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The American Society **ASME** of Mechanical Engineers
SETTING THE STANDARD
1880 2005
Canton Alliance Massillon Section News



Editor: Kevin T. Reynolds

January 2005

PLEASE KEEP YOUR E-MAIL ADDRESS CURRENT

Newsletters are sent by e-mail in PDF format to all members with an e-mail address on file. Paper copies are sent by US mail only to those members without an e-mail address on file. Newsletters are also posted on the CAM section website.

Please take a moment to verify your e-mail address and keep it current at the "Members Only" tab at www.asme.org. You will need your member ID for access.

ATTENTION Members

In an effort to expand our members' area knowledge and interests, we strive to present some of the latest technologies and knowledge in Engineering in our area. If you or your company has some interesting topic that you're willing to share with your fellow CAM colleagues, please contact Krich Sawamiphakdi (Chairman) or any Executive Committee Member (at the left).

Please Join Us at the Program and Dinner Meetings. Your support and attendance is greatly appreciated.

The CAM Section will have a dinner meeting on **January 25, 2005**, and dinner at the Holiday Inn, North Canton, OH. SEE DETAILS NEXT PAGE.

DINNER MEETING TOPIC:

AN ELECTRO-MECHANICAL INFINITELY VARIABLE SPEED TRANSMISSION

Presented by Xiaolan Ai, The Timken Company

The transmission leverages the advantages of an output power-split configuration for low-speed operation and a compound power-split configuration for high-speed operation. It is capable of being operated in a number of operating modes including an eVT only mode and a hybrid mode when equipped with on-board energy storage devices. The transmission provides a compact, highly efficient and potentially low cost driveline solution for both conventional vehicles and hybrid electric vehicles.

Other Upcoming Events

Jan. 2005-CAM Board Elections (see p. 3)
Feb. 23, 2005-CJEC Eng. Wk. Banquet (see p. 4)
Mar. 14, 2005 - Goodyear Blimp Hanger Tour
Apr. 18, 2005 - Joint Mtg. with STLE and ASM

CAM Section Board Meeting

Tuesday
February 8, 2005
6:00 PM at 356th Fighter Group Restaurant,
4919 Mt. Pleasant St N
North Canton · OH

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AN ELECTRO-MECHANICAL INFINITELY VARIABLE SPEED TRANSMISSION

Presented by Dr. Xiaolan Ai, The Timken Company

ABSTRACT:

An electro-mechanical infinitely variable transmission (eVT), comprising a pair of planetary trains interconnected with two electric machines and clutches, has been proposed. The transmission leverages the advantages of an output power-split configuration for low-speed operation and a compound power-split configuration for high-speed operation. It is capable of being operated in a number of operating modes including an eVT only mode and a hybrid mode when equipped with on-board energy storage devices. The transmission provides a compact, highly efficient and potentially low cost driveline solution for both conventional vehicles and hybrid electric vehicles.

A virtual transmission prototype was built in EASY5¹. A base vehicle model was also constructed in EASY5 environment with Ricardo Powertrain Library components. Performance of the proposed transmission was evaluated in context of the base vehicle for driveline efficiency, vehicle acceleration, vehicle fuel consumption and emissions under various driving cycles. Comparison with a conventional four-speed automatic transmission was made.

Results of the evaluation have demonstrated superior performance of the proposed eVT over conventional automatic transmissions. The eVT has a high efficiency of 92% over most of the speed conversion range. The infinite conversion range of the eVT enhances the vehicle's tractive effort, improving vehicle acceleration. It shortens the acceleration time by 7.5% from 0 to 60 mph, and 9.5% from 30 to 50 mph. The infinitely variable speed ratio along with the rapid speed-ratio-change capability of the electric system allows the transmission to significantly improve vehicle's fuel economy and reduce vehicle's emissions. Even under eVT only operation mode (for conventional vehicle application), 11% fuel savings for urban driving and 9% on highway driving are easily achievable. The reduction in Nox emission is predicted to be about 12% under urban drive cycles and 5% on highway.

The electro-mechanical eVT allows various degrees of hybridization to provide further gains in fuel economy and environmental acceptability.

About the Speaker: Xiaolan Ai, Ph. D.

