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1-800-843-2763

November 2008 Newsletter

Message from the Chair

October Meeting Recap:

The October meeting was held at the OPPD North Omaha Power Plant. In attendance were 29 members, 2 guests, and 13 students. The plant has five generating units burning coal and natural gas to produce up to 700MW of electricity. The tour included a look inside the unit 4 boiler and other equipment as it was out of service for an overhaul. It was a pleasure to have a large student turnout as South Dakota School of Mines and Technology was passing through Omaha on their way to a leadership conference in Des Moines. THANKS for the great participation in this event!

The November event is the first of two Professional Development courses for the year on November 17th with the topic 'Metallurgy Fundamentals for Engineers.' This will earn you 8 PD hours of continuing education and will be a joint session with Society of Women Engineers at Mahoney State Park. See details below in this flyer with the course outline attached. **The deadline for sign up is Monday, November 10th.**

If you cannot join us for the PD course, have a great Thanksgiving and plan to attend the Christmas play in December.

Sincerely,

Gary Ruhl
ASME, Nebraska Section Chair.

2008 ASME Nebraska Section planned program is as follows:

Sept 3rd to Oct 15th - PE Refresher Course - complete
September 16th - 3M Plant Tour Valley, NE - complete
October 9th - OPPD North Omaha Power Station - complete
November 17th - Metallurgy PD Course
December 13th - Mahoney Christmas Play
January - Duncan Aviation tour or Speaker/Social Event
February - ASHRAE Joint Luncheon; E-Week Banquet
March - PD Course
April - Becton Dickenson Tour, Columbus, NE
May - Magnus Farley Tour, Fremont, NE
June - NSPE Golf Outing; OPPD Power Drive Competition

PROFESSIONAL DEVELOPMENT COURSE
METALLURGY FUNDAMENTALS
FOR ENGINEERS

LAST CHANCE TO SIGN-UP!!!!

HOSTED BY ASME DISTRICT C - NEBRASKA SECTION

November 17, 2008

8:00 a.m. – 4:30 p.m.

Mahoney State Park Lodge
Ashland, NE

Earn 8 Professional Development Hours

Register and pay on-line via credit card through the 'Register' in the link buttons below.

http://sections.asme.org/nebraska/prof_dev_2008.html

The Metallurgy Fundamentals for Engineers is a course designed to discuss the practical applications of Metallurgy in the world of engineering as it applies to industry. Topics to be covered are listed in a course outline below. The presenter is John Makinson, PhD, PE. John has been employed in a variety of companies including being a Mechanical Metallurgical Engineer for Hornady Mfg., Plant Engineer for Lincoln Plating, Graduate Research assistant at UNL, Assistant Professor for UNL Mechanical Engineering Department, Senior Director at RSI Materials Engineering and currently Senior Design Engineer at Lincoln Composites. John has authored and co-authored many peer reviewed articles in the field of research metallurgy however, he has also worked in a hands-on capacity in heavy industry providing materials science and mechanical engineering consulting services to clients as diverse as Union Pacific Railroad Engineering and Freight Car Maintenance Departments, to corrosion surveys of water towers, to instrumented testing of crack propagation rates in large light towers.

Course fee includes course materials, PDH certificate, continental breakfast, lunch, refreshments, and state park entry permit.

Reservations are required and are due by November 10th.

Contact Hans Iwand at
402.827.9328 or hans@railsciences.com .

Make payment to
ASME – Nebraska Section
or pay on-line through the link above.

Send to
Hans Iwand, RSI, 605 N.13th St.
Omaha, NE. 68102

Course outline

1. Introduction
 - a. What is a metal?
 - b. Basic Engineering Assumptions
 - c. Crystallography / dislocations - fundamentals of plastic flow
 - d. Short introduction to the stress-strain diagram
 - e. Yield, UTS, Elongation
2. Strengthening Mechanisms
 - a. Grain boundaries
 - i. Hall Petch
 - ii. measurement
 - iii. low angle GB
 - b. Yield point phenomenon
 - i. Upper/lower - Luders band
 - ii. Strain Aging
 - c. Solid Solution
 - d. Two-Phase Aggregates
 - e. Fine Particles
 - i. Precipitation hardening
 - f. Martensite Transformation
 - g. Cold Work
 - i. Strain Hardening
 - ii. Annealing
 - iii. Bauschinger Effect
 - iv. Crystallographic Texture
3. Fracture
 - a. Types
 - i. Ductile
 - ii. Brittle
 - b. Theoretical Strength of Metals
 - c. Notch Effects
 - d. Ductile to Brittle Transition Temperature (DBTT)
 - i. Phenomenon
 - ii. Impact testing
 - iii. Metallurgical Variables that Affect DBTT
 - e. Temper Embrittlement of steels
 - i. One-step
 - ii. Two-step
 - f. Hydrogen Embrittlement
 - g. Liquid Metal Embrittlement
 - h. Neutron Embrittlement
 - i. Strain Rate Sensitivity
4. Fatigue of Metals
 - a. Stress Cycles
 - b. S-N Curve
 - c. Statistical Nature of Fatigue
 - d. Effect of Mean Stress on Fatigue
 - e. Structural Features of Fatigue Cracking
 - i. Stages of Fatigue
 - ii. Fatigue Crack Propagation
 - f. Effect of Stress Concentrations
 - g. Effect of Size

