Announcement of the

72\textsuperscript{nd} International Conference on Mass Properties Engineering

May 18-23, 2013    St. Louis, Missouri

www.sawe.org
The Society of Allied Weight Engineers invites you to the 72nd International Conference on Mass Properties Engineering, at the Doubletree Hotel in the historic St. Louis Union Station. The St. Louis Chapter has prepared an excellent program in a first-class venue. Vice President and Technical Director Miguel Mascaray-Rufus has ensured that we have a fine technical program. Standards and Practices Chairman Alan Titcomb has a full day of activities planned for you. Vice President – Training Errol Oguzhan has gathered knowledgeable and enthusiastic instructors for a variety of classes. Our Vice President of Vendor Relations Bill Griffiths will delight you with a full complement of vendors and exhibitors, and sponsors — so be sure to visit the exhibitors room during your time at the conference.

In addition, be sure to partake of many non-technical activities the St. Louis chapter has in store for us, including dinners and tours. St. Louis is truly the gateway to the American west, as exemplified by the prominent Gateway Arch stretching high above the west bank of the Mississippi River. The courthouse where the Dred Scott case was argued before Roger Taney and the Supreme Court is but a few blocks away. Check out the many fine restaurants in the area.

We come to these conferences to learn or tell others about the latest in mass properties engineering and to meet both the experienced and up and coming mass properties engineers. We all share a common interest, so take the opportunity to meet new people, talk to the people behind the desks in the exhibitors’ room, ask questions in the technical sessions, take a class or two, and consider writing a paper for the next conference. Be an active contributor in the Standards and Practices meetings – this is your opportunity to influence how the mass properties engineering job is accomplished. Meet with your officers, try some “hands-on” activities, be a participant in what is really your conference. And join me in thanking the people who took the time to write papers and get them through their company’s approval systems, the vendors and exhibitors, and particularly the host committee members, who have spent a lot of time and effort to present the SAWE with a worthwhile conference.

Come to the conference prepared to learn and share, remembering that the vast majority of practicing mass properties engineers do not have the privilege of being present at the conference. Partake of what we have offered, enjoy your stay, and remember to share your experiences when you get back home to your own chapter. The conference brings together experts and novices, and each can learn from the other.

Finally, to all the spouses, significant others, and companions, please feel free to enjoy what the SAWE, the St. Louis Chapter, and the St. Louis area has to offer. Join in the camaraderie that we all share, and absorb the enthusiasm that this engineering specialty exudes and encourages in its members.

Have an enjoyable conference!
The St. Louis Chapter and the 2013 Conference Committee invite you to join us in St. Louis, Missouri, the Gateway to the West! From its beginnings as a small French fur-trading town in 1764, St. Louis soon became a major embarkation point for westward travel and expansion. Lewis and Clark began their famous expedition in St. Louis, which was celebrated a century later by both the 1904 World’s Fair and Olympic Games. Charles Lindbergh’s quest to conquer the Atlantic also began here. Today, St. Louis reflects an elegant mix of the historic and modern. From stately homes to 1800s architecture, fine dining to the finest in down-home barbeque, ballet and Broadway to comedy clubs and blues bars. And, of course, the three B’s that define St. Louis: beer, baseball, and Boeing!

Our conference site is the St. Louis Union Station Hotel in the heart of downtown (www.stlouisunionstation.com). Up until recently a premiere Marriott hotel, it has just been rebranded as a DoubleTree by Hilton. The hotel not only affords all the usual amenities, but as the former Union Station railway depot, it also features some spectacular historic architecture. The attached former train shed, now the site of numerous shops and restaurants, is also undergoing a renovation, much of which will have been completed or be underway when you arrive.

The 2013 Conference Committee has worked hard to make the 72nd International Conference an enjoyable and memorable experience. Come meet old friends, make new ones, and party in style in St. Louis!
On behalf of the International Society of Allied Weight Engineers, Incorporated, I encourage your company to participate as an exhibitor or sponsor at the 72nd Annual International Conference on Mass Properties Engineering in St. Louis, Missouri. The venue is the DoubleTree by Hilton St. Louis Union Station Hotel in downtown St. Louis. The St. Louis region is resplendent with historical sites – it is not just about the Arch, but that in itself is worth seeing.

The SAWE is returning to the U.S. after a very successful conference in Germany. We are hoping to maintain vendor relationships with several of our European sponsors and exhibitors from Germany. At the same time, we look forward to seeing many of our American vendors who could not participate in last year’s conference due to economic restraints or other commitments.

As an exhibitor, your company will have the opportunity to provide conference attendees with an awareness of the newest concepts, products, and services offered in a diverse range of technologies and transportation sectors. Each exhibitor will have an 8’x10’ area to display their products and services in a secured exhibit area, the Illinois/New York Central Ballroom. The Ballroom has ample space for 15 exhibitors, so claim your spot early by registering today! Exhibitors and sponsors are each invited to make a brief presentation in one of the Technical Tracks. Longer presentations of 20-40 minutes can be arranged with concurrence of the Technical Program Committee. In addition, if you desire to provide training in the use of your product or service, I will arrange a discussion with our Training Group to afford this opportunity. I encourage more involvement with SAWE on every level.

Conference attendees are encouraged to visit all of the exhibits to discuss the products and technologies with the attending representatives. Depending on the particular exhibitor, knowledge in the form of demonstrations, literature, or samples will be available to take back to your place of employment and share with colleagues.

