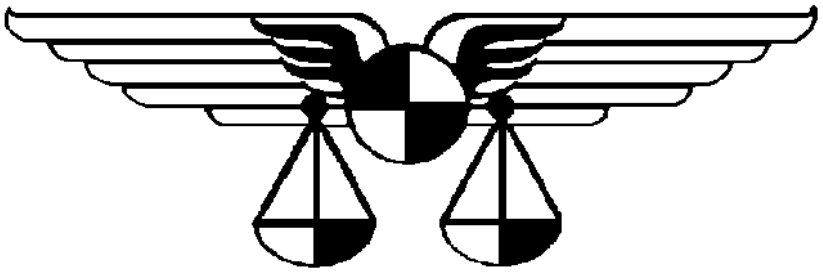
Society of Allied Weight Engineers, Inc.



Aerospace - Marine - Offshore - Land - Allied Industries

SAWE'S VIRTUAL TECH FAIR FOR MASS PROPERTIES ENGINEERS 2020

Message from the President

On behalf of the Society of Allied Weight Engineers I want to extend a cordial invitation to SAWE's first ever virtual conference which is our 79th Annual International Conference. Our conference host committee has planned an exciting event line up of opportunities for you to:

- Learn about today's latest technologies, techniques, and programs
- Participate in mass properties specialty training courses
- Participate in development and updates of mass properties industry standards
- Experience problem solving in forum and workshop discussions
- Get acquainted with products essential to our jobs and get in contact with vendor representatives

SAWE's technical sessions, training courses, standards and practices workshops, and forum discussion address the many needs and issues across the military aircraft, commercial aircraft, airline, space, marine, offshore, land vehicles, and allied industries represented by our society.

The conference is designed to enhance your knowledge and capabilities in a technical, comfortable, and affordable atmosphere. Mass properties engineering has many dynamic influences that have become increasingly important. Factors such as new challenges due to changes in technologies, materials, manufacturing, design to cost, and significant impending workforce attrition make these opportunities even more important for companies to sponsor your participation.

Attendance at our conference will be rewarded with a valuable experience renewing your understanding of mass properties and improving your abilities to generate top performance products in a safe, efficient manner.

You should note that most of our schedule is spread into shorter sessions than usual to accommodate time zones worldwide and reduce fatigue of sitting for entire days. In addition this conference is very affordable to attend and presents an opportunity to accommodate your training budgets for maximum attendance.

Got questions? Email techfair@sawe.org

John Hargrave
SAWE President, Northrop Grumman (retired)

REGISTER AT THE FOLLOWING LINK

https://www.sawe.org/registration/

Supporting Organizations

AEROSPACE

Corporate Partner
Exhibitor

LOCKHEED MARTIN

Corporate Partner
Exhibitor

ALTAIR

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Exhibitor

resonic inertia measurements

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GEC General Electrodynamics Corporation

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ShipWeight™

Exhibitor

Huntington Ingalls Industries

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Intercomp advanced weighing technology . . . by any measure

Corporate Partner
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lsb Management Consulting and System Development GmbH

Social Break Sponsor

TECHNICAL SESSIONS

All times are listed as Pacific Daylight Time (PDT), which is -7 UTC (Coordinated Universal Time)
Central European Time is +2 UTC, PDT is therefore 9 hours behind Central European Summer Time

MONDAY - JUNE 22, 2020 ALL TIMES PDT	
SESSION 1 Host: Robert Zimmerman (SAWE VP Technical Director) Co-host: Kim Mittler (Airbus)	
07:00 - 07:10 AM	Opening Remarks; Intro to Tech Fair John Hargrave & Robert Zimmerman
07:10 - 08:00	Keynote Speech: "Why Weights Engineering is So Dang Important, and Why Weights Engineers Get All the Blame" Dr. Daniel P. Raymer (Conceptual Research Corporation)
08:00 - 08:10	Vendor-Sponsor Presentation: Shipweight (Runar Aasen)
08:10 - 08:20	Short Break
08:20 - 08:50	Paper 3734: Dynamic Computer Simulation of Aircraft Buoyancy Peter Stubbers (Gulfstream Aerospace)
08:50 - 09:00	Corporate Sponsor Presentation: Lockheed Martin (Glen Richbourg)
09:00 - 10:00	Long Break
SESSION 2 Host: Robert Zimmerman (SAWE VP Technical Director) Co-host: Dirk Petersen (Airbus)	
10:00 - 10:05	Welcome Back Introduction of Session 2 Panelists
10:05 - 10:35	Paper 3735: Weight and Balance Challenges for Hybrid Electric Propulsion System Vera de Paula (Airbus)
10:35 - 10:45	Vendor-Sponsor Presentation: Resonic (Robert Kloepper)
10:45 - 11:15	Paper3736: Hydrogen Fuel Cell Power System Weight Challenges in VTOL Aircraft Joseph Rainville and Greg Ray (Bell)
11:15 - 11:20	Short Break
11:20 - 11:50	The 2021 SAWE International Conference, Patrick Brown (Northrop Grumman)
11:50 - 12:00 PM	Corporate Sponsor Presentation: General Electrodynamics Corporation (Matthew Bailey)

