



The American Society of  
Mechanical Engineers

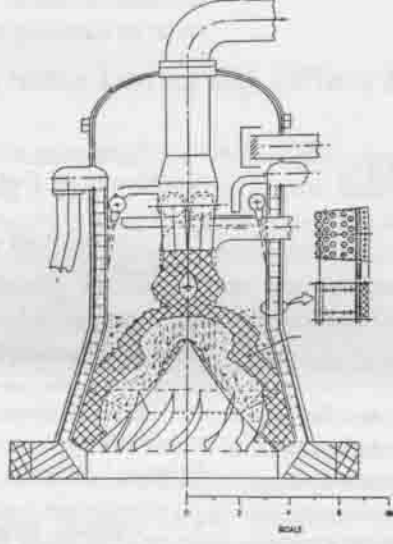
ASME San Francisco Section

# Newsletter

April 1993

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## April Meeting: Inertial Confinement Fusion Reactors



Date: Wednesday, 28 April 1993  
Location: Spengers Fish Grotto  
1919 4th Street  
Berkeley, near I-80 and University Ave  
Menu: Orange Roughy Filet  
or Baked Chicken Breast  
Time: 6:00 PM Cocktails  
7:00 PM Dinner  
8:00 PM Program  
Cost: \$18 ASME members  
\$20 Non-members  
\$ 8 Students  
RSVP: S.F. ASME  
(415)721-4478  
RSVP before 23 April 1993  
with choice of entree

This month's meeting is joint with the San Francisco Chapter of the American Nuclear Society (ANS).

### Prof. Per Peterson Department of Nuclear Engineering University of California, Berkeley

Prof. Peterson's talk will be on the topic of blast attenuation in the HYLIFE-II Inertial Confinement Fusion (ICF) Reactor. To generate 1000 MW of electricity by exploding targets of deuterium and tritium with heavy ion or laser beams, an ICF power reactor must maintain repetition rates of 6 to 8 Hz for nominal target yields (350 MJ). Extracting useful energy from what are essentially miniature hydrogen bomb explosions is not trivial, but extensive research by Lawrence Livermore National Laboratory, U.C. Berkeley, and others has generated promising conceptual reactor designs. Among these the HYLIFE-II design is unique, as it uses compact jets of molten sand to shield the reactor structure from the intense neutron emission from the targets. This presentation will address the key design issues for ICF reactors for power generation, emphasizing recent numerical and experimental simulations of the X-ray ablation of the jet material, and the subsequent blast propagation and venting processes.

### Message from the Chair...

Since the oil crises of the 1970's, energy from nuclear fusion has been seen as a panacea to the ills of fossil fuel and uranium resource depletion. Many promising steps in achieving the fusion energy "breakeven" point were widely reported from the late '70's through the mid '80's. Oddly, it seems the only news on fusion since then was the "cold fusion" hype of 1988 (or was it early 1989?). Meanwhile, scientists and engineers at Lawrence Livermore Lab and around the world have continued to advance the temperature-density conditions achieved in experimental reactors. Our April meeting, to be held jointly with the American Nuclear Society, will examine progress and opportunities in "inertial confinement" fusion, one of the leading candidates for commercial reactors

Rich Myhre

### Tribology

#### 1993 ASM Monterey Seminar, 16 - 18 April, 1993

For over thirty years the Golden Gate Chapter of ASM International has sponsored a weekend gathering in the beautiful setting of Monterey, California. The Monterey Seminar features a one day symposium on a selected materials topic with emphasis on current developments. This year's technical session topic, "Tribology", will include fundamental aspects as well as engineering developments which encompass topics in lubrication, friction, and wear. The speakers for the technical session comprise an outstanding group of experts in the subject field, and their reputations portend a very educational session. In addition to the technical program, a golf outing on Friday and social activities on Friday and Saturday evening afford opportunities to renew old friendships and make new acquaintance with colleagues in the materials field. Spouses/guests are also encouraged to attend the seminar functions. The 35th Annual Monterey Seminar promises to be an educational and memorable experience.

#### Presentations/Guest Speakers

- \* "Diagnosing and Solving Wear Problems," Mark D. Bell, Preventative Metallurgy, Galt, CA.
- \* "Fundamentals of Lubrication," Douglas Godfrey, Wear Analysis, San Rafael, CA.
- \* "Wear Models: Why We Cannot Predict Friction or Product Wear Life," Ken Ludema, University of Michigan, Ann Arbor, MI.
- \* "Erosion Corrosion at Elevated Temperatures in Combustion Boilers and Chemical Processing Reaction Vessels," Alan V. Levy, Lawrence Berkeley Laboratory, Berkeley CA.
- \* "Tribology Influences on Rolling Element Performance: Concentrated Contacts," P.S. Orvos, Timken Co., Canton OH.

For more information, contact Russ Klehn, ASM, (510)242-3396.