If you are interested in participating as an exhibitor, sponsor, author of a technical paper or presentation, or would like to teach a vendor training course, please visit the website, www.sawe.org. Early registration for the conference is encouraged. The SAWE Store can be accessed from the above website, and it is possible to register now and pay later. The deadline for registering and paying in full is April 30, 2013.

For more information on sponsorship and exhibiting, please contact any of the following: Bill Griffiths, billgriff19@yahoo.com, (425) 883-2098, (310) 367-4134 [cell]; Claudia Rosenberger, ros@usb-muc.de, +49 89 99 89 42 83; Paul Kennedy, pkennedy@space-electronics.com, (860) 829-0001 ext. 204

Regards,
William Griffiths
Corporate Partners - Silver

Lockheed Martin

Silver Sponsorships

Huntington Ingalls Industries

Bronze Sponsorships

General Electrodynamics Corporation

Corporate Partner - Gold

Exhibitors

Altair Engineering
BAS Engineering
CMW Incorporated
General Electrodynamics Corporation
Huntington Ingalls Industries
IDEA Toolkits LLC
i.e. Solutions
Intercomp Company
Space Electronics LLC
Stanley Vidmar
Teknoscale OY
usb GmbH

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BAE Systems (U.K.)
BAS Engineering
German Aerospace Center (DLR)
Short Brothers PLC
The Aerospace Corporation

Break Sponsors

General Electrodynamics Corporation
Space Electronics LLC
Since its inception in 1939, the purpose of the SAWE has been to promote the exchange of technical information and new ideas in Mass Properties Engineering.

The SAWE International Conference is the annual meeting that brings together mass properties professionals from throughout the world. These dedicated men and women work in close cooperation with, and address the needs of, industry, government, and other engineering and manufacturing organizations. The 2013 Technical Tracks are a result of input from these mass properties professionals with the combined efforts of the International Officers, the 2013 Conference Committee, and the Technical Committee.

For us, the mass properties professionals, but also for the entire engineering community, the SAWE Annual event is an excellent opportunity to learn and share the latest developments on the discipline, not only attending the technical sessions and papers presentations, but also meeting colleagues from all around the world.

The technical content of the 2013 Conference will include WEIGHT ASPECTS OF NEW MATERIALS, NEW WEIGHT DESIGN PROCEDURES, METHODS FOR CALCULATING MASS PROPERTIES, WEIGHT ESTIMATION IN PRELIMINARY DESIGN, NOVEL AIRCRAFT CONFIGURATIONS WEIGHT ESTIMATIONS, etc.

There will be two complete days dedicated to the technical presentations.

The Technical and Organization Committee is working on the technical content of our conference by searching for PAPERS and also setting up a new format in our Sessions: the technical FORUMS — an open debate on one specific topic of Mass Properties.

Best Regards,
Miguel Mascaray-Rufas

Expected PAPERS are:

3565  Weight Aspects of Glare Fiber Metal Laminates
      – CG van Hengel, Fokker Aerostructures

3568  Weight Reports on the Cheap
      – David Tellet, US Navy

3569  Revisiting Seawater Density and its Impact on Submarine Design
      – David Tellet, US Navy
3593 **Trade Study of System Level Ranked Radiation Protection Concepts for Deep Space Exploration**
– Jeff Cerro, NASA Langley Research Center

3594 **New Weight Design Procedures**
– Ali Elham, Michel J.L. van Tooren, Delft University of Technology

3595 **Calculating Mass Properties From a Triangulated Solid**
– Paul Sinclair, CESSNA

3596 **Estimate of Electrical Cable Length and CG**
– Robert Chitwood, Huntington Ingalls Industries

3597 **Aircraft Weight Estimation in Preliminary Design Process**
– Omran Al-Shamma, PhD Student, University of Hertfordshire.

3598 **Improving Structural Weight Estimation of Novel Aircraft Configurations to Enhance Flying Quality Analysis**
– Seyyedeh Maryam Moghadasi, Delft University of Technology

3599 **Mass Properties and Automotive Longitudinal Deceleration (Braking and Crashing)**
– Brian Paul Wiegand, Northrop Grumman Corporation, Retired

3600 **Autonomous Mass Properties Tracking Database Attributes**
– Greggory Edd Burt, Gulfstream

3601 **Guidelines for Submarine Roll Weight Moment of Inertia Calculations**
– David Tellet, US Navy

3602 **Mass Properties and Advanced Automotive Design**
– Brian Paul Wiegand, Northrop Grumman Corporation, Retired

3603 **Mass Property Measurements of the Mars Science Laboratory Rover**
– Keith Fields, NASA

3604 **Installation of Offshore Wind Turbines and the Importance of Weight Management in Guiding Design**
– John Capin, Huntington Ingalls Industries
During the Monday and Wednesday Sessions, a new Format will be introduced in our Conference for the first Time.

The SAWE (New !!) TECHNICAL FORUMS

This Year we will debate on:

Mass Uncertainties Present During the Whole Development Phase.
- During early development phases, prediction of weights becomes a key and difficult activity since not all the relevant data are available.
- Due to the lack of data availability and the need of necessary assumptions done to properly estimate the weights, an uncertainty on the resulting figures is always present.
- Product cost and performances are directly linked to weight and unforeseen weight increases can lead to a failure of the overall Product business case.
- The Mass Uncertainties Management (MUM) Processes should apply to early weight estimations during weight control phases when weight risk and opportunities are identified.

