



Excellence in Sustainability

On behalf of CST, Research Director Terry Zdan (left), accepts the **Excellence in Sustainability Award** from the Manitoba Minister of Conservation, Hon. Stan Struthers (right).

The award was presented by the Manitoba Round Table for Sustainable Development.

See page 4, *CST Receives Award* for more information.

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Upcoming Events

- **PHEV 2009 Conference** announced for Montreal in November
- **Sustainable Transportation Webinars:**

Jan. 27, 2009. *Urban Transportation Emissions Calculator.*

Feb. 3, 2009. *The Canadian Walkability Roadshow.*

For information on webinars and events, contact CST at cstinfo@uwinnipeg.ca.

Tracking Otto

In April 2008, CST announced a research project called, "Using Otto to Change Driver Behaviour." This research uses Otto-driving companion® device (Otto) in a year-long study using in-vehicle devices to raise driver awareness regarding idling and greenhouse gas (GHG) emissions. This research is made possible by funding from Natural Resources Canada.

This study assesses the effectiveness of driver feedback systems in order to identify factors that change social behaviour in light-duty urban traffic environments. Driver feedback systems provide "real-time" fuel consumption information to drivers as they drive.

The proposed system will allow motorists to visually identify areas where they can improve their driving habits and quantify their GHG reductions. Driver and vehicle data is recorded to assess behavioural changes when given visual feedback of fuel consumption and Carbon Dioxide (CO₂) equivalent emission rates.

With this research, the project team will be in a position to raise awareness with participants and the general public. CST will also formulate and disseminate results as a basis for further policy development regarding driver feedback systems.

The study has two phases and an option to continue using Otto in a battery storage optimization for a plug-in hybrids study. See auto21.uwinnipeg.ca for more information. For more on Otto, see page 3, *Otto Enrols at Stanford University*.

CST is currently in the second phase of this study, which assesses users' opinions of a real-time data display using the latest model of Otto, OttoView.

Join CST!

Stay up-to-date on the Centre's current projects, activities, and the general developments in the field of sustainable transportation.

Become a member of CST. Discover the benefits membership brings.

Contact CST's membership coordinator at j.bergen@uwinnipeg.ca for details.

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Driving 4,000 km on Sunlight

Take sunlight from 150 million kilometres away. Shine it on silicone (Si) or gallium arsenide (GaAs) solar cells that convert the sunlight into electricity. Charge a lithium-ion battery with the tax-free electricity. Power an electric hub motor integrated into a lightweight car frame and aerodynamic body.

It is now possible to drive this solar-powered “car” 4,000 kilometres, including crossing an international border, in less than 52 hours of daylight.



Above: The Red River Raycer features silicone (Si) cells.

Below left: Principia's Car Ra 7 uses gallium arsenide (GaAs) cells. (photo credits: Terry Zdan)



The 2008 North American Solar Challenge attracted college and university teams from across the United States, Canada, Germany, and England in a trek beginning in Plano Texas, near Dallas/Fort Worth, and moving north across the border to Winnipeg, Manitoba. Teams then migrated west to finish at the 1988 Olympic Oval at the University of Calgary in Alberta.

This international challenge took place over 10 days, but teams put in over half-a-year's effort in a complex array of jobs preparing for this challenge. They needed to pass a rigorous scrutinizing trial on a closed circuit oval to ensure vehicle safety and technical criteria were met or exceeded.

CST is now assisting the North American Challenge 2008 compile a legacy document of the event. The report will include technical specifications and as well as additional information about the range of issues teams overcame to participate in the challenge.

For more information on the North American Solar Challenge visit www.americansolarchallenge.org.

Innovative Design for U of W's Richardson College

Construction is now underway at The University of Winnipeg's new *Richardson College for the Environment and Science Complex*. The state-of-the-art complex will provide much-needed new classrooms, laboratories and offices for the Faculty of Science. The College will be a cutting-edge centre, engaging students and faculty in innovative research in natural and social sciences with a focus on the North, climate change, water stewardship, and indigenous science education. The building itself will also be a model for green building technology and will be constructed to a minimum LEED (Leadership in Energy and Environmental Design) Silver Standard with a goal of achieving a maximum of energy efficiency.