TECHNICAL SESSIONS

TUESDAY - JUNE 23, 2020 ALL TIMES PDT	
SESSION 3 Host: Robert Zimmerman (SAWE VP Technical Director) Co-host: Dr. Donna Gerren (University of Colorado)	
07:00 - 07:05 AM	Welcome Back Introduction of Session 3 Panelists
07:05 - 07:35	Paper S3743: FVA 30: Structural Design of a Touring Motor Glider using Probabilistic Mass Estimation Methods Matthias Konersmann (Rheinisch-Westfaelische Technische Hochschule Aachen)
07:35 - 07:45	Corporate Sponsor Presentation: Space Electronics (Robert Cipolli)
07:45 - 07:50	Short Break
07:50 - 08:20	Paper 3741: Finding the Balance Between Accuracy and Practicality In Deadweight Audits Manuela Bucci (Tymor Marine)
08:20 - 08:30	Corporate Sponsor Presentation: Altair (Rocco Cappiello)
08:30 - 09:00	Paper 3752: A portable device for measuring the CoG: design, error analysis and calibration Giorgio Previati (University di Milano)
09:00 -10:00	Long Break
SESSION 4 Host: Robert Zimmerman (SAWE VP Technical Director) Co-host: Darren Gamble (Bombardier)	
10:00 - 10:05	Welcome Back Introduction of Session 4 Panelists
10:05 - 10:35	3732: Class II & 1/2 Mass Estimation of Light Aircraft Composite Wings Miguel Nuño (Rheinisch-Westfaelische Technische Hochschule Aachen)
10:35 - 10:45	Vendor / Sponsor
10:45 - 11:15	Presentation 3747: CFRP Density uncertainties and its overall mass impact Joerg Eichhorn (Airbus)
11:15 - 11:20	Short Break
11:20 - 11:50	Paper S3758: Strategies for the Composite stiffened Panel Topology Optimization for Minimum Weight Mohit Talele (Technical University Braunschweig)
11:50 - 12:00 PM	Vendor / Sponsor

TECHNICAL SESSIONS

WEDNESDAY - JUNE 24, 2020 ALL TIMES PDT	
SESSION 5 **Host: Robert Zimmerman (SAWE VP Technical Director)** **Co-host: Manuela Bucci (Tymor Marine, Ltd)**	
07:00 - 08:30 AM	Mass Properties Forum The Role of Statistics in Mass Properties Engineering Manuela Bucci (Tymor Marine) & Robert Zimmerman (SAWE)
08:30 - 08:35	Short Break
08:35 - 09:00	Paper S3749: One fits all? A comparison of weight estimation methods for preliminary aircraft design Arthur Klünder (Technical University of Berlin)
09:00 - 10:00	Long Break
SESSION 6 **Host: Robert Zimmerman (SAWE VP Technical Director)** **Co-host: Anjie Emmett (Analytical Mechanics Associates)**	
10:00 - 10:05	Welcome Back Introduction of Session 6 Panelists
10:05 - 10:35	Paper 3751: Development of the Mass Properties Engineer Certification Program Andreas Schuster (Retired)
10:35 - 10:45	Corporate Sponsor Presentation: The Aerospace Corporation (Richard Manning)
10:45 - 11:15	Presentation: Aircraft Weight and Balance System Version 11 Harold Smoot (Lockheed Martin)
11:15 - 11:20	Short Break
11:20 - 11:50	Paper 3753: Theoretical and experimental evaluation of the flexibility of the test rig on inertia property measurement Giorgio Previati (University di Milano)
11:50 - 12:00 PM	Corporate Sponsor Presentation: Intercomp Company (Johnny Redman)
12:00 - 12:20 PM	The 2021 SAWE International Conference, Patrick Brown (Northrop Grumman)