St. Louis Union Station Hotel Floor Plan:
The objective of the SAWE's Standards and Practices Committee, or SPC, is to serve the mass properties profession by providing a non-proprietary, consensus forum for the development of industry products that respond to the needs of our members and their customers. Much of this work centers on Recommended Practices, or RPs, of many types including requirements, best practices, product and process standards. SPC activities are not limited to RPs alone. Just about any activity that serves the society membership in a given industry sector is acceptable. Past examples have included textbooks, handbooks, and industry surveys. An unofficial objective of the SPC is to foster the development of products that make our professional activities more efficient, more consistent, and more valuable for the professionals of today and tomorrow as well as clearer and more understandable to our customers.

Planned SPC Events
The SPC is such an important activity that the SAWE dedicates an entire day to it. That day will feature the following highlights:

**Opening Session** – A kickoff to the day’s activities at which the year's progress will be reviewed, our progress towards becoming an official ANSI-recognized Standards Developing Organization will be presented, and future objectives will be discussed.

**SPC Breakout Sessions** – During these meetings chaired by industry and government leaders, industry needs and opportunities are reviewed, the year’s activities are presented, and future activities are planned. Present standards are reviewed for currency and new standards are formulated. Specific industry breakout sessions include: Marine, Military Aircraft, Offshore Systems, Missiles and Space Systems, Airline Affairs, and Ground Systems.

In these sessions, sample topics of discussion include:

- Where do the committees stand with respect to work in progress?
- How did the committees do with respect to the objectives established during last year’s conference?
- What new standards are needed by industry?
- What is the highest priority for each committee to accomplish in the coming year?

The SPC welcomes all members and visitors to participate and improve the mass properties profession as it relates to your specific industry. We always welcome new ideas, new participants, and new contributions. Help us improve our profession by participating in SAWE SPC activities.
Dave Glover began his professional career as a lawyer, but quickly decided he wanted a job where clients did not threaten to kill him. Today, he is the host of the popular “Dave Glover Show” afternoons on KFTK radio.

In an industry where radio stations change their call letters, formats, and on-air personalities about as often as some people change their bath towels, the “Dave Glover Show,” popularly known as the DGS, has consistently been one of the top-rated shows for some ten years. Today, the DGS is the #1 afternoon show in the St. Louis market (available elsewhere by smart phone app), and Dave and his cast of characters are always at or near the top of just about every listener demographic. Add in Dave's three “Missouri Broadcaster of the Year” awards, and you can see how the DGS has become the “must listen to show” on weekday afternoons, with a lively mix of topical issues, original comedy, celebrity interviews, and real “Slice of Life” discussions with his audience. Outside of the studio, Dave does numerous remote broadcasts, community and charity events, and of course, the annual Dave Glover Halloween Show.

Dave will address us on “Using Humor as a Basis of Communications.” While the main format of the DGS is light and wacky humor, as a broadcaster, he does not shy away from hot-button social, political, and religious topics. Dave understands how to use humor to create an implicit trust and familiarity in his audience that allows for complex discussions that do not feel forced or phony. We, as engineers who deal with complex data and have to present it to managers, coworkers, and customers in an understandable manner, may learn some tips and tricks for our own presentation and communication styles.
ShipWeight North American User Group Meeting

The 7th ShipWeight User Group meeting will be held on Tuesday, May 21, following the conclusion of the Marine Standards and Practices Committee meeting. The meeting will be of interest to active ShipWeight users as well as those who are considering acquiring it.

This year’s meeting will be focused on presenting the advanced user features in Release 11, along with a look ahead into what is planned for the next version, Release 12.

The meeting is also an excellent opportunity to meet other ShipWeight users in an informal setting for exchanging experiences and discussions on best practices. Last, but not least, it is a great opportunity to provide feedback to BAS Engineering as developers of ShipWeight and participate in making priorities for future development of the software.

<table>
<thead>
<tr>
<th>Key Information</th>
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<tbody>
<tr>
<td>Where</td>
<td>St. Louis Union station – a DoubleTree by Hilton Hotel (See Page 21)</td>
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<tr>
<td>When</td>
<td>Tuesday, May 21, from 1:00 – 4:00 PM</td>
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<tr>
<td>Registration</td>
<td>Through the web at <a href="http://www.sawe.org">www.sawe.org</a></td>
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<tr>
<td>Cost</td>
<td>Per General Conference Registration, Page 23. One Day registration permits attendance to the SAWE Standards and Practices Session and ShipWeight User Group meeting. Two or more day’s registration grants access automatically to the ShipWeight User Group meeting. Note, lunch on May 21, is at an additional cost.</td>
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<tr>
<td>Registration deadline</td>
<td>Per General Conference Registration, Page 23</td>
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<tr>
<th>ShipWeight User Meeting – Tentative Schedule</th>
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<tbody>
<tr>
<td>Tuesday, May 21, 2013</td>
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<tr>
<td>1:00 pm – 1:45 pm</td>
<td>Parts and Assembly Library in ShipWeight</td>
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<td>1:45 pm – 2:30 pm</td>
<td>Crosstab and Trend Reports</td>
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<td>2:30 pm – 3:00 pm</td>
<td>User Case Presentation</td>
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<tr>
<td>3:00 pm – 3:20 pm</td>
<td>Coffee Break</td>
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<tr>
<td>3:20 pm – 4:30 pm</td>
<td>New Features in ShipWeight 12.0</td>
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We reserve the right to change the agenda.
As the Society of Allied Weight Engineers Training committee prepares to welcome you to the 72nd Annual International Conference on Mass Properties in St. Louis, Missouri, we would like to present our preliminary slate of classes for your professional development. These classes are offered to expand your expertise as a Mass Properties Engineer (MPE), and we hope that many of you will register for classes in fields outside of your area of expertise or industry. We hope that, after taking these classes, you will emerge more knowledgeable and learn how special the discipline of weight engineering is across the multiple industries. This year, the Training Program will take place at the Union Station Doubletree Hotel. The SAWE has a track record of delivering outstanding training and hope you will enjoy it with us here in St. Louis.