### Enjoy a Fresh Brew with ASME

Featuring a generous, sturdy design, these cobalt blue mugs emblazoned with the ASME cloverleaf in microwavable gold provide a quick reference to the San Francisco section's and the Western Regional Office's phone numbers. You can use your steam tables for a coaster. \$6.50, including postage (\$5 if you buy one at a dinner meeting).

### May Meeting

Date: Wednesday, 19 May 1993  
Place: Spengers Fish Grotto  
Speaker: Paul Pires (Epilogics)  
Topic: The Geared Continuously Variable Transmission

### Congratulations to the 1993 ASME Farbar Award Recipients

#### UC Berkeley

Adrian Adamson  
Brandon Muramatsu  
Allison Okamura

#### SF State

Teresa Perez  
Ursula Metson  
Francis McCormick  
Leroy Gullette

#### Cal Maritime Academy

Vikram Shetty  
Suzanne Wolfe

The Farbar Awards are given every year by the San Francisco Section to recognize outstanding leadership, scholarship and service in the field of Mechanical Engineering by college students. The funding of these awards is through section member donations to the Farbar Fund. The recipients this year were chosen from a long list of very qualified candidates. ASME extends its warmest congratulations to these outstanding young people.

### San Francisco State University Offers Free Energy Audits

Thanks to a contract with University City Science Center, of Philadelphia, under the auspices of the Department of Energy, SFSU's Division of Engineering will soon be offering a free new service to small and medium sized manufacturers. Under this program, engineering faculty and student teams in the newly created Energy Analysis and Diagnostic Center (EADC) conduct energy audits for interested manufacturers. The teams conduct one day visits at a mutually agreeable time, look at the plant's processes, and perform measurements related to energy usage. Following an analysis, the team prepares a report recommending ways to reduce energy consumption, including estimated costs and payback period for implementation. Clients do not have to pay for this service and are under no obligation to implement the recommendations.

This service is intended solely for small to medium sized manufacturers within 150 miles of San Francisco with fewer than 500 employees and less than \$75,000,000 gross sales per year for a given plant. The manufacturer's energy bill must be \$1.75 million or less and there must be a lack of in-house energy expertise at the plant. If firms meet three of these four criteria, they are eligible for this service. This program is not intended to duplicate similar services available from other sources. There are 21 other EADC's in operation across the country at universities with ABET-accredited engineering programs. In addition to providing a service to manufacturers, the EADC program is designed to enrich the engineering experience of engineering faculty and students by involving them with industry. For information on EADC, call (415)338-6218, or write to the administrator, Ron Trauner, at the following address: Energy Analysis and Diagnostic Center, Division of Engineering, San Francisco State University, 1600 Holloway Drive, San Francisco CA 94132.

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### Annual Section Dues Donation

If you've already sent this year's dues donation, thank you very much. If you haven't, here's a second chance. Each year, the San Francisco Section collects a dues donation to aid with the daily operation of the section. Additionally, you may choose to add an additional donation to support the section's student related activities. Please check the appropriate items below. Your generous support is sincerely appreciated.

Annual Dues Donation: \_\_\_\_\_ \$10 \_\_\_\_\_ \$20 \_\_\_\_\_ \$30 \_\_\_\_\_ Other  
Additional Donation to Student Fund: \_\_\_\_\_ \$10 \_\_\_\_\_ \$20 \_\_\_\_\_ \$30 \_\_\_\_\_ Other  
Additional Donation to Farber Scholarship Fund: \_\_\_\_\_ \$10 \_\_\_\_\_ \$20 \_\_\_\_\_ \$30 \_\_\_\_\_ Other

Total Enclosed \$ \_\_\_\_\_

Return in a sealed envelope to:  
ASME San Francisco Section  
c/o Prof. Dennis K. Lieu  
5128 Etcheverry Hall  
University of California  
Berkeley, CA 94720

Please do not send cash.

Make checks payable to: ASME San Francisco Section

### 1992-1993 San Francisco Section Executive Council

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### JOB BULLETIN 1-800-624-9002

#### MEMBERS

Looking for a job? Contact the ASME Western Regional Office to obtain a copy of the Job Bulletin.

#### COMPANIES

Looking for mechanical engineers? Contact ASME Western Regional Office to place a free listing in the Job Bulletin, or to obtain information regarding advertising in Mechanical Engineering magazine.

San Francisco Section Executive Council meetings are held at 6:15 PM the first Wednesday of each month, September through May. The location is the offices of Bevilacqua-Knight (BK), 501 14th Street, Suite 210 (second floor), Oakland. BK1 is in the Oakland City Center complex next to the 12th Street BART station. Validated parking is available in the City Center garage. All members who are interested in helping organize events for the San Francisco Section are invited to attend.

#### Advertising Space Available

This newsletter is published monthly, and reaches approximately 1500 professional and 250 student members. \$200 Full page, \$100 1/2 page, \$50 1/4 page, \$20 business card, \$10 25 word classified. Contact Dennis Lieu (510) 642-4014

Address Changes, Membership Problems and Information. Contact ASME Western Regional Office 1-800-624-9002