

A CALL FOR VOLUNTEERS

SAVIAC Inaugurates S&V Committees

SAVIAC is looking for volunteers to develop new shock- and vibration-related technical committees. These technical committees will become an important part of the SAVIAC community. They will provide emphasis for the advancement of the state-of-the-art or the state-of-practice in particular areas, will bring together members of the community with like interests, and will aid the sharing of advancements in these areas.

The technical committees will be composed of knowledgeable volunteers from the community. The committees will be able to sponsor and develop special sessions or work shops at the annual Shock and Vibration Symposia. Their significant results will be pub-

lished in the SAVIAC Monthly Newsletter. The committees will be able to propose, sponsor, and oversee the development of monographs to be published by SAVIAC that will be added to the current catalog of monographs that are maintained by SAVIAC. With the agreement of our journal editors, the committees may sponsor special issues of one of the two SAVIAC journals, the journal of Shock and Vibration (edited by Professor Dan Inman), or the Journal of Critical Technology in Shock and Vibration (edited by Professor Walt Pilkey).

Participation on a committee as a member or chair will reward you in several ways. First, it will help you gain community support for your research,

and it will provide you with a forum to share your work. You will be recognized at SAVIAC functions, such as at the annual Monday Night Program Committee Reception of the Shock and Vibration Symposium, and on the SAVIAC web site. Committees will be honored with plaques, and outstanding committees may be recognized at the Opening Session of the Symposium.

We will support you in the development of your committee by providing training and assistance. We will provide you with contact information for prospective members, and we will offer open discussion pages at the SAVIAC web-site.

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Vibration and Shock Testing, Measurement, Analysis and Calibration, also ESS, HASS and HALT : An Excerpt Part II

The following is part II of a IV-part excerpt from Chapter 29 (of 31) of Wayne Tustin's forthcoming text "Vibration and Shock Testing, Measurement, Analysis and Calibration, also ESS, HASS and HALT". Part I may be read in the January 2003 edition of Current Awareness. Wayne describes the book as "A minimal-mathematics introduction," and says it "has applications in the fields of aeronautical, automotive, seismic and shipboard testing". Adjacent chapters are 28 "Measuring and Quantifying Mechanical Shock" and 30 "Mechanical Shock Testing". Further details are available from tustin@equipment-reliability.com.

Chapter 29 is entitled "SRS - The

Shock Response Spectrum". This month we bring you sections 29.4 "Studying earth motion" and 29.5 "Early studies of shipboard shock". In March, sections 29.6 "Understanding the SRS" and 29.7 "The maximax spectrum". Finally, in April, we'll bring you section 29.8 "Electronic SRS analysis".

Chapter 29 SRS - the Shock Response Spectrum

- 29.4 Studying earth motion
- 29.5 Early studies of shipboard shock

29.4 Studying Earth Motion On rare (fortunately) occasions, newspaper headlines around the world tell us of

damage and loss of life due to seismic activity. Certain areas are earthquake prone. In many of these, networks (Figure 29-3) of monitoring stations have been set up to facilitate earthquake studies.



Figure 29-3 A typical earthquake monitoring system, Puget Sound area, Washington State, USA

Accurate predicting of earthquakes in these and other areas is still a dream, but present knowledge has considerable value in reducing damage when earthquakes occur.

The southern California map in
continued on page 4

Modern Protective Structures * July 14-18, 2003

a Penn State engineering short course for engineers, architects, and safety and security managers. Catastrophic events such as the embassy bombings in Kenya and Tanzania, the destruction of the federal building in Oklahoma City, the attacks on the World Trade Center and the Pentagon, blasts in London's financial district, and explosions in petrochemical plants are becoming all-too-frequent occurrences. In today's world, knowledge of modern protective structures is vital.

The course gives engineers, architects, and safety and security managers practical background information relating to the performance and design requirements for hardened facilities. Comprehensive reviews and advanced research and development topics are designed to augment the technical capabilities of hardening and forensic engineers and scientists. In addition, a review of Blast Damage Assessment (BDA) issues provides forensic and rescue personnel with additional background information.