**SAWE RP-07: Mass Properties Management and Control of Military Aircraft**

*Dudley Cate, SAWE Honorary Fellow, NAVAIR-Retired*

This full-day class will familiarize students with effective control of the weight and other mass properties of an aircraft. The class will also expose students to other considerations associated with mass properties management and control described in SAWE RP-07. The primary objective will be to acquaint participants with the major considerations for successful weight control during the development phases of a program, to include: concept exploration, demonstration, validation, and full-scale development. These major elements incorporate planning, organizing, staffing, subcontractor control, requirements allocation, risk reduction, data collection, analysis, tracking, controlling, weight reduction programs, validation, verification, and test support.

**Aircraft Weight Estimating and use of SAWE RP-08: Weight and Balance Reporting Forms for Military Aircraft**

*Dudley Cate, SAWE Honorary Fellow, NAVAIR-Retired*

The objectives of this one-day course are to provide an overview of weight estimating methods and the weight estimating process for aircraft and to provide insight into the weight and balance reporting formats and requirements of SAWE Recommended Practice 8. Included will be descriptions of the many types of aircraft estimating methods, together with their applicability and limitations. Many other weight estimating considerations also will be addressed, including impacts of new technologies, estimating prototypes and derivatives, sources of weight data and estimating methods, and dealing with estimating uncertainty. Estimating aircraft center of gravity location and moments of inertia will be briefly discussed. The portion of the course devoted to RP-08 will address the three major parts contained therein. The basic RP-08 concept of allocation by function will be explained, and the important RP-08 allocation instructions will be covered. The requirements for structural increments and design information also will be addressed, along with why inclusion of those data is so important to weight estimating and weight control.
Principles of Weight Management and Weight Estimating Methods for the Offshore Oil Industry

Andy Schuster, SBM Offshore, SAWE Honorary Fellow

Weight Management is a critical element of design, construction, and operation of an offshore oil system. Keeping the weight and center of gravity within predefined limits can be challenging. However, application of proven principles and tools will result in achieving these goals.

The principles involved in weight management for the offshore oil industry will be presented and explained. The student will develop an understanding of technical topics such as development of preliminary and detailed weight estimates, application of weight contingencies and allowances to cover ‘known unknowns,’ control of changes to designs, and weight saving techniques. The student will develop an appreciation of how weight information is used by other project team members such as cost control, scheduling, transport and lift contractors, and others. Also, the student will learn about some of the techniques that can be used to successfully manage the weight.

A key to Weight Management is the initial weight estimate. Therefore, an overview of weight estimating methods as defined in SAWE RP-14 and applied to the offshore industry is included. For example, the application of proven methods — based on historical weight data and experience — is employed to determine preliminary weights for offshore structures.

This training course will highlight the importance of weight management in the oil industry, present several of the methods typically used to create preliminary estimates of weight and center of gravity, and walk through an example of estimating preliminary weight and CG data for a floating offshore platform. After registration, please keep an eye out for an e-mail from the instructor. He will likely be sending out a list of reading material to review before the class.

Aircraft Weight & Balance Course

Tom Oole, SAWE Honorary Fellow, United States Air Force – Retired

This two-day course assumes a basic knowledge of weight and balance. The class will demonstrate and teach proper procedures for weighing and completing forms for military aircraft. The intent of this class is to provide the student with an understanding of the weight and balance system within the United States Air Force and “pitfalls” involved in weighing aircraft. Students should bring basic calculators, paper, and pens/pencils for use in examples and exercises. Students should also dress appropriately for the trip to the aircraft hangar. Wear rubber-soled, closed-toed shoes.

Automated Weight and Balance System (AWBS) Software Training

Harold Smoot, Lockheed Martin

This one-day class will present the features of the Automated Weight and Balance Software in a hands-on training class. The class will begin with a discussion of the terms and developmental history of AWBS, minimum system requirements, and software installation. The basic approach of the class is to give computer demonstrations followed by student exercises that will provide the students with a good understanding of AWBS Version 10.0 features. Students will receive a complete overview of the software features to support weight control programs for military aircraft. The instructor will also allow time to address specific AWBS needs and questions of the students. Students are required to bring their laptop computer with AWBS 10.0 loaded.

Measurement of Mass Properties

Jerry Pierson, Lockheed Martin

This class is a basic class which teaches measurement of weight, center-of-gravity, and moments of inertia (MOI). Effects of gravity variation due to latitude and altitude will be explained. This class will demonstrate and teach moment of inertia measuring techniques typically used for missiles and control surfaces. The Mass Properties Measurement class will contain both a classroom presentation and a laboratory session. The class will consist of approximately three hours of lecture and five hours of hands-on laboratory session with participants making mass properties measurements.