Dr. Xiaolan Ai received his B.S. and M. S. in Mechanical Engineering from Tsinghua University, Beijing in 1984 and 1986. He earned his Ph. D. in Mechanical Engineering from Northwestern University in 1993. Dr. Ai joined the Timken Company in 1995 and worked in various areas including Mechanical and Tribochemical Sciences, Bearing Fundamentals and Modeling, and Advance Product Design.

Dr. Ai is member of STLE, ASME and SAE. He was appointed an adjunct professor at the Department of Mechanical Engineering at Ohio State University in 1999. Dr. Ai has wide research interests in Tribology, Electro-mechanical drives and components, and Vehicular transmissions. Dr. Ai has authored and co-authored a book chapter and more than thirty technical journal papers. He holds nine US patents and several corresponding foreign patents, and has 15 patents pending.

Most recently, Dr. Ai was invited as a guest speaker at the MIT/Industry consortium to present his work on hybrid vehicle powertrain design.

Meeting Location: Holiday Inn, North Canton, OH, Dressler Rd. near Belden Village.

Schedule: *January 25, 2005*, Social period starts at 6:00 pm, Dinner at 6:30 pm and Presentation at 7:30 pm

Dinner reservations: Please make reservations by contacting Krich Sawamiphakdi (The Timken Company) at (330) 471-2731 or krich.sawamiphakdi@timken.com. Please make reservations by 5:00 pm. on January 18, 2005.

Dinner selection: Choice of Chicken Breast or Orange Roughy; main meal comes with fresh vegetable medley, house salad, oven roasted redskin potatoes and orange sherbet.

¹ EASY5 is a registered trademark of MSC. Software Corporation of Santa Ana, CA.

Jan. 2005 Dinner Meeting Continued:

Dinner prices: Members and Spouses; Nonmembers and Guests: \$15.00
Retirees and Students: \$10.00

Please provide your name, company affiliation and dinner selection when making reservation.

ATTENTION MEMBERS!!!



It's that time again for CAM Section Officer Elections for 2005-2006. This year's nominating committee needs you!

Elections for new Executive Committee members and Directors will be coming in January 2005. If you have that desire to serve your local ASME-CAM Section Board and may be interested in a position please contact [Bill Prueter](mailto:wpprueter@bwt.com) 330-860-6713 (wpprueter@bwt.com), **Nominating Committee Chairman** or [Norm Moore](mailto:norm.moore@timken.com), **Vice Chairman** 330-471-2649 (norm.moore@timken.com) for further details.

A roster is currently being compiled for the ballot.

CJEC - National Engineer's Week Banquet 2005

Program Information

- **When:** Wednesday, February 23rd, 2005
- **Location:** Skyland Pines
3550 Columbus Road NE
Canton, Ohio 44705
- **Times:**
 - Cash Bar 6:00 PM
 - Dinner 7:00 PM
 - Program 8:00 PM

Speaker: **Mr. Salvatore J. Miraglia, Jr.** (see bio next page)

Senior Vice President – Technology
The Timken Company

- Program: Six Sigma in Technical Community: What should be the role of “Six Sigma Discipline” in the Scientific and Engineering Communities?
- **Price:** \$25.00 per person (\$18.00 Students)
Last day for Reservations: 02-18-05
Tickets to be picked up and paid for at the door.
- **Menu:** Choice of Scrod, Steak, or Vegetarian.
Meal includes: fruit cup, dinner salad, baked potato, rigatoni, green peppers, sherbet dessert, and beverage.
- **Contact:**
Steve Jones
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Mr. Salvatore J. Miraglia, Jr., Senior Vice President – Technology, The Timken Company

The Canton Joint Engineering Council is pleased to announce that Mr. Salvatore J. Miraglia, Jr., Senior Vice President – Technology, The Timken Company, will be the 2005 National Engineer's Week Banquet Keynote Speaker.

Salvatore J. Miraglia, Jr., is senior vice president – technology at The Timken Company. Mr. Miraglia began his career with the company in 1972 and held various positions in the Bearing and Steel Businesses, as well as in the research and purchasing areas. In 1989, Mr. Miraglia was named director – manufacturing – steel, and, in 1993, vice president – manufacturing – steel. In 1994, he joined the Bearing Business where he held subsequent positions of director – manufacturing – Europe, Africa and West Asia, vice president – bearings – North American industrial and super precision and group vice president – bearings North America – industrial and super precision. Mr. Miraglia was elected senior vice president – technology in December 1999.