Additional features:

- Hands-on guided analysis and design activities
- Case-study, problem-solving approach
- Simulations and projects
- One-on-one contact with instructors for individual assistance
- Open computer lab sessions for extended analysis and problem solving

Take-aways:

- Computer disk with programs for analysis and design of protective structures
- Extensive design manual and reference materials

You will examine these topics:

- Fortification science and technology
- Analysis, design, assessment, and retrofit
- Industrial explosive safety
- Antiterrorist design
- Hazard sources
- Physical security
- Blast damage assessment

About the Instructor

Dr. Theodor Krauthammer, Penn State professor of civil engineering and director of the University's Protective Technology Center, is an internationally recognized researcher in enhanced structural performance and safety and has more than thirty years of experience in protective structures. He has served as a technical consultant to government and industry in the United States and abroad and is the former chairman of the American Concrete Institute (ACI) Committee 370 on Short Duration Dynamics and Vibratory Load Effects, a member of five technical committees of ACI, a member of the American Society of Civil Engineers (ASCE) Task Committee on Structural Design for Physical Security, and a member of the ASCE Committee on Shock and Vibratory Effects.

Continuing Education

Penn State is a Registered Provider with the AIA Continuing Education System. This program qualifies for 32 hours of Health, Safety, Welfare (HSW).

Fee and Registration

The fee covers all instruction, course materials, refreshment breaks, and lunches. Registrants are responsible for all other meals and lodging. The fee may be paid by check, money order, or purchase order (made payable to Penn State), or by major credit card (American Express, MasterCard, VISA, or Discover). An additional charge of \$30 will be added to all walk-in registrations.

To register, go to <http://www.cde.psu.edu/C&I/protectivestructures/> and complete the printable registration form, and return with fee to Penn State by June 24, 2002. Or complete and submit the online registration form. Fax registrations must be accompanied by credit card payment information. You may also register with your credit card by calling 814-863-5162 or 800-PSU-TODAY (778-8632; toll free within the United States). You will be notified promptly of any cancellations or schedule or program changes. Conferences and Institutes will confirm your enrollment in the program and provide information on travel, accommodations, final registration, and parking.

Refunds

All cancellations must be received in writing by mail or fax. Full refunds will be made for cancellations received by June 21, 2002. Refund requests made after that time will not be honored, and the participant or sponsoring organization is responsible for the fee. Anyone who is registered but cannot attend may send a substitute.

University Policies

Access--Penn State encourages individuals with disabilities to participate in its programs and activities. If you anticipate needing special accommodations or have questions about the physical access provided, please contact the conference planner at 814-863-5100 before your visit.

Cancellation--The University may cancel or postpone any course or activity because of insufficient enrollment or other unforeseen circumstances. If a program is canceled or postponed, the University will refund registration fees but cannot be held responsible for any other related costs, charges, or expenses, including cancellation/change charges assessed by airlines or travel agencies.

For More Information

About program content

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About registration

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Volunteers continued from page 1

The guidelines governing the development of SAVIAC-sanctioned committees are being developed and will be published in subsequent newsletters. Approval for SAVIAC committees will rest with the SAVIAC Executive Council.

If you have an idea for a technical committee, please drop me a short email with information on the topic and purpose of the committee, and who might be the prospective team members. We also are accepting recommendations on the rules governing the committees, along with what kind of additional support SAVIAC might provide.

Get Involved Volunteer

Call For Papers

74th Shock and Vibration Symposium

October 27-31, 2003
Red Lion Hanalei Hotel
San Diego, CA

Planning for the 74th Shock and Vibration Symposium is underway, with the selection of NSWC/Crane and SPAWAR as the Government Featured Organizations, Endevco as the Commercial Featured Organization, and the Red Lion Hanalei Hotel in San Diego as the location.

The Shock & Vibration Symposium is the oldest continuously held meeting dealing specifically with the structural dynamic behavior of air, sea, space, and ground vehicles and structures. The Symposium was established as a mechanism for the exchange of information among Government activities, private industry, and academia on current work and new developments. Presentations on work in progress are encouraged. Separate sessions are held for presentation of classified or limited-distribution material.