The classroom discussion will include mass definition and mass measurement techniques. Force measurement methods such as spring scales, load cells, strain gauges, and rebalance technology will be discussed. The MOI
definition and its relationship to torque and angular acceleration and measurement techniques will be included. The definition of Product of Inertia (POI) will be discussed and how it relates to Principle Axes definition, measurement, and calculation techniques. Laboratory exercises will include mass measurement, center-of-gravity measurement, MOI measurement using a torsion rod and the bifilar method. POI measurement/calculation and principle axis measurement/calculation will be taught.

It is the intent of this class to provide the student with an understanding of the methods for measuring moment of inertia. The class will conclude with the taking of a test to verify that the class has provided the students with the basic understanding of how to measure moment of inertia of a missile or a control surface.

Basic calculators will be needed for examples and exercises. Please dress appropriately for working with measuring equipment.

**Introduction to Finite Element Analysis**  
*Chayan Basak, Altair*

This half-day class will introduce the student to the fundamentals of finite element analysis, particularly as it pertains to the process of product design, analysis and validation. The class will be targeted to the audience of mass properties engineers and will include an overview basic finite element theory. The class will include several examples and a demonstration. It is recommended that the student take this class prior to the Introduction to Structural Optimization class.

**Introduction to Structural Optimization**  
*Chayan Basak, Altair*

This half-day class will introduce the student to the fundamentals of structural optimization using numerical and finite element methods. The class will introduce a variety of optimization techniques for conceptual design, detailed design, design-of-experiments and reliability-based studies. The format of the class will be seminar-based with ample room for student interaction and dialog. It is recommended that the student take the morning Introduction to Finite Element Analysis class or have some experience with Finite Element Analysis.

<table>
<thead>
<tr>
<th>Day</th>
<th>Class Title</th>
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<tr>
<td>Sat</td>
<td>Principles of Mass Properties Management and Control of Military Aircraft Using RP 7</td>
<td>5/18</td>
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<tr>
<td>Sun</td>
<td>Principles of Weight Management in the Offshore Oil Industry</td>
<td>5/18</td>
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<tr>
<td>Sun</td>
<td>Aircraft Weight Estimating and Use of RP 8 for Weight Allocation</td>
<td>5/19</td>
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<tr>
<td>Sun</td>
<td>Aircraft Weight and Balance - Day One</td>
<td>5/19</td>
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<td>Mon</td>
<td>Aircraft Weight and Balance - Day Two</td>
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<td>Mon</td>
<td>Introduction to Finite Element Analysis</td>
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<td>Mon</td>
<td>Introduction to Structural Optimization</td>
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<td>Wed</td>
<td>Automated Weight and Balance System (AWBS) Training</td>
<td>5/22</td>
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<tr>
<td>Wed</td>
<td>Conference Planning</td>
<td>5/22</td>
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All training class attendees will receive a course completion certificate with the appropriate Professional Development Hours (PDH). This is being done in order to assist trainees in meeting any necessary professional development requirements that they must meet.
**Special Events**

### Special Events General Schedule

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<tr>
<th></th>
<th>Saturday</th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
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<tbody>
<tr>
<td><strong>Daytime</strong></td>
<td>Explore on your own and take in the local sights</td>
<td><em>Hannibal Tour</em></td>
<td><em>St. Charles Main Street</em></td>
<td><em>Anheuser Busch Brewery</em></td>
<td><em>Chocolate Chocolate Factory</em></td>
<td><em>St. Louis Science Center</em></td>
</tr>
<tr>
<td><strong>Evening</strong></td>
<td>Dinner at a local eatery following the BOD meeting</td>
<td>Welcome Reception (Hotel)</td>
<td><em>City Museum</em></td>
<td>Open</td>
<td>Awards Banquet (Hotel)</td>
<td>Open</td>
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*Transportation will be provided for these events

**Sunday, May 19: (Daytime) – Hannibal, Missouri Tour**

We will travel by bus to Hannibal, Missouri, the famous boyhood home of Samuel Clemens, who would later grow up to become America’s iconic author and humorist Mark Twain. Tour the historical sites made famous in such novels as “The Adventures of Tom Sawyer,” “The Adventures of Huckleberry Finn,” and others. We will depart the hotel at 8:00 am to get to the town about 9:30 am. After a few hours to walk and explore, we will have a private buffet lunch on the Mark Twain Riverboat, followed by a sightseeing cruise. We plan to return to the hotel by 4:00 pm. Transportation, tickets, lunch and cruise included. ([www.hanmo.com](http://www.hanmo.com))

**Monday, May 20: (Daytime) – St. Charles Main Street**

Before Jefferson City was built to become Missouri’s permanent capitol, nearby St. Charles was chosen as the interim site. Today, the Main Street historical area still welcomes visitors with shops and eateries reflecting its 1800’s architecture and old-world charm, much the same as Lewis and Clark found it while preparing for their famous expedition to explore the west. The bus will drop us off at the south end of Main Street where we will have some 2+ hours to walk, browse and shop up the street to 1ST Capitol Drive, where we will rejoin the bus to travel to a local restaurant for lunch. Your cost includes transportation. Lunch and any other purchases are on your own. ([www.historicstcharles.com](http://www.historicstcharles.com))
Monday, May 20: (Evening) – City Museum

City Museum is St. Louis downtown’s most unusual attraction. The bus will take us a few blocks north of the hotel where we will have dinner, then have several hours to roam and explore this “eclectic mix of children’s playground, funhouse, surrealistic pavilion, and architectural marvel.” Your fee includes all costs except perhaps alcoholic drinks at dinner. (www.citymuseum.org)

Tuesday, May 21: (Daytime) – Anheuser-Busch Brewery Tour

Take a free tour of Anheuser-Busch’s historic landmark brewery on the city’s south side. See how their iconic brands have been brewed since 1852, from the selection of ingredients to the final product. The tour includes stops at the brewing kettles, aging cellars, and packaging lines. You will also see and learn about the world-famous Budweiser Clydesdales. And, of course, for those over 21, there is a stop at the tasting room at the end of the tour to sample AB’s lineup of products. The tour does involve walking and some climbing of stairs, but also includes chances to stop and rest along the way.