TECHNICAL SESSIONS

THURSDAY - JUNE 25, 2020 ALL TIMES PDT	
SESSION 7 **Host: Robert Zimmerman (SAWE VP Technical Director)** **Co-host: Melissa Gray (United States Air Force)**	
07:00 - 07:05 AM	Welcome Back Introduction of Session 7 Panelists
07:05 - 07:35	Paper 3737: Use of Mass Growth Allowance to Dynamically Manage Mass Risk Zaid Karajeh (Maxar)
07:35 - 07:45	Vendor / Sponsor
07:45 - 07:50	Short Break
07:50 - 08:20	Paper 3739: Rotorcraft mass assessment in an integrated design framework Dominik B. Schwinn (DLR)
08:20 - 08:30	Corporate Sponsor Presentation: Huntington Ingalls Industries (David Cash)
08:30 - 09:00	Paper S3760: Design for Positive Static Margin of a Radio-Controlled Box-wing Aircraft Charlotte Bellerjeau (University of Colorado)
09:00 -10:00	Long Break
SESSION 8 **Host: Robert Zimmerman (SAWE VP Technical Director)** **Co-host: Errol Oguzhan (SAWE Senior Vice President)**	
10:00 - 10:05	Welcome Back Introduction of Session 8 Panelists
10:05 - 10:35	Paper 3759: Advanced weight forecasting based on physical/mechanical similarity of components during early development of land vehicles, aircraft and spacecrafts Hans-Peter Dahm, TGM Lightweight Solutions
10:35 - 10:45	Vendor / Sponsor
10:45 - 11:15	Presentation: Airbus Flight Sciences Uwe Kerlin(Airbus)
11:15 - 11:20	Short Break
11:20 - 12:00 PM	Awards and Closing Statements Paper & Student Awards Other Awards Closing Remarks (William Boze, SAWE Executive Director)

Standards & Practices

SAWE supports mass properties professionals and their customers by making available products such as Recommended Practices, textbooks and handbooks. The Standards and Practices committee provides a non-proprietary, consensus forum for developing these products which make our professional activities more efficient, more consistent, and more valuable to the professionals of today and tomorrow, as well as more understandable to our customers.

Six industry committees encompass the breadth of SAWE activities. Each industry committee will meet in separate sessions. During this time, industry needs and opportunities are reviewed, past progress is reviewed and future activities are planned. Committees may use the forum to brainstorm or build consensus on a particularly challenging issue. This is also the opportunity to elect committee chairs for the next year.

The Standards and Practices committee invites all conference attendees to participate and help us improve our profession. You are not required to join the session that matches your industry. We welcome new ideas, new participants and new contributions. This is your opportunity to make your voice heard.

Airline Affairs – focused on aircraft loading and performance for commercial airline operations; includes commercial aircraft product development

Marine – private, commercial, government and military surface vessels; submarines

Military Aircraft – military fixed wing, rotary wing and lighter-than-air vehicles; includes remotely piloted aircraft; includes applications on private and commercial aircraft

Missiles & Space - commercial, government and military missiles, launch vehicles and spacecraft

Offshore – fixed base, floating and semi-submersible platforms primarily for commercial petroleum exploration, drilling and production

Ground Vehicles – private, commercial, government and military cars, trucks, motorcycles, off-road vehicles, construction equipment and trains

All times are listed as Pacific Daylight Time (PDT), which is -7 UTC (Coordinated Universal Time) Central European Time is +2 UTC, PDT is therefore 9 hours behind Central European Summer Time

Standards & Practices

MONDAY - June 29, 2020	
07:00 - 09:00 AM	Standards and Practices Joint Opening Session Host: Doug Fisher, VP S&P Highlight: We're all in the same storm, but not in the same boat – but standards can keep us all afloat
09:00 - 10:00	Long Break
10:00 - 12:00 PM	Military Aircraft Workshop Host: Paul Kachurak Highlight: RP A-7 Mass Properties Management & Control
TUESDAY - June 30, 2020	
07:00 - 09:00 AM	Marine Workshop Host: Greg Roach
09:00 - 10:00	Long Break
10:00 - 12:00 PM	Military Aircraft Workshop Host: Paul Kachurak Highlight: RP A-8 Weight & Balance Forms
WEDNESDAY - July 1, 2020	
07:00 - 09:00 AM	Missile and Space Workshop Host: Richard Manning Highlight: ANSI/SAWE RP A-6 Coordinate System for Spacecraft
09:00 - 10:00	Long Break
10:00 - 12:00 PM	Offshore Workshop Host: Robert Hundl Highlight: Review progress on RP O-4 Offshore Weight Reporting and RP O-7 In-Service Weight Control
THURSDAY - July 2, 2020	
07:00 - 09:00 AM	Airline Affairs Workshop Host: Mike Byham Highlight: Development of a standard passenger weight guideline for the FAA
09:00 - 10:00	Long Break
10:00 - 12:00 PM	Ground Vehicle Workshop Host: TBD
FRIDAY - July 3, 2020	
07:00 - 09:00 AM	Standards and Practices Joint Session Host: Doug Fisher, VP S&P Highlight: session review, plans for 2021
09:00 - 10:00	Long Break
10:00 - 12:00 PM	Open