This project has been designed by Number 10 Architects of Winnipeg, one of Canada's leading green architectural firms. It will be a “Signature Building” and will include a four-storey atrium incorporating reclaimed wood from the Roller Rink previously on the site, comprehensive daylighting strategies, and innovative glass technology. Completion is expected in late 2010. For more information, visit www.uwinnipeg.ca.



Architectural Design by
Number Ten Architectural Group

OTTO Enrols at Stanford University

On May 15, 2008, *ScienceDaily* published a story around research being conducted by a Stanford University researcher, Dr. Clifford Nass, titled “New Cars Are Gathering Information On You That Might Interest Insurance Companies, Advertisers, Government.” What interested Terry Zdan, Research Director at CST, was the statement in the article from Dr. Nass, “...an intelligent car with a caring voice might persuade humans to drive more safely.”

The Otto-Driving Companion Device

CST had launched the Natural Resources Canada sponsored ecoEnergy project, “Using Otto to Change Driver Behaviour” in April, 2008. CST and PERSENTECH, the maker of Otto, applied the Otto-driving companion® device (Otto) in research to determine if in-car devices, like Otto, can influence drivers' perceptions and behaviours.

Among its attributes, Otto tells you the speed limit and alerts you if you exceed it. Otto tells you when you are approaching potentially hazardous locations including Red Light Camera intersections, crosswalks, school areas and deer crossings. It operates in your local municipality and can be upgraded to other coverage areas. Otto also helps to save the environment. The latest Otto model also logs your trip data as you drive.



Otto impressive in California

Terry contacted Dr. Nass and informed him about the applied research CST was undertaking with Otto and suggested that he might be interested in seeing this first hand. Dr. Nass's interest was more than enthusiastic: “You mean Otto is a commercial device that does this, on the road, in real-time, and not in a lab simulator?”

Dr. Nass immediately went to work on a meeting agenda and arrangements were made for CST, PERSENTECH, and Otto to visit him

at Stanford University in Palo Alto, California in July. PERSENTECH loaded Otto with a base map of Palo Alto and integrated it with another device, Otto Link, for demonstrations at Stanford during two days of meetings with car OEMs and other interested organizations.

The presentation and discussion meetings also featured a ride-and-drive with Otto. Feedback and first impressions were positive. It can be generalized that Otto was well received at Stanford University and should complement Dr. Nass' simulator lab and future research in applied driving behaviour. *(continued on page 4)*

Stanford University (2008, May 15). New Cars Are Gathering Information On You That Might Interest Insurance Companies, Advertisers, Government. *ScienceDaily*. Retrieved August 12, 2008 www.sciencedaily.com/releases/2008/05/080513101713.htm

Earth Week Environmental News Clip – CBC National News Saturday Report coverage of the CST can be referenced by viewing the following file: [April 26th CBC Saturday Report Show-case News Segment](#)

<http://design.stanford.edu/CarLab.html>

[Making roads safer by reading drivers' moods | Tech news blog ...](#)

16 Jun 2008 ... **Clifford Nass**, a professor at Stanford and director of its ... Last year,

Volkswagen gave \$5.7 million as a gift to Stanford's new **CarLab**, news.cnet.com/8301-10784_3-9969572-7.html - 74k

www.myottomate.com

CST welcomes further collaboration for applied research using Otto.

Contact cstinfo@uwinnipeg.ca if you have any questions, comments or suggestions about this, or any other, area of research.

CST Board Update: Increases!

On June 26, 2008, CST held its fourth board meeting since transferring to Winnipeg. The entire board was present, apart from Richard Danis who was absent with apologies. Research Director Terry Zdan attended the meeting as an observer.

The meeting touched on many activities of the Centre, but two items were of major importance.

First, there was a suggestion to increase the size of the board. This was unanimously agreed upon and a recommendation was made to increase to 12 members.

Secondly, the CST board decided to launch a membership drive. It will target both new and former members and introduce new membership categories for elementary, high school, and post-secondary students.