From the brewery, we will head to lunch at Joe Buck’s downtown restaurant, just a few blocks from the hotel. You may know Joe from his frequent television appearances for football and baseball games, as well as the World Series. But his restaurant, set in a former 19th-century warehouse, now offers a stellar lineup of food and beverages, featuring authentic Missouri barbeque. Your cost includes transportation. Brewery gift shop and lunch are on your own. (www.budweisertours.com / www.jbucks.com/downtown)
Since Wednesday will be a late night, we have an easy, relaxed day. Sleep in. Have a leisurely breakfast. Then catch the bus at 10:15 am to take a free tour of the nearby Chocolate Chocolate Chocolate Company’s new factory, where you can view all types of candy being made – from famous family recipes to old favorites. The tour includes samples and a stop at the retail outlet store. Following the tour, we’ll head to St. Louis’s famed Hill area, historic center of the city’s Italian immigrant population, for lunch at Favazza’s. Return to the hotel by 1:30 pm. Your cost includes transportation. Lunch and all other purchases are on your own. (www.chocolatechocolate.com/www.favazzas.com)

Thursday, May 22: (Daytime) – St. Louis Science Center

Spend the morning at St. Louis’s top-rated Science Center, named one of the top five centers in the country. Explore more than 700 exhibits, the Omnimax theater, McDonnell Planetarium and Boeing Space Station, and more. Entrance to the center and most exhibits are free, but the theater, planetarium shows, special exhibits, and some other activities require purchasing a ticket. We will depart the hotel at 9:15 am for several hours of free-roaming fun, and return to the hotel by 1:00 pm. Your cost includes transportation. Exhibit tickets and food purchases are not included. (www.slsc.org)

Reservations for special events should be made at time of conference registration. Space is limited and is subject to availability. Payment must be received upon request of event registration and registration will not be confirmed until payment is received. All event registration information will be retained by the Special Events Chair and may be verified at time of conference check-in if desired. All social events are detailed in this announcement and prices are listed below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/19/13</td>
<td>Sunday</td>
<td>Hannibal Tour and Cruise</td>
<td>$65</td>
</tr>
<tr>
<td>5/20/13</td>
<td>Monday (Daytime)</td>
<td>St. Charles Main Street</td>
<td>$40</td>
</tr>
<tr>
<td>5/20/13</td>
<td>Monday (Evening)</td>
<td>St. Louis City Museum</td>
<td>$81</td>
</tr>
<tr>
<td>5/21/13</td>
<td>Tuesday</td>
<td>Brewery Tour</td>
<td>$31</td>
</tr>
<tr>
<td>5/22/13</td>
<td>Wednesday</td>
<td>Chocolate Chocolate Chocolate Factory</td>
<td>$20</td>
</tr>
<tr>
<td>5/23/13</td>
<td>Thursday</td>
<td>St. Louis Science Center</td>
<td>$21</td>
</tr>
</tbody>
</table>
In addition to our technical schedule and training classes, we will offer numerous opportunities for relaxation and social interaction. Whether this is your first conference or fifty-first, come join us for fun, networking, and meeting friends old and new. The three organized events for this are the Sunday Welcome Reception, Tuesday’s Standards and Practices Luncheon, and, of course, Wednesday’s closing Awards Banquet, where the history and heritage of the SAWE will be on display. All members, attendees, and guests are invited to join us. Separate registration and payment is required for each, including for exhibitors.

- **Welcome Reception** – We invite you to join us in Union Station’s famed Grand Hall, where during the heyday of train travel, soldiers and commoners mixed with Hollywood stars and titans of industry on their way to and from their trains and destinations. Our reception will feature separate stations of barbeque, crab cakes, toasted ravioli (a St. Louis tradition), desserts, and more. A cash bar will be available for liquid libations.

- **Standards and Practices Luncheon** – Enjoy a plated luncheon of tossed salad, lacquered pork loin with rice and seasonal fresh vegetable, rolls and butter, coffee and tea, and dessert. (See page 11 for details on our luncheon speaker)

- **Awards Banquet** – As it does every year, the Awards Banquet closes our conference and allows us to celebrate all those who have had a part in running our Society for the past year. We induct our new international officers for 2013-2014, introduce the latest Fellows and Honorary Fellows, confer the Best Paper Award and Student Scholarship, and present all the other accomplishments of note. Dinner will consist of a choice of a choice of pistachio-crusted sea bass with rice and baby bok choy or a grilled 12 oz New York strip steak with white cheddar macaroni and cheese and asparagus. Both include salad, dinner rolls, dessert, and coffee or tea. A cash bar will be available both before and during the banquet.

