

## 6<sup>TH</sup> ANNUAL WATER BOTTLE ROCKET LAUNCH

Our Section is again proud to host the Water Bottle Rocket Launch. This year's event is being held on Saturday, April 9, at Fiesta Island in Mission Bay, from 10:00 am until 2:00 pm.

In conjunction with the Jamul Chaparras 4-H Club, all of the rocket launching equipment and helpers will be provided. You can build your rockets then and there with empty 2-liter bottles or you can bring the rockets that you already built. Plain 2-liter bottles can also be launched. Everyone will have an opportunity to make several launches and to modify their rocket design and/or propellant ratio to optimize rocket performance. For details on building water bottle rockets, visit [sections.asme.org/sandiego/waterrocket.htm](http://sections.asme.org/sandiego/waterrocket.htm).

This free event is open to the whole family. Anyone who would like to participate can. Snacks and soda will be provided. Contact Katherine Biederman (858-513-8163, [kflores@tecategroup.com](mailto:kflores@tecategroup.com)) for more information. Hope to see you there on April 9!



## TOUR OF HYDRANAUTICS



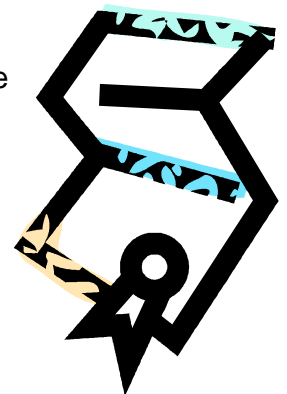
A factory tour to learn about the manufacturing of high performance membranes for water treatment is planned for Friday, April 15, at Hydranautics' facility in Oceanside. The tour starts at 4:00 pm and will be

followed by optional dinner at a restaurant at the harbor. Visit our Section website for updates, including directions and map. Contact Louis Berlin (619-525-8382, [berlinl@pbworld.com](mailto:berlinl@pbworld.com)) to RSVP or for questions.

## ANNUAL AWARDS BANQUET

Mark your calendar for this annual end-of-year event to honor and recognize the Science Fair winners, the Mechanical Engineering student paper winners, the 25-yr and 50-yr ASME members, other special awards, and your local volunteers. The banquet will be held on Friday, May 20, at Tom Ham's Lighthouse in Harbor Island.

Watch for all the details in the next issue of the newsletter.



## Science and Engineering Fair Judging

Three (3) judges are needed to select two (2) ASME winners at the Greater San Diego Science and Engineering Fair on Wednesday, March 16 at Balboa Park. Judging is from 12:30 pm to 2:30 pm. Please contact David Hill (cell 619-540-1778, [dhill@trcsolutions.com](mailto:dhill@trcsolutions.com)) if you can help. There is plenty of parking.

## Tours and Meetings Report

### **Bilstein Shocks Tour**

24 members, students, and guests toured the Bilstein Shocks facility in Poway on January 13. The tour was perhaps better described as a mini-seminar on shocks!

### **South Bay Power Plant Tour**

17 members and guests toured the power plant on January 21. 12 also met for lunch before. They all found the 2-hour tour to be interesting. The opportunity for networking was much appreciated.

### **National Engineers Week Banquet, Awards, and Activities**

National Engineers Week San Diego 2005 Awards Banquet was held on February 25 at USD's Joan Kroc Center for Peace and Justice. 220 engineers and guests from 19 societies filled the banquet hall. Five outstanding engineers awards were presented. The finale to the evening was the keynote speaker from the Jet Propulsion Laboratory discussing planetary exploration to Saturn, Mars, and Titan.

The Outstanding Engineer Award was presented to **Ken Discenza** – CSPE of Site Designs Associates, Inc. for his role as Project Manager for the development of Fairbanks County Club, which included a golf course and residential housing.