Presentations in the following subject areas are welcomed:

901D Case Studies	Dynamic Testing	Product Announcement/Facility
Active Vibration Control	Environmental Databases	Description
Ballistic Shock	Finite Element Analysis	Pyrotechnic Shock
Biodynamics	Fluid-Structure Interaction	Shock Characterization
Blast Design	Ground Shock	Shock Hardening
Combined Environments	Seismic Shock	Shock Qualification by Extension
Computational Structural Dynamics	Impact/Penetration Mechanics	Shock Test/Equipment Failure Modes
COTS	Instrumentation	Simulation Methods
Crash Dynamics	Isolation Systems	Specifications and Standards
Damage Identification	Large Structures	System Identification
Damping	Live Fire Testing	Test Criteria
Data Analysis	Machinery Diagnostics	Test Tailoring
Dynamic Analysis Methods	Machinery Vibration	Underwater Shock Testing
Dynamic Measurement	Material Dynamic Properties	Vibroacoustics
Dynamic Scale Modeling	Modal Analysis and Testing	

Two categories of presentations will be accepted: full papers, suitable for publication in the Symposium Proceedings; and short discussion topics, consisting of viewgraphs with no written paper. Full papers will have a 15 minute technical presentation time plus 5 minutes for questions, while short discussion topics will have a 10 minute presentation time with no question period.

Presentations will be accepted on the basis of their abstracts, which must be submitted by May 30, 2003. You are encouraged to submit online at www.saviac.org, click on 74th S&V Symposium Abstract Submittal. The Program Committee will review the abstracts during the June Program Committee meeting and authors will be notified of acceptance by June 26, 2003. The full paper presentations must meet the following standards: They must be previously unpublished and unrepresented, must be appropriate to community interests and must not be overtly commercial, except for papers in the Product/Facility session. Standards for short discussion topics are similar except that they may include previously presented or published material.

The Proceedings will be published on CD-ROM.

The paper due-date is October 17, 2003.

Questions should be directed to Joel Leifer, 301.596.0100 or joel.leifer@saviac.org.



Figure 29-4 Northridge Earthquake, California, 1994

Figure 29-4 illustrate equal intensity contour estimates in the vicinity of one earthquake-monitoring station. That earthquake caused much damage to nearby homes, streets, buildings and bridges. Note the damaged freeway bridge shown in Figure 29-5.

We need to record earthquakes in terms of magnitude and frequency content. If we know about earthquake forcing frequencies f_f , we can place natural frequencies f_n elsewhere, when we design buildings, bridges and other structures.



Figure 29-5 Damage from Northridge Earthquake, 1994

On a smaller scale, we want similar information about localized events caused by blasting. When blasting is scheduled for a building or bridge foundation or a tunnel, a portable seismographs (such as in Figure 29-6) is set up



Figure 29-6 Portable seismograph courtesy GeoSonics

nearby.

Figures 29-7 and 29-8 (from California Strong-Motion Instrumentation Program via Fischer Consulting, Verona, PA and AstroNuclear/Dynamics, Inc., Large, PA) show digitized and processed acceleration time histories. Figure 29-7 was recorded at Tarzana station, 4.3 miles south of the epicen-

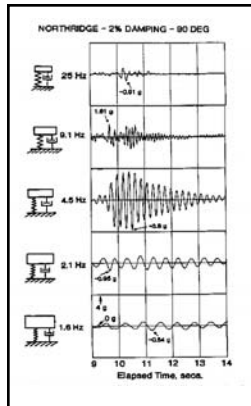


Figure 29-7 Northridge Earthquake, 1994

ter. Figure 29-8 was recorded at Corralitos Station. Significant damage was experienced near San Francisco, 60 miles distant.

In Figure 29-9, Dr. Richard Clymer of Berkeley Seismological Laboratory (BSL) attaches to the San Francisco Bay Bridge a seismometer for measuring the aftershocks that occur in the days immediately after a major earthquake. The unit consists of an aluminum housing with three accelerometers (Wilcoxon 731) orthogonally mounted inside, to provide one vertical and two horizontal measurements of seismic activity.

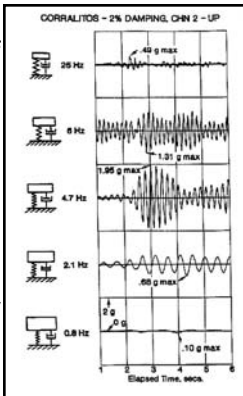


Figure 29-8 Loma Prieta Earthquake, 1989



Figure 29-9 Earthquake aftershock monitor (courtesy Sound & Vibration magazine)

The sensors feed a small digital data recorder in a weatherproof housing. BSL keeps ten of these data recorder/sensor packages handy for rapid deployment. More typically, they are buried a foot or two deep in the ground.

