 2010. One full day of the meeting was devoted to current best practices and innovations in traffic signal education and training, including exploring the following questions:

- What do university students, engineers, and technicians in practice need to know and understand about traffic signal systems?
- What resources are available or needed to improve the skills and competencies of engineers and technicians in practice, of university faculty, and of university students?
- How can the Traffic Signal Systems Committee encourage the development of new educational materials, curriculum, tools, supporting research, and other activities to improve education and training in traffic signal systems?

NIATT researchers Ahmed Abdel-Rahim, Mike Dixon, Steve Beyerlein, Howard Cooley (PhD candidate and 2009 NIATT Student-of-the-Year), and Michael Kyte used the meeting to showcase several education projects related to traffic signal systems, including the MOST project and the TransEd project. The team solicited feedback from the signal systems professionals attending the summer meeting, an important part of the work program for both projects. An expanded version of this day-long workshop was held at the annual meeting of the Transportation Research Board in January 2011.

Student of the Year – Dylan Dixon



NIATT's 2010 Student-of-the-Year is first-year graduate student Dylan Dixon (second from left). Dylan received his award at the 2011 Council of University Transportation Centers Awards Banquet in January 2011.

It's unusual for a student to receive the honor their first year of graduate school, but Dylan has been working with NIATT for over five years. He began with the UI Clean Snowmobile Team as a freshman, and he has become a valuable team member. He was team captain for two years, and he is now the graduate mentor. Under his leadership, the team achieved a second and a third place in the Society of Automotive Engineers (SAE) national competition. He also has had a professional internship with Bombardier/Evinrude, assisting in engine development efforts, bringing that experience back to the team.

Recently Dylan was selected to attend the SAE Small Engine Technology Conference in Linz, Austria to present a design paper on the clean snowmobile team's entry in the 2009 Challenge.

Dylan's graduate work is focused on exploring the benefits of exhaust throttling in a two-stroke engine. This work will look at the effects exhaust throttling has on emissions, efficiency, and power output, as well as automating and installing the system on a snowmobile. In his free time, he enjoys modifying and riding motorcycles and other motorized equipment.

NIATT Welcomes Wendy Secrist as Research Writer



NIATT is pleased to announce Wendy Secrist as our new Research Writer.

Wendy received her MA in English from UI, and she has been a technical writer or editor for several companies, including Hewlett-Packard and, most recently, Schweitzer Engineering Laboratories. She will be working with faculty to develop new research project proposals. Wendy joined NIATT in March 2011.

Advanced Accessible Pedestrian System Installation at 6th & Deakin Complete

An Advanced Accessible Pedestrian System (AAPS) is now installed at the intersection of 6th and Deakin Streets on the University of Idaho campus in Moscow, Idaho. Development of the AAPS was led by Dr. Richard Wall of NIATT, and the system is manufactured by Campbell Company of Boise, Idaho.

The intersection at 6th and Deakin Streets was selected because of the high volume of pedestrian traffic and the relatively low volume of vehicular traffic. Zane Sapp, 2010 MSEE graduate and current employee of Campbell Company, and Cody Browne, electrical engineering graduate student, showcased the installed AAPS (left). Employees from the City of Moscow evaluated the details of the installation with Cody Browne observing (right).



The installation of the AAPS on the Moscow campus is a great opportunity to showcase the six years of research and development effort by Dr. Wall and his graduate students. A recent NIATT report that describes the operation of the system is available online at http://www.webs1.uidaho.edu/niatt/research/Final_Reports/KLK719_N11-02_Final.pdf.

Equipment for the installation was donated by Campbell Company. Four of these systems are installed in the St. Paul, Minnesota area and have been in use for over a year.

Awards



Michael Kyte (left) received the 2011 Teaching Excellence Award from the University of Idaho at the annual Excellence Awards in April. Dr. Kyte has had a long history of outstanding contributions to university transportation education and research. He served as the Director of NIATT for 15 years.



Richard Wall (top right: pictured with UI President Duane Nellis on right) received the University of Idaho's Innovations Impacting Society Award at the Entrepreneurship & Innovation Celebration in April. Dr. Wall was recognized for his Advanced Accessible Pedestrian System for signalized traffic intersections patent (see story above).



Ahmed Abdel-Rahim (left) received the College of Engineering's Outstanding Faculty Award at the awards ceremony in May. Dr. Abdel-Rahim was selected for this award because of his excellent record in teaching, research, and service. He goes above and beyond his call of duty.