The Outstanding Engineering Educator Award was presented to **Dr. Nihad Hussain** – ASME, Professor at San Diego State University since 1969. Dr. Hussain has served as a research faculty fellow at both NASA-Lewis Research Center and the U.S. Air Force at Wright Patterson AFB and as a consultant to several engineering companies and state agencies. He has contributed more than thirty articles to the heat transfer/fluid mechanics literature.

The Outstanding Engineering Project Award was presented to **Jim Benson**, the Founding Chairman and Chief Executive Officer of SpaceDev for the SpaceShipOne Rocket Motor. SpaceShipOne with SpaceDev's rocket motor traveled to an altitude of nearly 70 miles twice to win the \$10 million dollar X-Prize.

The Outstanding Engineering Service Award was presented to **Dr. Nip Shah** – ASME Fellow for his role as the organizer of ASME's highly successful Human Powered Submarine Competitions in 2002, 2004, and 2006.

Our Section and SDSU's Student Section had a table at this year's National Engineers Week Mall Exhibit on Saturday at Grossmont Center. The SDSU students brought a mountain bike front wheel assembly with DC brushless assist motor integrated into the front disc brake rotor. Many parents and students showed interest in the display and in engineering as an education/career path. Many ASME magazines and ASME anniversary items were given away.

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### ***Nominations and Elections***

*The following have been nominated to serve as Executive Committee Members for the 2005-2006 Society fiscal year:*

<i>Chair:</i>	<i>Ian Parkinson</i>
<i>Vice Chair:</i>	<i>John Corrado</i>
<i>Treasurer:</i>	<i>Katherine Biederman</i>
<i>Secretary:</i>	<i>James Powell</i>
<i>Directors (5):</i>	<i>Nihad Hussain, York Lew, Nip Shah, Phil Young, Steve Zawadzki</i>
<i>Nominating Committee:</i>	<i>Phil Young</i>

*Other elected positions available are two (2) more Nominating Committee members. Contact Phil Young if you are interested in these positions and are willing to work in a team environment. Nominations by petition in accordance with Section Bylaws are accepted until April 9. The ballot will be mailed with the next newsletter.*

### Jobs Available

**Northrop Grumman Space Technology Radio Systems**, a leader in the development of software defined radios for the next generation of integrated avionics systems, has local openings for Digital Design Engineers, Electro Mechanical Engineers, Component Engineers, and Part Developers. Apply to jim.donnelly@ngc.com or on line (and review complete job descriptions) at www.ngstcareers.com.

**Atigo, Inc.**, a startup company, is looking for a senior level Mechanical Engineer to lead their design efforts for a new line of automotive safety products. The ideal candidate will have a sizable portfolio of successful product designs, developed both for work and for personal projects and be proficient with CAD systems such as SolidWorks and also be comfortable working in a machine shop. The ability to work without supervision and a "do whatever is needed to get the job done" attitude are essential. This is a part-time position that will grow into a full-time position as circumstances permit. Compensation will include equity (stock options or restricted stock grants). For further details contact Brian Chamberlin, President, Atigo, Inc., 5525 Delacroix Way, Yorba Linda, CA 92887, 714-692-9400.

### College Student News

#### SDSU

The students continue to work on several projects: the mini-Baja car for the race near Tucson, the Challenge X Vehicle Design Competition, and Human Powered Vehicle. If you or your company can donate materials, services, or funds for any of the projects, please contact Michael Cacciotti, the SDSU ASME Student Section Chair, MECacciotti@yahoo.com.

#### USD

An ASME Student Section has been approved and chartered. Look out, SDSU and UCSD, here comes USD. If you want to be kept abreast of the progress of the program, contact Dr. Frank Jacobitz, jacobitz@sandiego.edu. USD will again be sponsoring the Walk On Water contest on April 23.