ALL TIMES PDT, UTC -7

Standards & Practices

Arline Affairs Agenda

• Welcome/Attendance/Anti-Trust Agreement
• Highlight: Development of a standard passenger weight guideline for the FAA AC120-27F / Passenger Weight Update
• Mass Properties Engineer Certification

Military Aircraft RP-7 Agenda

• Welcome / Introduction
• Agenda Overview
• Anti-Trust Statement Agreement
• Review of Last Year's Minutes
• Status of Mass Properties Engineer Certification
• Review of Military Aircraft Critical Elements
• RP-7 Overview Training and Q&A Session
• Closing Remarks

Military Aircraft RP A-8 Agenda

• Welcome / Introduction
• Agenda Overview
• Anti-Trust Statement Agreement
• Status of Mass Properties Engineer Certification Recap Day 1
• Review of Military Aircraft Critical Elements Recap Day 1
• RP A-8 Overview Training and Q&A Session
• Closing Remarks

Marine Agenda

• Acknowledgement of the Anti-Trust policy
• Standards Update and Discussion
• SAWE RP12/M-1 "Weight Control for Naval Ships" Update
• Weight & KG Margins
• Service Life Allowances/Future Growth Margins
• Waterfront weight monitoring, tracking and reporting
• 3D Modeling and Mass Properties
• Weight Engineer's Handbook update
• ESWBS Guide Discussion
• IC Chair Elections
• Mass Properties Engineer Certification working session
• Open discussion

Offshore Agenda

• Acknowledgement of agreement to the SAWE Anti-trust Agreement
• Current Officer state, election of new officers
  (a) Robert Hundl
    (1 yr, continue term for 2020-21)
  (b) Open (2 yr)
  (c) Open (3 yr)
• MPE certification – Andy Schuster
• Status of items from HOW 2020 (Regional Workshop)
• SAWE RP O-7 "In-Service Weight Control"
• SAWE RP O-4 "Weight Reporting"
• Weight Engineers Handbook – Offshore Section

Ground Vehicles Agenda

• Review SAWE's Anti-Trust Agreement
• Nominate/Elect GV Industry Committee Co-Chairs
• Review Minutes from 2019, 2018
• Perfect the Agenda for 2020
• Review RP G-1, and vote to approve
• Discussion of Certification of Mass Properties Engineers Requirements for GV
• Additional Ground Vehicle RPs
• A revised Land Vehicle Chapter of the SAWE handbook
• Review Potential technical Paper Topics for 2021
• Develop training classes for "professional" level engineers
  • Based on the textbook: MOA & POI of Rigid Body Design Principals of Measurements Systems.
• Establish Meeting Schedule for 2020-21

Missile & Space Agenda

• RP A-3 Mass Properties Control for Space Vehicles
• ANSI/SAWE RP A-6 Missiles and Space Standard Coordinate System
• Missiles & Space book
• RP 16 Measurement of Missiles and Space Mass Properties

Training Courses

Automated Weight and Balance System (AWBS) Software Training
Harold Smoot – SAWE Fellow – Lockheed Martin

This class will present the features of the Automated Weight and Balance System in a hands-on software training class. The class will include explanations of the charts and forms (Chart A, Form B, Chart C, and Form F) explained in RP7 to maintain proper operational weight and balance of military aircraft. The basic approach of the class is to give computer demonstrations followed by student exercises that provide the students with a good understanding of AWBS Version 10.0 features and capabilities. The instructor will also address students' specific AWBS questions. Students are required to schedule a 30 minute Set up session with the instructor prior to the class. This session is to install AWBS v10 on the student's computer.

Structural Weight Optimization for Mass Properties Engineers
Raj Bishnoi - Altair

This course will enable Mass Properties Engineers to identify and realize weight reduction opportunities through application of finite element analysis based structural optimization. The course will cover the topics key to successful application of structural optimization which include (i) fundamentals of finite element analysis, (ii) fundamentals of structural optimization, (iii) identification of optimization opportunities, (iv) formulation of structural optimization problem, (v) design interpretation, (vi) design validation, and (vii) practical engineering aspects of structural optimization. Classroom instructions on these topics will be consolidated using hands-on exercises.