Randy Maglinao, 2011 PhD graduate in Biological & Agricultural Engineering and NIATT research assistant, received the College of Engineering's Outstanding Graduate Student Award at the awards ceremony in May. Randy's dissertation, entitled "Thermochemical Conversion of Glycerol to Primary and Polyhydric Alcohols" was in April. Randy worked as a Research Assistant for NIATT from August 2007 until he graduated in May 2011. He accepted a position as a Research Associate at Montana State University at Havre. Randy is in the center of the bottom right photo, with his Major Professor, Brian He, on the left and College of Engineering Dean, Don Blackketter, on the right.



2011 NIATT Advisory Board Meeting



The Annual NIATT Advisory Board Meeting was held on Thursday, April 28, 2011, coinciding with the University of Idaho College of Engineering's Annual Engineering Exposition (<http://www.uidaho.edu/engr/expo>).

On Wednesday, April 27, 2011, a banquet was held to welcome board members and other guests. In the picture on the left, Kari Dickinson (guest), Dan Cordon, Tom LaPointe (board member), and Jon Van Gerpen listen intently as Karen Den Braven, NIATT Director, welcomes everyone.

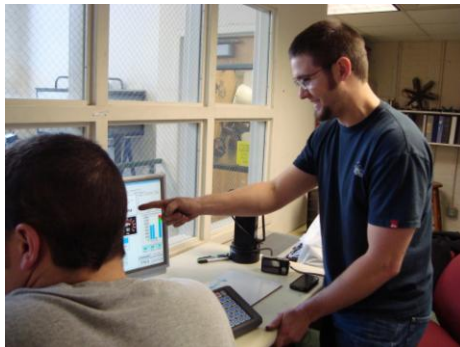


Richard Wall, Paul Zebell (City of Portland), and Rob Klug (Clark County Public Works) discuss Richard's AAPS.

Dylan Dixon, NIATT's 2010 Student-of-the-Year, and the Virtual Technology and Design team working on Dr. Michael Kyte's UTC Visualization project made presentations on their experiences working in NIATT as well as their current project work.

On Thursday, the meeting was in full swing with presentations of project proposals by NIATT researchers seeking funding for the 2011-2012 academic year. The board members interacted with presenters and made recommendations for funding for the next fiscal year. In the picture on the left, Denise Bauer,

NIATT Develops a Unique Snowmobile Engine for Increased Power and Reduced Emissions



Left: Alex Fuhrman and Andrew Hooper evaluating preliminary prototype tests.

Right: Current prototype undergoing tests on the dynamometer.



NIATT has been working on making two-stroke engine snowmobiles cleaner and more efficient, with the goal of meeting the requirements of the National Parks. The research team, led by Dr. Karen DenBraven, hopes to fill the need for a clean, lightweight, powerful, wide-operating-range snowmobile that is easy to maneuver and maintain.

The research team is developing a third-generation prototype of a novel design for a two-stroke engine. The engine uses a new synchronous charge trapping system that reduces fuel use, improves torque at low engine speeds, and reduces unburned hydrocarbon emissions by preventing the fresh fuel/air mixture from escaping out the exhaust port.

A cleaner, more efficient, and more powerful two-stroke engine has potential for a wide variety of uses. Other applications for this technology could be scooters, lawn care equipment, personal watercraft (jet skis), boats, generators, ATVs, and APUs (auxiliary power units) for hybrid vehicles. This technology could also be developed for use in two-stroke diesel engines. More details about the evolution of the design are available at the team website:

http://seniordesign.engr.uidaho.edu/2010-2011/gas_trap/shortcircuit.htm.

For additional information on the current project see

http://www.webs1.uidaho.edu/niatt/database/Project_Detail.asp?Project_ID=184.

Engineering EXPO

The College of Engineering held the 18th Annual Engineering Design EXPO on Friday, April 29, 2011.

The EXPO showcases senior engineering students Capstone Design coursework. NIATT students had a presence in several places. Two of the NIATT teams won awards.



The Next Generation Hybrid Formula Car won an award for best Booth & Exhibit (left). The team members are Corey Adrian, Cody Brumett, Chris Eacker, Chris Enzler, Josh Foss, Josh Hartung, Steve Hieb, Bobby Jackson, Matt Montgomery, Brian Norman, Zack Porter, Nathan Repp, Justin Ruegsegger, and Justin Shook. The graduate student mentor is Sam Wos.

The Clean Snowmobile Challenge Team won the Award for Excellence in Technical Presentation

(right). The team members are Amos Bartlow, Cole Bode, Amanda Bolland, Eric Buddrius, David Erickson, Alex Fuhrman, Chris Hill, Drew Hooper, Ian Lootens, Dallyn Lord, Ty Lord, Niel Miller, Jeremy Nichols, and Sam Smith. The graduate student mentors are Austin Welch and Dylan Dixon.



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