29.5 Early studies of shipboard shock

Long before we had reliable accelerometers, data recorders and electronic spectrum analyzers, we needed to understand the damage

potential of shipboard shocks. Many more World War II ships were rendered helpless by nearby explosions than were sunk by direct hits.

Figure 29-10 shows a US Navy shock gage in ERI's museum. (It is possibly the only one still in existence.) Note the series of "twangers", cantilever beams, each tuned to a different natural frequency f_n , with a scribing point on each beam lightly touching waxed paper (not shown) on a platen.

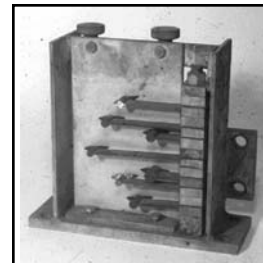


Figure 29-10 US Navy Shock Gauge

While preparing a Navy ship for a oversee explosion shock test, gages were bolted into position at various locations, some down near the ship's keel, some in the hull, some in the superstructure, as in Figure 29-11.

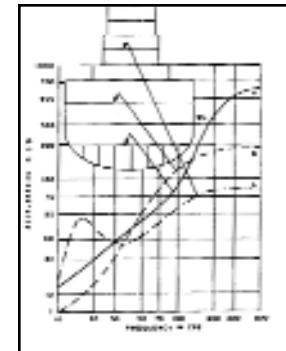


Figure 29-11 SRS within a surface ship

Explosives were discharged oversee at various distances. Or the ship's own guns fired a broadside. The resulting sudden motion of the ship excited all the Figure 29-10 "twangers", each array at its chosen location, each beam at its own f_n .

After-test study of scribed lines (an SRS) showed the potential for damage at various shipboard locations. Equipment designers used those SRS for guidance. They designed equipment to have f_n s where the SRS was weak.

SRS on a given ship from oversee explosions varied somewhat, depending upon distance, upon water depth and temperature, etc., as suggested by Figure 29-12. These variations were factored into

Tustin continued from page 4

shock test programs using the shock generating machines and explosive-shocked barges we will examine in Chapter 30.

SRS gages were also used to evaluate shock testing machines. Hopefully,

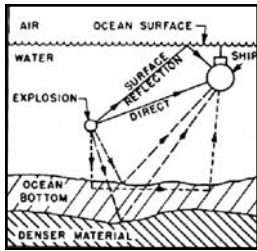


Figure 29-12 Energy transmission paths

test machine SRS would show the same potential for damage as the shipboard SRS. SRS comparisons led to adjustments on Navy shock testing apparatus (Chapter 30) to better simulate the effect of shipboard shocks.

In practice, nearly all physical SRS gages have used reeds, even though most textbooks show a series of SDOF systems, each SDOF having a different natural frequency f_n , all having the same percentage of critical damping. See Figure 29-13. In fact, the definition of shock response spectrum specifies SDOF systems! Reeds, however,

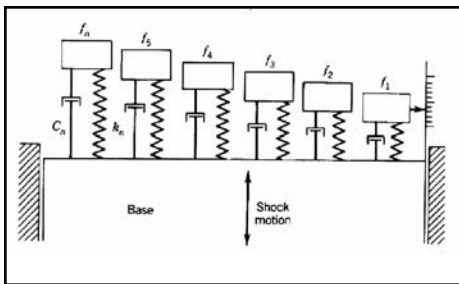


Figure 29-13 Array of SDOF systems

are easier to build.

Be sure to read next month's issue of Current Awareness for Part III of

Would you like to comment on this article?

E-mail your comments to admin@saviac.org and, if appropriate, SAVIAC will publish them in an upcoming issue of *Current Awareness*. Please include "Tustin Excerpt" in the subject line of your e-mail.

Wayne Tustin's excerpt.