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/18/13</td>
<td>Saturday</td>
<td>BoD Luncheon</td>
<td>$30</td>
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<tr>
<td>5/19/13</td>
<td>Sunday</td>
<td>Welcome Reception</td>
<td>$65*</td>
</tr>
<tr>
<td>5/21/13</td>
<td>Tuesday</td>
<td>SPC Luncheon</td>
<td>$43*</td>
</tr>
<tr>
<td>5/22/13</td>
<td>Wednesday</td>
<td>Awards Banquet</td>
<td>$74</td>
</tr>
</tbody>
</table>

*$10 for 3-day registrations
### 72nd International Conference Host Committee – St. Louis Chapter

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman</td>
<td>Tom Schultz</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Budget/Finance</td>
<td>Emil Bantz, Jr</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Exhibitor Coordinator</td>
<td>GJ Miller</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Facilities</td>
<td>Joe Ramey, John Schmidt</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Hospitality</td>
<td>Kent Melcher</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Photography</td>
<td>Larry Crain</td>
<td>IDEA inc.</td>
</tr>
<tr>
<td>Programs</td>
<td>Kent Melcher</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Publicity</td>
<td>Emil Bantz, Jr</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Registration</td>
<td>Doug Baldwin</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Special/Spouse Events</td>
<td>Tom Schultz</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Technical Papers</td>
<td>Emil Bantz, Jr, John Schmidt</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Training Coordinator</td>
<td>Brad Hill</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Transportation</td>
<td>Tom Schultz</td>
<td>The Boeing Company</td>
</tr>
</tbody>
</table>

### Conference General Schedule

<table>
<thead>
<tr>
<th></th>
<th>Saturday</th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morning</strong></td>
<td>BOD Meeting</td>
<td>Hannibal, Missouri Tour and Luncheon Cruise and Training</td>
<td>Training and Technical</td>
<td>SPC Joint Session &amp; Workshops</td>
<td>Training and Technical</td>
<td>St. Louis Science Center</td>
</tr>
<tr>
<td><strong>Afternoon</strong></td>
<td>Open</td>
<td>Welcome Reception</td>
<td>City Museum</td>
<td>Open</td>
<td>Awards Banquet</td>
<td>Open</td>
</tr>
<tr>
<td><strong>Evening</strong></td>
<td>Open</td>
<td>Welcome Reception</td>
<td>City Museum</td>
<td>Open</td>
<td>Awards Banquet</td>
<td>Open</td>
</tr>
</tbody>
</table>
General Information

Location

The 72nd Annual International Conference of the Society of Allied Weight Engineers will be held at the DoubleTree Hotel at St. Louis Union Station in St. Louis, Missouri. Union Station, a National Historic Landmark, was formerly one of the largest and stateliest railway stations in the country. Today, the Station and its resident hotel still welcome guests with amazing architecture and luxurious amenities.

The DoubleTree features several choices for dining and refreshment. The Station Grille, which as the original Harvey Restaurant with its iconic “Harvey Girls” revolutionized railroad dining, still offers some of the finest dining in the city with seating for 130 diners. The Grand Hall Lounge is open every afternoon and evening for drinks, snacks, and light dinner. And downstairs in the Midway, Einstein Brothers Bagels features bagels, coffee, salads, soups, and more from 6:30 am – 3:00 pm daily (5:00 pm on Friday and Saturday).

Accommodations

St. Louis Union Station – a DoubleTree by Hilton Hotel
1820 Market Street, One Union Station
St. Louis, Missouri 63103 USA
Tel: 1-314-621-5262
(www.stlouisunionstationhotel.com)

Our rooms have been reserved at the Union Station DoubleTree Hotel for the 2013 International Conference. Rooms are available three days pre- and post-conference from Thursday, May 16, through Saturday, May 25, based on hotel availability. The special conference room rate is $149 plus tax per night for standard rooms, a government rate of $105 plus tax per night, concierge-level rooms at $179 plus tax per night, and one-bedroom suites at $249 plus tax per night. All rooms sleep up to four people at the same rate. Direct telephone or website registration information will be arranged and made available on the SAWE conference website.

Transportation

Lambert – St. Louis International Airport is the city’s primary airport, serving thousands of passengers a day from the major airlines. The hotel is about 15 miles from the airport. Auto rental facilities and other transportation options are available.

If driving, be advised that St. Louis Union Station owns no parking lots and offers no free onsite parking. Valet parking (special conference rate of $12/day) is available at the front entrance, or self-parking ($16/day) is available at city lots in the train shed and just west of the hotel at 18th street. View a brochure of downtown parking lots at www.downtownstl.org/docs/DowntownParkingGuide.pdf for more information.

Taxi service is available directly from the airport, outside the baggage claim areas in either Terminal #1 or #2, to the front door of the hotel. Fees will run about $35-$45 one way or $70-$90 round trip, depending on traffic, weather, and number of passengers.
If you do not have a lot of luggage, or it is easy to handle, you can pick up the Metrolink light rail system in the airport and ride it right to the back door of Union Station for about $3.00. See more information at www.metrostlouis.org, and click on the Metrolink icon in the upper right of the screen. A map of Metrolink stops is under the Metrolink System Map link.

Best Transportation offers a great low-cost alternative to get to/from downtown hotels via dedicated van or limos, for guaranteed low rates starting at $21 one way or $37 round trip. Our special conference rate will be $18 per person one way or $34 per person round trip. Get more information or make a reservation at www.gobestexpress.com.

Be advised that if driving to St. Louis from the west, Blanchette Bridge on I-70 leading from St. Charles into St. Louis has had the westbound span removed for reconstruction, and all traffic is sharing the eastbound span. Expect delays and slowed traffic, especially during peak driving hours.

