Welcome to SAWE
What is Mass Properties Engineering?

- Predict, Control, Verify:
  - Weight
  - Center of Gravity (CG)
  - Moments of Inertia (MOI)
  - Products of Inertia (POI)
- Entire product, entire life-cycle
  - Concept thru Customer Support
  - “Rivet to Ramp”
Why is Mass Properties Control important?

- Weight, Center of Gravity, Moments and Products of Inertia are **critical** for vehicle safety and performance.
Why is Mass Properties Control important?

• **Cost of weight growth and balance issues increases dramatically as your programs progress**
Who is SAWE?

• We are a Non-Profit International Organization of Mass Properties Engineers founded in 1939

• Our Purpose:
  • To promote the Mass Properties discipline
  • To provide a medium for exchanging recommended practices based on experience and innovation
  • To foster technical excellence and superior quality in mass properties prediction, control and validation

• 20 Chapters in the US, Canada, South America, UK and Europe

• 12 Corporate Members and Partners
Industries Served by SAWE

• Initially - Society of Aeronautical Weight Engineers
• 1973 - Renamed Society of Allied Weight Engineers to include:
  • Aerospace – aircraft, missiles, space, electronics, ...
  • Marine – surface, cargo, submarines, ...
  • Offshore Platforms – oil and gas, launch/landing, ...
  • Land Vehicles – automotive, armored, construction, ...
  • Allied Industries – scales, equipment, software, ...
### SAWE International Leadership Team

<table>
<thead>
<tr>
<th>Position</th>
<th>Officer</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Robert Hundl</td>
<td>Fluor Corporation</td>
</tr>
<tr>
<td>Executive VP</td>
<td>Jason Booth</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>Senior VP</td>
<td>Chris Wandell</td>
<td>Northrop Grumman Corporation</td>
</tr>
<tr>
<td>VP Publications</td>
<td>Melissa Gray</td>
<td>United States Air Force</td>
</tr>
<tr>
<td>VP Technical</td>
<td>Robert Zimmerman</td>
<td>Lockheed Martin - Retired</td>
</tr>
<tr>
<td>VP Training</td>
<td>Dan Rowley</td>
<td>Northrop Grumman Corporation</td>
</tr>
<tr>
<td>VP Vendor Relations</td>
<td>Clint Stephenson</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>VP Internet Operations</td>
<td>Greg Ray</td>
<td>The Boeing Company</td>
</tr>
<tr>
<td>VP Standards &amp; Practices</td>
<td>Jorge Bes</td>
<td>Airbus</td>
</tr>
<tr>
<td>VP Academic Affairs</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Executive Director</td>
<td>Bill Boze</td>
<td>HII - Retired</td>
</tr>
</tbody>
</table>
Why is SAWE important?

• **Mass Properties discipline often overlooked**
  • Not specifically in college curriculum even though it is integral to every product and system
  • Company Management mistakenly thinks CAD can do it all
  • Inadequate staffing/skills increases program risk
  • Aging workforce in this crucial discipline
    • 62% retiring over next 10 years*

• **SAWE provides:**
  • Proven processes and experience for mass properties control
  • Educational resources for ensuring a skilled workforce
  • International collaboration between industry and governments
  • Venue for sharing and discovering new methods and lessons learned

*The Health of Mass Properties Engineering - 2018 Industry Survey*
How do Individual Members Benefit?

• Networking
  • Collaborate with peers at chapter meetings, virtual forums, training, and regional and international conferences
  • Learn from experts and mentor the next generation
  • Discover career opportunities
  • Make lifelong friendships

Upcoming International Conferences
  2024 Virtual
  2025 Albuquerque, New Mexico
How do Individual Members benefit?

• **Publications**
  • Members Only access to *the* premier source for Mass Properties literature
  • Extensive Library of over 3500 Technical Papers*
  • 3 issues of Weight Engineering Journal per year
  • SAWE Blog
  • Discounts for all SAWE publications and textbooks
  • Free SAWE Handbook (digital) plus updates

* 10 free downloads/year
How do Individual Members benefit?

• Training
  • Variety of unique courses from analytical methods to measurement techniques taught by experts online, onsite, or at conferences
  • Certification courses in critical tasks such as Aircraft Weighing, Automated Weight and Balance Software, Ship Inclining, and others
  • Improves technical capabilities and skills

Classroom or online

Hands on
How do Individual Members benefit?