Below are a few comments on last month's excerpt:

One has to admire Wayne Tustin, first as a survivor. Not many have been around the S&V world as long as he has. I attribute that in part to very active life. I presume that he has not become overweight, au contraire. Not only has he been physically active, he has been mentally active. Does everyone know that he has a playful mind? That TTI originated as TIT? And that he once considered suing the State of California because they would not allow him a TIT vanity license plate? He describes the book as "A minimal-mathematics introduction," and that is the nature of everything he has published. His genius is that even though he simplifies, at times radically, his work can always be straightened out in more rigorous settings. This latest

SAVIAC Current Awareness page 5 work, as presented in the newsletter, is a good example of how careful he can be. It is harder to be simple than to be complicated. At his invitation some forty years ago, I sent him the start of a tutorial on random vibration. I began with a lengthy, set theoretic definition of a probability space. I don't believe I have heard from him since.

Cliff O'Hearne
Polymer Dynamics, Inc.
Allentown, Pennsylvania

This chapter is well written. The fundamental principles are very clearly elucidated in simple language. It well reflects the author's abundant experiences in this field. A brief history of SRS makes the chapter more interesting besides its technical clearness. To many, SRS is not a stranger, but its history is not a well known fact.

The style the author attacks the topic is very impressive.

One more comment: There are no scales in Fig 29-1. So it is not strong to say that "only when shock pulse duration is close to a mechanical system's period T is the response (y) likely to be damaging." I am sure that if an appropriate scale (even schematically) is added in Fig 29-1, it will be clearer for the reader to understand the above conclusion.

Dr. Z. Zong
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Would you like SAVIAC to e-mail Current Awareness to you?

If you would like to receive the electronic version on Current Awareness each month, please send your name and e-mail address to Lauren Yancey at lauren.yancey@saviac.org.

Announcement & Call For Papers

Sessions on Computational and Experimental Structural Acoustics at the 74th Shock and Vibration Symposium

October 27-31, 2003
San Diego, CA

The Shock and Vibration Symposium represents a unique opportunity for researchers from academe, industry, and government laboratories to discuss their work. Because both classified and unclassified sessions are held at the Symposium, topics for presentation are not limited to those suitable for public release. Of equal importance, public, academic work with implications for government researchers can be presented in a venue where both academic and government researchers are in attendance.

Historically, structural acoustics and vibration have been an important part of the Symposia. For the upcoming meeting in October, we plan to hold classified and unclassified sessions on new work in structural acoustics and vibration, both in applications and in new experimental, analytical and computational methodologies. Topics include (but are not limited to):

- Finite element methods for structural acoustics
- Other advanced computational methods for acoustics
- Experimental studies of vibrating systems
- Noise suppression and control technologies
- Aerospace and Naval applications
- Transient analysis
- Visualization of acoustic phenomena
- Design methodologies for acoustic systems
- Verification and validation of computational and analytical tools
- Modeling methods for acoustic systems
- Computational studies of vibrating systems

Two categories of presentations will be accepted: full papers, suitable for publication in the Symposium Proceedings; and short discussion topics, consisting of viewgraphs with no written paper. Full papers will have a 15-minute technical presentation time plus 5 minutes for questions, while short discussion topics will have a 10-minute presentation time with no question period. Researchers are also encouraged to propose discussion groups or panel sessions to be held at the Symposium.

Presentations will be accepted on the basis of their abstracts, which must be submitted by May 30, 2003. You are encouraged to submit online at www.saviac.org (click on 74th S&V Symposium Abstract Submittal). The Program Committee will review the abstracts during the June Program Committee meeting and authors will be notified of acceptance by June 26, 2003. The full paper presentations must meet the following standards: They must not have been previously published or presented, must be appropriate to community interests, and must not be overtly commercial, except for papers in the Product/Facility session. Standards for short discussion topics are similar except that they may include previously presented or published material. The Proceedings will be published on CD-ROM. The paper due-date is October 17, 2003.

This preliminary announcement will be followed by more details when available. The abstracts may be submitted online at www.saviac.org or sent to:

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ABAQUS, Inc.
jeffrey.cipolla@abaqus.com

Joel Leifer
SAVIAC
joel.leifer@saviac.org
(301) 596 0100

Questions should be directed to Joel Leifer.

Shock & Vibration Seminar

SAVIAC is planning the 3rd Shock & Vibration Seminar for Wednesday, June 18, 2003 at the Red Lion Hanalei in San Diego, CA, the site of the 2003 Shock & Vibration Symposium. This seminar will coincide with the June Program Committee Meeting.