Inquiries

All inquiries about the SAWE 2013 International Conference should be made to:

Tom Schultz
St. Louis Conference Chairman
314-777-7021
thomas.m.schultz@boeing.com

All inquiries about the SAWE organization, including membership and sponsorship, should be made to:

Ron Fox
Executive Director
Society of Allied Weight Engineers, Inc.
5734 Lucia Walk
Long Beach, CA 90803-4015 USA
Phone: 562-596-2873  Fax: 562-596-2874
ron.fox@sawe.org
General Conference Registration

Conference registration is **required** for everyone planning to attend or participate in any conference events, including technical tracks, training, social and special events, etc. Only by registering can you obtain a Conference Badge, which is required for admittance to all events. Advance registration is strongly advised. **Payment of all applicable Registration Fees by credit card, check, or cash is required prior to or at the time you obtain your badge and conference materials at Registration.** There are NO exceptions to this, including for exhibitor representatives. General Registration fees are as follows. Students, Retirees, Authors, and Presenters, please see the fees identified under the Special Conference Registration section. Registration should be conducted online at [www.sawe.org](http://www.sawe.org).

<table>
<thead>
<tr>
<th>Registration Level</th>
<th>Fee¹</th>
<th>Welcome Reception</th>
<th>SPC Luncheon</th>
<th>Awards Banquet</th>
<th>Includes Conference Papers²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAWE Members</strong></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>3-day Registration</td>
<td>$750</td>
<td>$10*</td>
<td>$10*</td>
<td>$74</td>
<td>Yes</td>
</tr>
<tr>
<td>2-Day Registration</td>
<td>$500</td>
<td>$65</td>
<td>$43</td>
<td>$74</td>
<td>No</td>
</tr>
<tr>
<td>1-Day Registration</td>
<td>$250</td>
<td>$65</td>
<td>$43</td>
<td>$74</td>
<td>No</td>
</tr>
<tr>
<td><strong>Non-members³</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-day Registration</td>
<td>$850</td>
<td>$10*</td>
<td>$10*</td>
<td>$74</td>
<td>Yes</td>
</tr>
<tr>
<td>2-Day Registration</td>
<td>$600</td>
<td>$65</td>
<td>$43</td>
<td>$74</td>
<td>No</td>
</tr>
<tr>
<td>1-Day Registration</td>
<td>$350</td>
<td>$65</td>
<td>$43</td>
<td>$74</td>
<td>No</td>
</tr>
</tbody>
</table>

* For the 72nd International Conference, ALL attendees and exhibitors must separately register and pay for the Welcome Reception and SPC Luncheon. This is to improve headcounts for food budgeting and help eliminate excess costs to the conference. Exhibitors and attendees with 3-day registrations are granted a discounted fee for each event (see the Conference Registered Events section).

1. All registrations conducted after **May 6, 2013**, will incur a $50 Late Charge over and above the listed fees. We therefore encourage all parties to pre-register prior to this date, even if your company has not yet authorized your attendance or you know you will be paying your fees upon arrival at the conference instead of at the time of registration. There is no charge to cancel a registration.

2. All qualifying registered attendees will be granted access to all SAWE papers presented at the conference by means of a password and link to allow access to them electronically. The links will be forwarded to the attendance list shortly after the conference. As a benefit of SAWE membership, members also have free access to all presented papers from past conferences one year or more previous to the current conference.

3. Non-members registering for the conference automatically incur a $100 non-member fee. Since current SAWE membership dues are $60/year, consideration should be made to becoming an SAWE member at registration instead.
Special Conference Registration

Full-time students, retirees, authors of SAWE conference papers, and conference presenters (who do not submit an associated paper for the presentation) are all eligible for Special Conference Registration fees. Please note that all Registration Fees must be paid in full by credit card, check, or cash prior to or at the time you obtain your badge and conference materials at Registration. There are NO exceptions to this. Registration should be conducted online at www.sawe.org.

<table>
<thead>
<tr>
<th>Special Registration Category</th>
<th>Registration Fee</th>
<th>Registration fee includes:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Welcome Reception</td>
</tr>
<tr>
<td>Full-time Students and Retirees</td>
<td>$10/day</td>
<td>No</td>
</tr>
<tr>
<td>Authors and Presenters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Author (non-student)</td>
<td>Complimentary 1-day registration on day paper is presented for one individual per paper only</td>
<td>No</td>
</tr>
<tr>
<td>Author (student)</td>
<td>Complimentary 3-day registration for all authors or co-authors</td>
<td>Yes</td>
</tr>
<tr>
<td>Presenter (without SAWE paper submittal)</td>
<td>Complimentary 1-day registration for day of presentation</td>
<td>No</td>
</tr>
</tbody>
</table>

Training Registration

- One two-day class: $700 (SAWE member)/$800 (non-member)
- One full-day class: $350 (SAWE member)/$450 (non-member)
- One half-day class: $175 (SAWE member)/$275 (non-member)
- Exhibitor class: $20 (SAWE member and non-member)

Course registrations must be completed no later than May 6, 2013, to ensure your seat in the class, and to allow for pre-planning by the instructor and preparation of sufficient class materials. Exceptions will be considered ONLY if class space remains after the aforementioned date. Class sizes are limited, and enrollment is subject to availability. The SAWE reserves the right to cancel or combine classes if enrollment does not meet the minimum requirements. Also, as with the conference registration fee, those who are not SAWE members incur a $100 non-member enrollment fee, and so should consider joining the SAWE for $60 at the time of registration.