- **Scholarships***
  - SAWE Scholarship - $1000 (2 awarded/year typically)
    - Applicants must be high school seniors or graduates who plan to enroll or students who are already enrolled in a full-time undergraduate course of study at an accredited four-year college or university.
  - Frank Fong Memorial Scholarship - $1000 (1 awarded/year)
    - Same requirements as above, but applicant must be majoring in a scientific field (e.g. engineering, physics, mathematics, computer sciences, etc.)
  - Annual Conference Scholarship - $1000 (1 awarded/year)
  - Chapter Scholarships
    - Amount determined by individual Chapter

*For student members and children or grandchildren of members active for at least 1 year*
How do Individual Members benefit?

• Recognition
  • Awards for advancing the Mass Properties discipline
    • Best Student Paper Award
    • Ed Payne Young Engineer Award
    • L. R. “Mike” Hackney Best Paper Award
    • Special Merit Award
    • SAWE Fellow
    • SAWE Honorary Fellow
    • SAWE Richard Boynton Lifetime Achievement Award
  • Certified Mass Properties Engineer
How do Individual Members benefit?

- **Leadership Development**
  - SAWE helps you:
    - Innovate
    - Create
    - Solve problems
    - Make a difference locally and globally!
  - Numerous opportunities to get involved and lead
    - Local Chapter Positions
    - International Officer Positions
    - Committee Chairs
How do Company Members benefit?

- **Skilled Workforce**
  - Mass Properties Engineers properly trained with access to the latest knowledge base
  - Program risk reduced through proper application of proven processes
  - Lessons learned passed on to younger generation starting at the college level
How do Company Members benefit?

• **Standards**
  • Gain access to proven recommended practices created through years of SAWE, industry and government collaboration
  • Help shape these standards
How do Company Members benefit?

• **Technology Awareness**
  • Keep abreast of the latest equipment, software and services available
  • Share your innovations with potential customers / collaborators
## How much does it cost?

<table>
<thead>
<tr>
<th>Level</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company</strong></td>
<td></td>
</tr>
<tr>
<td>• Gold Partner</td>
<td>$15,000/year</td>
</tr>
<tr>
<td>• Silver Partner</td>
<td>$6,000/year</td>
</tr>
<tr>
<td>• Member Level 2</td>
<td>$1,500/year</td>
</tr>
<tr>
<td>• Member Level 1</td>
<td>$1,000/year</td>
</tr>
<tr>
<td><strong>Individual</strong></td>
<td></td>
</tr>
<tr>
<td>• New Member</td>
<td>$40/1st year</td>
</tr>
<tr>
<td>• Member</td>
<td>$80/year</td>
</tr>
<tr>
<td>• Retired Member</td>
<td>$40/year</td>
</tr>
<tr>
<td>• Student Member</td>
<td>Free (pending verification)</td>
</tr>
<tr>
<td>• Lifetime</td>
<td>15X Individual Membership</td>
</tr>
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</table>
## What is included in Company Membership?

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Silver</th>
<th>Gold</th>
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<tbody>
<tr>
<td>Annual International Conference Proceedings</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Presentation opportunity at International Conference</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SAWE Weight Engineering Journal</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Listing on SAWE Website</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Open access to SAWE Technical Library (* up to 100 downloads/year, ** up to 200/year)</td>
<td>✓*</td>
<td>✓**</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Open access to SAWE Standards and Practices</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>10% Discount on Annual Advertising Rates</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reduced rate for Onsite Group Training</td>
<td>5%</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
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<tr>
<td>Complimentary Individual Memberships</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Seat on Board of Directors</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voting privileges on Board of Directors</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>Standards and Practices Committee Memberships</td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
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<tr>
<td>One 3-day International Conference Exhibit Space</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>3-day International Conference Registrations</td>
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<td>2</td>
<td>6</td>
<td></td>
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<tr>
<td>One 1-day Training Course Registration</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
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<tr>
<td>Job Postings for Open Mass Properties Positions on SAWE Website</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Color Ad in the International Conference Program</td>
<td></td>
<td>½-page</td>
<td>Full-page</td>
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</tr>
<tr>
<td>Choice of ½-Page Color Ad in one edition of Weight Engineering Journal or 3-month Ad on Website</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One full-page Color Ad in each edition of Weight Engineering Journal and full-year ad on Website</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Where can you learn more?

- https://www.sawe.org
How can you partner with us?

• [https://www.sawe.org/members/corporate-partners/](https://www.sawe.org/members/corporate-partners/)
Come and Join Us as a Corporate Partner!

• Gain access to key Mass Properties experts and decision makers form around the globe
• Help us keep our critical discipline alive and well
  • Encourage your employees to become members
  • Support them in writing technical papers
  • Send them to conferences and training
  • Sponsor our conferences, certification, and training programs
• Your Company and SAWE share the same goals for excellence in Mass Properties Engineering

Help Us Help YOU!