The previous seminar took place on February 11 at NSWC/Crane and attracted 67 people despite a morning blizzard. SAVIAC would like to thank the instructors; Eric Kathe, US Army, TACOM-ARDEC Benet Labs, Dan Gregory, Sandia National Labs, Kurt Hartsough, NAVSEA Philadelphia Code 626, Jeff Blankenship, NAVSEA, Coastal Systems Station, Rudy Scavuzzo, Consultant, Don Hatfield, Instrumented Sensor Technology, Inc., Tony Abbey, Noran Engineering, Inc., and Gary Gonzales, Sony Precision Technology America, Inc. for their excellent presentations. The attendees were introduced to the SAVIAC community and its capabilities on the following subjects: Stress, Strain & Fracture: An Engineers Perspective of Low Cycle Fatigue Systems & Issues, Random vs Sinusoidal Vibration, Navy Shock Qualification Process, Shock Testing/Test Fixture Design, Accelerated Life Testing, Frangibility, Shock Loads & Allowable Stresses, Challenges of Stand-Alone Data Recording, NE/NASTRAN-Technical Briefing on DDAM Analysis, and Selection of Storage Media for Data.

SAVIAC is soliciting ideas for topics for the San Diego Seminar. Please send in your suggestions for presentations you would like to hear or would like to give. We want to attract the aerospace industry and so are particularly interested in presentations on the following topics: combined (extreme) environments (such as high temperature, vibration, loads), vibration control (smart structures/mat'l's), UAV/UCAV, loads (launch/reentry/on-orbit), vibration, flutter (aeroelasticity, aero/ser-voelasticity, aeroshock (buffet), modal analysis/response, FSI, and damping. Look for the agenda in the April newsletter.

Remember, SAVIAC and the featured experts in their disciplines are organizing this seminar to introduce people to the SAVIAC community, while providing a valuable educational experience. So

Please forward this invitation to anyone you know who may be interested in attending this program.

The seminar is free, but you must register to attend. Please RSVP to Lauren Yancey, (301) 596-0100 or lauren.yancey@saviac.org to assure your space and note packet. For more information about SAVIAC and directions to the Red Lion Hanalei Hotel, please visit our website at www.saviac.org.

Industry News

In-Line Adaptor Enables Piezoelectric Sensors with TEDS Capabilities

New In-Line TEDS Adaptor, from the Electronics Division of PCB Piezotronics, Inc., stores and recalls TEDS data for the ICP sensor which is attached. In-Line TEDS Adaptor features an interface chip that allows the identification, location, sensitivity, and other information relative to the attached sensor to be stored.

The device allows ICP accelerometers that do not have TEDS functionality to be used in typical TEDS applications such as large channel count modal analysis and structural testing. The use of PCB's In-Line TEDS Adaptors expedites large channel count testing by eliminating cable connection errors and reducing the set-up time involved

in recording sensor model numbers, calibrations data, etc.

For additional information, contact the Electronics Division of PCB Piezotronics, Inc., toll free at 800.828.8840; e-mail: electronics@pcb.com; or fax 716.684.0987. For other PCB products, visit our web site at www.pcb.com.

Small Triaxial Accelerometer has Electronic Data

A new, small triaxial PiezoSMART accelerometer from Kistler Instrument, 8793A500M10, conforms to the IEEE P1451.4 standard for universal plug and play operation with self-displaying data sheet. The data sheet includes basic sensor information such as the serial number.

The piezoelectric element measures vibration and shock in three mutually perpendicular axes. With a lightweight, low profile design the sensor is suited to modal applications where mass loading of the specimen is a concern.

Featuring extremely low sensitivity to thermal transients and transverse acceleration, the measuring range is +/- 500 g. A stainless steel enclosure hermetically seals the unit from adverse environments. Convenient, screw mounting enables intimate contact to the test structure.

Kistler is a worldwide supplier of precision instrumentation for the measurement of pressure, force and acceleration serving the R & D, industrial and OEM communities.