- h. Effect of Temperature
 - i. Effect of Surface Conditions
 - i. Roughness
 - ii. Residual Stresses
 - j. Cumulative Fatigue Damage
 - k. Metallurgical Variables
 - l. Design for Fatigue
 - i. Infinite-Life
 - ii. Safe-Life
 - iii. Fail-Safe
 - iv. Damage-Tolerant
 - m. Corrosion Fatigue
 - n. Fretting
- 5. Corrosion
 - a. Fundamentals
 - b. Galvanic
 - c. Uniform
 - d. Stress Corrosion Cracking
 - e. Pitting
- 6. Mechanical Properties and Their Measurements
 - a. Fundamentals of tensile testing
 - b. Fundamentals of hardness testing
 - c. Fundamentals of fatigue testing
- 7. Common Engineering Metals and Alloys
 - a. Steel and cast irons
 - i. Definition - The iron-carbon phase diagram
 - ii. Martensite transformation - more detail
 - iii. Effect of alloying elements
 - b. Stainless steels
 - i. Ferritic
 - ii. Martensitic
 - iii. Austenitic
 - iv. Precipitation-hardening
 - v. Duplex
 - vi. Corrosion
 - c. Aluminum and Aluminum Alloys
 - i. Classification
 - ii. Hardening mechanisms
 - iii. Temper Designations
 - iv. Corrosion / embrittlement
 - d. Copper and Copper Alloys
 - i. Classification
 - ii. Corrosion / embrittlement
 - 1. Stress-corrosion
 - 2. Dezincification
- 8. Failure & Analysis
 - a. Case histories and examples

Tomorrow's Leaders ...
Are **YOU** ready for the Challenge?

Do you feel strongly about the direction of ASME? Are you passionate about new ideas and initiatives? Are you ready to step up and lead? Become an ASME Leader TODAY!

Consider running in June 2009 for the following offices:

President – one year term

Board of Governor – 3 year term

Vice President (Centers Sector) – 3 year term

Vice President of Professional Development,
Practice & Ethics

Vice President of Public Awareness

Codes and Standards Sector

Vice President of Standardization and Testing

Knowledge and Community Sector

Vice President of Affinity Communities

Vice President of Financial Operations

Visit the Nominating Committee Website at http://www.asme.org/Governance/Nominating/Nominating_Committee.cfm or email RuthAnn Bigley at bigleyr@asme.org for details.

VOLUNTEERS NEEDED! ENGINEER YOUR LIFE

Help Inspire the Next Generation of Young Women to
Become Engineering Leaders!

ASME (as part of its Engineers Week collaboration) actively supports Engineer Your Life (EYL), the national campaign to encourage college-bound girls to consider engineering enrollment.

A key element of EYL outreach is collaboration with the college counseling community through the National Association for College Admission Counseling (NACAC).

We are asking for volunteers – engineering and engineering students – for high school fairs throughout the U.S. this fall.

Cities, dates and locations of fall fairs can be found at http://www.eweek.org/site/pdfs/college_fair.pdf For more information or to sign up, contact Marina Stenos at 212 591 8614 or stenosm@asme.org. For more information about Engineer Your Life, visit www.EngineerYourLife.org



THE ASME
FOUNDATION

The ASME Foundation Grants Program funds programs that support students and early career engineers and activities that help shape their careers. Planned gifts to the Foundation are the groundwork on which funding for scholarships and grants is based, helping in many ways to inform the future of engineering.

A capital campaign, "World Class by Design," was launched in 1996 to endow the Grants Program. The focus of the Foundation Grants Program is three-pronged: technical literacy, specifically early (K-12) math and science literacy and tuition and scholarships at the college level; career planning and skills development to nurture early career engineers; and technologically sound public policy stewardship.

For calendar year 2008, the Foundation Grants Program awarded support to six programs. Five of those specifically benefit students and early career engineers. Those projects are: Increasing ASME Impact at the Graduate Level, World-Class Engineering Student/Engineer Design, Students Engineering a Sustainable Planet, *Heroes of Engineering* Comic Education Series and ASME Faculty Development Workshops – Understanding Student Diversity; Increasing Learning.

The ASME Grants Program is trying to streamline the application and reporting processes moving forward. Currently, there is \$264,300 available in funding for approved ASME programming in calendar year 2009. Proposals selected for funding will be announced following the meeting of the Foundation Board of Directors at Congress in November in Boston, MA.