This should bring the focus back to the members of the Centre and see CST more involved in helping members meet their sustainability goals.

The next meeting of the CST board will be the annual general meeting on Dec. 12, 2008.

Annual General Meeting, December 12, 2008.

Agenda items include:

- Overview on CST's future projects and partnerships,
- Increasing the size of the board, and
- Introduction to new membership initiatives.

Watch for an update in the next newsletter.

CST Receives Award

“It is an honour to receive recognition for the work we do,” says Terry Zdan, Research Director for CST, speaking about the Award of Excellence he accepted from the Manitoba Round Table for Sustainable Development.

The award was presented to the Centre on Nov. 27, 2008 at a reception at the Delta Winnipeg Hotel. The reception was a component of the *Choose the Future, Education for Sustainable Development Conference* held in Winnipeg from Nov. 26—28, 2008.

The award recognizes individuals and organizations who have made a lasting contribution to the field of sustainability in Manitoba.

CST is internationally recognized for their definition of sustainable transportation, which is a system that:

- Allows the basic assess of needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations,
- Is affordable, operates efficiently, offers choice of transportation mode and supports a vibrant economy,
- Limits emissions and waste within the planet’s ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.

For more on sustainable transportation and CST, visit cst.uwinnipeg.ca.

...Stanford University *(continued from page 3)*

The Stanford campus is a wonderful place – a legendary central entrance and courtyard, a Rodin sculpture garden, a cathedral, the Hoover Tower, a golf course Tiger Woods tamed – and lots of NEVs, EVs, ZEVs and bicycles.

Stanford is home to numerous research centres beyond Dr. Nass’s Communication between Humans and Interactive Media (CHIME) lab, including the Initiative on the Environment and Sustainability, the Precourt Institute for Energy Efficiency, and CarLab.

“CarLab is an interdisciplinary research lab at Stanford University. The vision of CarLab is that by creating a community of faculty and students from a range of disciplines at Stanford with leading industry researchers, we can radically re-envision the automobile for unprecedented levels of safety, performance, and enjoyment. Our mission is to discover, build, and deploy the critical ideas and innovations for the next generation of cars and drivers.”

Stanford is also in the heart of California’s Silicon Valley and “...car manufacturers all over the world are following [vehicle] experiments with great interest. After all, Silicon Valley has, in a very short time, become the R&D centre for many car-tech companies as cars get new interface technology and become computing devices.”

Dr. Nass already has several ideas in mind for using Otto in applied research at the CHIME and CarLab at Stanford. No doubt driving with the Otto around California will generate many more.

CST WinSMART Technical Consultant

CST is the technical consultant on greenhouse gas (GHG) measurement for the City of Winnipeg. In the summer of 2007, CST estimated a baseline of GHG emissions from transportation in Winnipeg. CST will estimate emissions achieved by implementing the WinSMART projects and compare these to that initial baseline.

The WinSMART program is one part of Transport Canada’s Urban Transportation Showcase Program, which runs from December 2007 to March 2009.

WinSMART demonstrates a variety of innovative urban transportation demand management initiatives in order to promote an integrated approach to increasing energy efficiency and reducing GHG emissions.

Through the demonstration and promotion of progressive initiatives, the City will be showcasing activities to make alternative modes of transportation an affordable, efficient, pleasant, and safe alternative to traveling by single-passenger vehicles.

Many of these projects target improvements in Winnipeg Transit, development of active transportation routes, and examination of social marketing tools to encourage the use of alternative transportation modes.

WinSMART also includes initiatives to improve the efficiency of urban freight, the distribution of goods, and a biodiesel fueling station demonstration providing B10 to municipal fleet vehicles.

Jodi Binder contributes the Centre’s core expertise in survey methods and quantitative analysis. Jeff Babb, Chair of the Mathematics and Statistics Department at the University of Winnipeg, assists the Centre in this work. For more information about WinSMART see www.tc.gc.ca/programs/Environment/utsp/winnipeg.htm.



*Confusion Corner, Winnipeg, MB
(photo credit: Jodi Binder).*