Conference Announcements

For a summary of upcoming conferences for 2003, visit www.saviac.org/upcoming_events.htm

Ninth International Conference on Urban Transport and the Environment in the 21st Century

Wessex Institute of Technology, UK

March 10-12, 2003

Crete, Greece

Urban Transport 2003 is a major annual event in the urban transport calendar with papers on both transport and the inter-related environmental issues which are of so much concern in our cities. Broad topic areas include urban transport systems, traffic control, accessibility and mobility, control and simulation, finance, air quality and noise, social issues and safety. For details visit www.wessex.ac.uk/conferences/2003/urban03/

Sixth International Conference on Computational Methods and Experimental Measurements in Contact Mechanics

Wessex Institute of Technology, UK

March 12-14, 2003

Crete, Greece

Contact Mechanics 2003 is the sixth international conference in this successful series on the application of Computational Methods and Experimental Measurements in Contact Mechanics. Modern engineering design has led to the realisation of the importance of contact problems in many technological fields. They are complex and inherently non-linear due to the moving boundary and the existence of friction along contact surfaces. Until a few years ago, researchers were engaged only in the fundamental concepts of contact problems. Today, due to substantial improvements in computer technology and experimental methods, it is possible to solve many complex practical problems accurately and efficiently. Contact Mechanics 2003 will discuss papers on Mechanical Models, Numerical Aspects, Experimental Measurements and Engineering Applications as well as other topics related to the theme of the meeting. There will be particular emphasis on the application of advanced theories; participants will be

encouraged to critically review existing ideas and to explore new research ideas.

8th International Symposium on Plasticity and Impact Mechanics

Indian Institute of Technology Delhi

March 16-19 2003

New Delhi, India

The IMPLAST 2003 is the eighth Symposium in a series of meetings on Large Deformation. The aim is to provide a forum for scientists, engineers and designers in universities, scientific laboratories and industry to share their research findings in fundamental and applied aspects of the mechanics of large deformations of metallic, composite and cellular materials and structures at low, medium and high rates of deformation. The Symposium will honour Prof. NORMAN JONES on his 65th birthday. The program will consist of invited lectures, special sessions and contributed papers. The proceedings will be published prior to the symposium. The following topics will be covered during the symposium. The list is only indicative and not exhaustive. Constitutive Relations, Theories of Plasticity, Applications of the Theory to Structural and Manufacturing problems, Structural Crashworthiness and Failure, Stress Waves in Solids, Penetration and Perforation, Fire and Blast Loaded Structures, & Earthquake Loading. For details visit www.iitd.ac.in/implast/index.html

Homeland Security Solutions Conference and Exhibition: Systems Solutions for Counter-Terrorism

April 23-24, 2003

Baltimore, MD

The Homeland Security Solutions conference and Exhibition is for systems applications buyers and manufacturers who are intimately connected with efforts to bolster homeland security to prevent and respond to attacks from foreign and domestic terrorists.

The Homeland Security Solutions

show will provide a forum for those who make and buy homeland security systems and solutions in the government and private sector.

Featuring suppliers, distributors, and manufacturers of homeland security solutions and technology for government and private security, the event will address the needs of industries such as nuclear, power, and water treatment plants, railroads, airports, bridges, government buildings, stadiums, shopping malls, office buildings, tourism, and ports of entry. The products and services featured will center on technologies to detect, prevent, and to respond to terrorist attacks and will include sensors, biometrics, information processing, image recognition and matching.

To find out more about this event, visit www.HomelandSecuritySolutionsShow.com.

Noise-Con 2003 Conference and Exposition

Institute of Noise Control Engineering

June 23-25, 2003

Cleveland, Ohio

The Institute of Noise Control Engineering announces the Noise-Con 2003 Conference and Exposition, to be held June 23-25, 2003 at the Renaissance Cleveland Hotel, Cleveland, OH. The exposition will be held in conjunction with the NOISE-CON 2003 Congress where 400 to 600 persons are expected to attend. Attendees will include engineers, technicians and managers interested in noise control products, services, and instrumentation. Areas include transportation noise, material properties, industrial noise control, environmental acoustics, architectural acoustics and building noise, HVAC noise, and product noise.

For further information about the conference or the exhibit please contact: Richard Peppin, Exposition Manager at (401) 290.7726 or by e-mail at PeppinR@asme.org.