#### 10 COMMON FEA MISTAKES, by David Hall, Western Sun Engineering and Consulting, dphall@earlink.net

(No endorsement is implied)

Engineers have increasingly relied on computers and finite element analysis (FEA) to solve once insolvable problems. However, failure by users to know the limitations of the software and model can lead to incorrect conclusions. Listed below are ten errors that can virtually guarantee problems:

**BLINDLY TRUST THE SOFTWARE** - This is the most important mistake and encompasses many of the other mistakes that will be discussed. Always be able explain everything, and explain it correctly. Just because the software calculated a solution does not mean that the solution is correct.

**MAKE A COMPLEX MODEL IMMEDIATELY** - Always start with a simple model and work up. Simple models are easier to verify so errors can be noticed earlier. Starting simple and going toward more complex will allow one to watch the solution converge.

**IGNORE THE ASSUMPTIONS** - FEA programs are developed using certain assumptions and methods. One should have a thorough understanding of the assumptions and limitations of the analysis methods that the software uses. Do not let the software compensate for lack of knowledge or information.

**DISTRIBUTED LOADS AREN'T (NECESSARILY)**

**DO NOT VERIFY THE SOLUTION** - One should verify every solution in each step of the analysis.

**USE LARGE MEMBERS TO CONNECT POINTS THAT MOVE TOGETHER** - Sometimes it is necessary to have two or more points that are to move together. Do not put in large, very stiff elements between the elements because this can cause ill conditioning of the matrix and erroneous results.

**DO NOT WORRY ABOUT PLANE TRIANGULAR ELEMENTS** - Sometimes it is easier to disregard the results in the area of triangular elements if that area is not important. But before using triangular elements, determine if other elements can be used or if skewing a rectangular element is possible.

**DO NOT WORRY ABOUT THINGS YOU CANNOT EXPLAIN** - This includes error messages and warnings. If the software gives error/warning messages and then continues on to completion with the results, do not assume the error messages are meaningless.

**DO NOT TAKE TRAINING** - Taking the training the software vendor offers will help one to understand the assumptions and limitations of the software.

**THROW AWAY THE HANDBOOKS** - If anything, buy more.

### **San Diego Section Contacts:**

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*Open positions: Tours,  
Programs, K-12 Relations,  
Member Interests,  
Membership Development,  
Professional Development,  
Diversity and Outreach, et al.*



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**Article C5.1.2**

The following has been quoted from the constitution of the American Society of Mechanical Engineers, current as March 15, 2003:

C5.1.2: The provisions of the Constitution and By-Laws and Society Policies established by the Board of Governors of the Society shall govern the procedure of all units of the Society but no action or obligation of such units shall be considered an action or obligation of the Society as a whole.

**DATED MATERIAL**



Monthly Planning Meetings are held on the first Wednesday of the month (except July) from 5:30 to 6:30 pm at the Hamilton Sundstrand office in Kearny Mesa (4400 Ruffin Road). All members are invited to attend. Please do contact Louis Berlin at 619-525-8382 or sandiego@asme.org to confirm the date and location if you plan to attend or if you would like to address the Executive Committee (because the building is secured and because the agenda is typically tight to keep the meeting duration to one hour).

**2005 CALENDAR**

(Please check our website for updates and more details.)

Mar 16	Judging at Science Fair, Balboa Park
Apr 9	Water Bottle Rocket Launch, Fiesta Island
Apr 15	Tour of Hydranautics Membranes Facility
May 20	Annual Section Awards Banquet
TBD	Judging of UCSD Student Papers
TBD	Judging of SDSU Senior Design Projects

**LINKS**

Here are several useful websites for ASME-San Diego Section members (please note the new URLs):

ASME San Diego Section: [sections.asme.org/sandiego](http://sections.asme.org/sandiego)

ASME Region IX (California, Nevada, and Hawaii):  
[regions.asme.org/regionix](http://regions.asme.org/regionix)

ASME Western Field Office (Regions VIII, IX, and XII):  
[regions.asme.org/wro](http://regions.asme.org/wro)

ASME International: [www.asme.org](http://www.asme.org)