A native of Scranton, Pennsylvania, Mr. Miraglia earned a bachelor's degree in metallurgy and material science from Lehigh University and a master's degree in metallurgy and material science from Case Western Reserve University. He also completed the Advanced Management Program at Harvard University Graduate School of Business Administration.

Mr. Miraglia is a member of the American Society of Professional Engineers, the Industrial Research Institute, Engineering, Research & Development Council-Manufacturers Alliance/MAPI, the American Institute of Metallurgical Engineers, the American Society for Metals and is a Registered Professional Engineer in the state of Ohio. In addition, he is a member of the Research & Technology Executive Council of the Corporate Executive Board and chairman of the Board of Trustees of the Ohio Aerospace Institute.

Engineers Without Borders Needs Mentors!

Interested in contributing your professional and technical knowledge to make the world a better place? Want to support engineering students as they help others while learning the practical aspects of engineering? Become a mentor for an Engineers Without Borders, USA (EWB-USA) team!

By becoming a professional member of EWB-USA, you will have the opportunity to mentor student projects in your local area and across the world. Each month, we send mentor opportunities to our network of professionals. EWB-USA is looking for engineers with an interest and expertise in such areas as fundraising, project management, water resources, renewable energy, structural design and cultural knowledge.

As a project mentor you will oversee all the technical aspects of a project and be responsible for the selection of technology, engineering design, and prototype testing and field implementation. Along with the technical aspects of engineering, an understanding of sustainable engineering practices, openness to learning about sustainable practices in other cultures and a sense of adventure are needed!

For information on mentoring, a complete list of current projects and to volunteer, visit the EWB-USA website at http://www.ewb-usa.org/get_involved_professional_mentor.html.

ASME Offers Communities of Practice

Want to talk to your peers about technical matters, career and personal interests? Want to do that without going to a meeting or even leaving your desk?

ASME offers you a new tool to communicate, get the information you need and meet others with similar interests and concerns at the new ASME Communities of Practice site.

On the CoP site, you can join a community, suggest a new community, participate in discussions and polls, and post your own message or request to be notified when messages are posted on the community. It's your choice what communities you participate in, and how you choose to participate.

You will need to register the first time that you use the page, and set your preferences for your home page. It only takes a few moments – then you are ready to participate, or just observe the discussions. To date, there are already 143 communities and approximately 2,200 users. To visit the site, and test the features, go to www.cop.asme.org



Celebrating 125 Years of ASME

Log onto www.asme.org/anniversary for up-to-date information on events for ASME's 125th anniversary, as well as how your local section can become involved.

Among the events that are scheduled to take place in 2005 so far are:

Founders Day: February 16

Boiler Code Day: March 12

Heritage Day: April 7

Summer Annual Meeting @The Franklin Institute – June 12.

Engineers Needed to Help in Middle School Science Classes

RE-SEED (Retirees Enhancing Science Education through Experiments and Demonstrations) is a Northeastern University program that prepares engineers and scientists to provide in-classroom support to middle school science teachers with teaching the physical sciences.

After completing a comprehensive FREE training program, participants volunteer in a middle school on a regular basis often with another volunteer as a partner. Since RE-SEED began in 1991, close to 500 volunteers have been trained in about 100 communities throughout the country offering about 500,000 hours of their time.

Upcoming training programs will be held in Massachusetts (Boston, Lowell, and Worcester areas), New York (West Nyack), and California (Palo Alto). If you would like to participate, but do not live in one of these areas, we will work with you to explore the possibility of starting a RE-SEED chapter in your area. You can reach us at 888-742-2424 or reseed@neu.edu. You can also visit us on the web at www.reseed.neu.edu.

ASME and NSBE Sign Joint Membership Agreement

ASME and NSBE (National Society of Black Engineers) have signed a one-year joint membership agreement, which offers a 50 percent discount to members of each society to join and participate in the other society's programs.

With more than 15,000 collegiate, professional and pre-college students in its ranks, the NSBE is the largest student-managed organization in the U.S. The NSBE aims to increase the number of Black engineers who excel academically, succeed professionally and positively impact the community. It also strives to promote public awareness of engineering and the opportunities for Blacks, and other underrepresented groups to participate as a representative body on issues and developments that affect the careers of minority engineers.