Short Course Announcements

Modern Protective Structures Course

The Pennsylvania State University
July 14-18, 2003

Penn State's course on Modern Protective Structures is aimed at addressing a broad range of technical issues dealing with mitigating the severe loading effects associated with blast, shock, and impact. Registration brochures and the web site will be available in late-January, www.outreach.psu.edu/C&I/ProtectiveStructure.s. For information about content: Ted Krauthammer, Director, Protective Technology Center & Professor, Civil and Environmental Engineering, Tel: (814) 865-3102; Fax: (814) 865-9630 E-Mail: tedk@psu.edu, URL: <http://www.ptc.psu.edu>. For information about registration: Janet Patterson Senior Conference Planner, Conferences & Institutes, The Pennsylvania State University, 225 Penn Stater, University Park, PA 16802 USA, Tel: 814 863-5123, Fax: 814 863-5190, e-mail: jrp1@outreach.psu.edu. More detail on this course can be found on page 2.

American Society of Civil Engineers

March 20-21, 2003

Nashville, TN

May 22-23, 2003

Palm Springs, CA

July 24-25, 2003

Portland, ME

Design of engineered structures in seismic regions requires an estimation of ground motion at the site. This seminar examines the various methods used in estimating the free-field motion at a site. You will: obtain information on the sources of strong-motion data; avoid serious mistakes caused by the use of inappropriate ground motion time histories in the dynamic analyses; learn how to use computational tools to analyze and interpret ground motions; gain an in-depth understanding of the effects of natural and synthetic ground motion time histories on the response of structures; gain insight into the effects of local soil conditions on the characteristics of ground motions; learn the latest seismic provisions in the Uniform Building Code. For more information visit www.asce.org/content/seminars/structural.cfm#Earthquake.

Engineering

American Society of Civil Engineers

September 26-27, 2002

New York City, NY

This seminar will benefit all structural engineers who would like to improve their earthquake engineering skills through mastery of the fundamental principles. It will be of value to engineers at all levels of experience. While the seminar is designed for practicing structural and architectural engineers, contractors, building officials, facilities managers, and educators also will benefit. You will: understand the cause and effect of earthquake ground motions; develop a feel for the dynamic behavior of structures; learn how to use NONLIN dynamic analysis computer program; understand why inelastic behavior and associated damage may be unavoidable; learn how to control damage through modern analytical techniques; find out how base isolation and passive energy systems may be used to minimize damage; develop a clear understanding of the theory behind the complex building code provisions for earthquake resistant design. For more information visit www.asce.org/content/seminars/structural.cfm#Fundamentals.

Earthquake Induced Ground Motions

Fundamentals of Earthquake

Check your 2003 SAVIAC calendar for upcoming events

There are only a limited number of 2003 calendars left! To receive your FREE copy e-mail

Lauren at lauren.yancey@saviac.org

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Industry continued from page 7

DIN-Rail Mountable ICP Sensor to 4 to 20 mA signal Conditioner

IMI Sensors, a division of PCB Piezotronics, Inc., has released a DIN-rail mountable, ICP sensor signal conditioner for converting the analog voltage measurement signals of industrial vibration sensors into 4 to 20 mA signals. Model 682A03 provides a choice of rms or peak acceleration, velocity, or displacement output signals as well as

a selection of filtering ranges. In addition, the unit converts and delivers a second 4 to 20 mA output signal proportional to temperature to accommodate IMI's vibration sensors with built-in temperature sensors. Additional features include an analog output BNC for dynamic signal analysis and diagnostics, LED indicators for power, input fault, and selected output, and 500 VDC isolation. With this one powerful and versatile instrument, critical machinery vibration can be continu-

ously monitored with PLC, DCS, SCADA, and alarm systems as well as analyzed and diagnosed with portable data collection and acquisition equipment.

For additional information, contact IMI's applications engineering group at (800) 959.4464 in the U.S. and Canada, (716) 684.0003 outside of the U.S., Fax: (716) 684.3823, E-mail: imi@pcb.com, or visit our website at www.imi-sensors.com



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In the February 2003 Current Awareness Newsletter

***A Call For Volunteers
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HASS and HALT": An Excerpt, Part II
74th Shock & Vibration Call for Papers
FREE Shock & Vibration Seminar
Industry News
Conference/Symposia Announcements
Short Course Announcements***

The Current Awareness newsletter is published by the Shock and Vibration Information Analysis Center, which is operated by HI-TEST Laboratories, Inc., under contract to the U.S. Army Engineer Research and Development Center.

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