ASME Salary Survey

Participate in ASME's Salary Survey get a **FREE** salary report based on your experience level and geographic area. Visit <https://asme.enetrix.com> and see how you compare!

ASME Member Exclusive! Purchase comprehensive, custom reports at a discount price.



Great Opportunities, Great Work, Great People Engineers without Borders – USA



Engineers Without Borders - USA (EWB-USA) is a non-profit humanitarian organization established to partner with developing communities worldwide in order to improve their quality of life. This partnership involves the implementation of sustainable engineering projects, while involving and training internationally responsible engineers and engineering students.

ASME and EWB-USA have been collaborating for several years on a variety of projects. You can get involved too! EWB-USA offers several opportunities to become involved in building a better world one community at a time, whether you are an engineering student (undergraduate or graduate; a student in some other field of study; a professional engineer or university faculty member; or, not an engineer at all!

There are several EWB_USA workshops taking place this fall around the country. More details on these workshops are available at <http://www.ewb-usa.org/Fallworkshops.php>. To find out how your Student Section can get involved in EWB-USA, contact Marina Stenos at stenosm@asme.org or 212 591 8614.

2008-09 Diversity Action Grants now Available

Sponsored by ASME's Center for Leadership and Diversity, the Diversity Action Grants program provides awards ranging from \$500 to \$1500 to ASME Student Sections to sponsor events which:

- Promote the inclusion of women and under-represented minorities in ASME Student Sections and in mechanical engineering;
- Inspire K-12 students to excel in science, technology, engineering and mathematics (STEM) education;
- Engage international participation in ASME Student Sections;
- Assist minority- and/or women-owned businesses solve engineering design problems

Projects that emphasize collaborative partnerships with other engineering societies on campus, as well as international in scope are strongly encouraged to apply.

To be considered for the 2008-09 academic year, all applications should be submitted by November 10. For more information on the DAG program and an online application, contact Marina Stenos at

stenosm@asme.org, or visit http://www.asme.org/Communities/Diversity/Diversity_Action_Grant.cfm

Call for Mentors! Ementoring Opportunities for Early Career Engineers.

Mentors are a great way to gain knowledge and learn from the experiences of experts in your field. ASME offers an e-mentoring service right at your fingers!

To learn more and sign up for mentors, or to register to become a mentor, log onto http://www.asme.org/jobs/mentoring/Ementoring_Early_Career.cfm or contact Noel Netel at neteln@asme.org

Volunteer with ASME Using the Volunteer Opportunities Bulletin Board

Have you thought about volunteering at ASME, but don't know where to start? Try the Volunteer Opportunities Bulletin Board (VOBB). Whether you are an experienced ASME volunteer or new member looking to make a difference, the VOBB is the place for you to start. As a tool designed to help volunteer leaders promote local Section and Society-wide positions, it opens the door to new opportunities. The opportunities for involvement include pre-college and educational activities, standards development, government relations, honors and awards selection, the development of new programs and more.

To learn more about the VOBB and the volunteer positions available, go to <http://volunteer.asme.org/vobb/>.

THE ASME FOUNDATION

Big Announcement

The ASME Foundation promised something big at Congress this month. Did we deliver? Were you front and center at the Keynote Address? If not, stay tuned for a recap in the December Section Newsletter!

ASME Salary Survey

The ASME E-Library is a members-only benefit that allows you to access online collections of engineering reference books to help you answer questions and find practical solutions to daily on-the-job problems.

As an added bonus, the ASME E-Library is powered by Knovel, whose interactive and user-friendly technology gives you the ability to manipulate and search for content across the entire collection quickly and easily.

To learn more, go to

<http://www.asme.org/Membership/Benefits/Profession>

Programs and Activities Training Committee

Seasoned members: Looking for a way to pass on your expertise to new members? New members: Looking for a way to increase your participation in ASME at your own pace?

The Knowledge and Community (K&C) Sector recently formed a Training Committee to work on the following:

1. Review and update existing skills and knowledge material. Volunteers use this material, called the body of knowledge (BOK), at each K&C leadership level.
2. Develop and implement an annual training plan for leaders in the K&C Sector. The training plan will include face-to-face conferences, webinars, online self-study material, and information that can be downloaded for local use.
3. Work closely with other ASME members to provide world-class leadership training and orientation for volunteer leaders, which will contribute to the quality of leadership at all levels.
4. Develop the knowledge and skills needed to lead ASME units in forming collaborative efforts, sharing best practices, providing forums for outreach, focusing programs on critical issues (students, early career engineers, industry, new technologies, etc.), encouraging more active volunteer participation, and developing new business opportunities.

Choose topics that most interest you. Contribute your special talents (speaking, teaching, editing, etc.) to enable learning at training events in your local, district or society events. We'd love to have you.

To apply, please visit the Volunteer Opportunities Bulletin Board at

<http://volunteer.asme.org/vobb/>

and select our position posted on the "Looking to Volunteer?" page.