"We welcome the opportunity to partner with ASME to provide our members with technical information and additional networking opportunities with other engineers in their field of interest," said Michele Lezama, NSBE executive director. "We hope that this will just be the beginning of many joint ventures between our societies."

The joint membership agreement allows members of NSBE to receive a 50 percent discount off the ASME membership dues, while its student members can join ASME for \$15. Members of ASME will receive a 50 percent discount off the NSBE member/student member rate. Joint membership will also provide an opportunity to broaden and improve membership benefits and strengthen academic and professional development pursuits.

"We see this joint membership agreement as an opportunity to reach out to all engineers, reinforce our commitment to diversity and more effectively serve the engineering community," said Virgil Carter, ASME's executive director. "We hope to use this as a model for partnerships with other organizations that can benefit from ASME's community and technical knowledge."

ASME members interested in taking advantage of the joint membership package with NSBE can get more details and join through the "Members Only" area of ASME.org

Student Activity Calendar

January

Jan. 31 [Gas Turbine Industrial Fellows Programs](#) – applications deadline

Jan. 31 Those who have not [renewed](#) their 2004-05 memberships are dropped.

February

Feb. 1 [Student Section Advisor Award](#) Nomination deadline

Feb. 1 Abstract Deadline: [NDE Student Paper Competition](#)

Feb. 15 [Arthur L. Williston Award Contest](#) – (Civic Service Paper) manuscript due

Feb. 20-26 [National Engineers Week](#)

March

* Entry deadline for the [Human Powered Vehicle \(HPV\) Competition](#)

March 1 Charles T. Main nomination deadline

March 5 [Fluids Engineering Division](#) Young Engineer Paper Contest abstract due

March 15 Application Deadline: [2005-06 ASME Scholarship](#)

March 15 [ASME Auxiliary Scholarship](#) – application deadline

March 15 [Petroleum Division](#) Student Scholarship Program – application deadline

* Attend your [Regional Student Conference](#)

Partners In Mechanical Engineering Grants Available

The Board on Diversity and Outreach is accepting applications for Partners in Mechanical Engineering grants. All ASME Sections are eligible to apply. Grants are made on a first-come, first-served basis. For more information, go to <http://www.asme.org/communities/diversities/bdo/partners.html>

Nominate a Young Engineer for the Young Engineer's Award

Nominations are being accepted for ASME members who have made great strides in the engineering profession, the work of the society and has continuous membership since becoming an ASME student member. Candidates should have earned his/her baccalaureate degree in Mechanical Engineering between the years **March 1, 1999 - March 1, 2001**.

The grand prize is \$5000 plus a prepaid life ASME membership. All nominations must be received no later than March 1, 2005.

To learn more about the selection criteria and how to nominate, log onto:
<http://www.asme.org/cma/og/youngengineer.html>

Renew Your Membership Today!

It's not too late to renew your membership for 2004-05! Members that do not renew by Jan. 31 will be dropped and will no longer receive *ME magazine*, or any other benefits of membership. To see our new member benefits including the Communities of Practice, visit ASME online at <http://www.asme.org/member/benefits/index.html>.

To renew now, call Info Central at 800-843-2763 or 1-973-882-1167, email infocentral@asme.org or renew online at <https://members.asme.org/catalog/DuesRenewal.cfm>

New Benefit for ASME Members!

ASME members can now subscribe to Chemical Engineering Progress (CEP) from AIChE at their member price of \$30 – a savings of \$105 the non-member price.

This is a great benefit for mechanical engineers who work with chemical engineers or in an industry where up to date knowledge of chemical engineering is a plus. For information about Chemical Engineering Progress, please check the AIChE website (<http://www.cepmagazine.org/>).

To take advantage of this offer, send your check for \$30, made out to AIChE to: John Beck, Manager, Member Records, ASME, Three Park Avenue, New York, NY 10016. Please include your ASME member number in the request. For questions, please contact John Beck at 212-591-8463 or beckj@asme.org

EMentoring for Early Career Professionals

Sign up for one of our MENTORS - a network of practicing engineers that can offer you advice, direction and provide you with resources that you can use to manage your career.

Participation will give you the opportunity to expand your knowledge base, increase your communication and leadership skills and much more.

<http://www.careerlifeguide.asme.org/recentgrad/ementoring.html>