Developing Basic Parametric Methods
Andy Walker - SAWE Member - Lockheed Martin

Have you ever been asked to predict the future? With a little information, you can explore the solution-space around the problems you encounter on the job as a Mass Properties engineer.

The course will cover:
- Parametric estimation and rapid aircraft mass properties assessments.
- Feasibility studies on detail design projects
- Conceptual trade studies based on very limited information
- Quantify predictive and descriptive uncertainty around your predictions
- Calculate the benefits of next-generation technologies

Agenda items will include basic statistical terminology, statistical correlation processes, parametric estimation pitfalls, and a parametric fighter aircraft wing weight correlation example.

Training Courses

Designing the Aircraft of the Future

Andy Walker - SAWE Member - Lockheed Martin

This class presents the principles of weight engineering in new aircraft design as described in the SAWE Aircraft Weight Engineering Textbook. Course topics include: requirements development, aircraft performance, conceptual aircraft design weight estimates & optimization, weight trades, engine selection, vendor weight selection, establishing target weights, operational weight, preliminary design studies, detail design and database management. Students attending the class will receive a copy of the Aircraft Weight Engineering Textbook.

Marine Vehicle Weight Estimating Methodology

David Hansch – SAWE Fellow - Huntington Ingalls Industry

This is a class discussing the fundamentals of marine vehicle weight estimating. A review of the weight estimating methods described in SAWE Recommended Practice 14 "Marine Weight Estimating & Margin Policy Guideline". The class will cover the theory, and application of these methods on specific examples and for whole ship design. The appropriateness of each method for each stage of ship design, construction and operation will be discussed. The students will work examples to estimate the weight of a vessel using multiple methods. Historic examples of weight estimating errors will be discussed as an example of practices to be avoided. Classroom materials and exercises will be provided. Students should have reviewed Chapter 24 in the Weight Engineers Handbook, and SAWE RP 14 found on the SAWE website

Training Courses

THURSDAY - June 25, 2020	
05:00 AM - 09:00 AM 02:00 PM - 06:00 PM (CET)	Automated Weight and Balance System (AWBS) Software Training (Part 1) (Intended Audience: Europe)
FRIDAY - June 26, 2020	
05:00 AM - 09:00 AM 02:00 PM - 06:00 PM (CET)	Automated Weight and Balance System (AWBS) Software Training (Part 2) (Intended Audience: Europe)
07:00 AM - 11:00 AM	Developing Basic Parametric Methods (Part 1)
SATURDAY - June 27, 2020	
07:00 AM - 11:00 AM	Developing Basic Parametric Methods (Part 2)
MONDAY - July 6, 2020	
07:00 AM - 11:00 AM	Designing the Aircraft of the Future (Part 1)
07:00 AM - 11:00 AM	Structural Weight Optimization for Mass Properties Engineers (Part 1)
TUESDAY - July 7, 2020	
07:00 AM - 11:00 AM	Designing the Aircraft of the Future (Part 2)
07:00 AM - 11:00 AM	Structural Weight Optimization for Mass Properties Engineers (Part 2)
WEDNESDAY - July 8, 2020	
07:00 AM - 11:00 AM	Designing the Aircraft of the Future (Part 3)
07:00 AM - 11:00 AM	Marine Vehicle Weight Estimating Methodology (Part 1)
THURSDAY - July 9, 2020	
07:00 AM - 11:00 AM	Designing the Aircraft of the Future (Part 4)
07:00 AM - 11:00 AM	Marine Vehicle Weight Estimating Methodology (Part 2)
FRIDAY - July 10, 2020	
07:00 AM - 04:00 PM	Automated Weight and Balance System (AWBS) Software Training (Intended Audience: Americas)

ALL TIMES PDT, UTC -7, UNLESS OTHERWISE LISTED

Class	Cost
Designing the Aircraft of the Future	$600
Structural Weight Optimization for Mass Properties Engineers	$300
Marine Vehicle Weight Estimating Methodology	$300
Automated Weight and Balance System Software Training	$350
Developing Basic Parametric Methods	$300

Prices are for each training course and do not include Week 1 and Week 2 event registrations

Pricing and Registration

$199

SAWE MEMBERS & NON-MEMBERS

ACCESS TO ALL TECHNICAL SESSIONS WEEK 1
ACCESS TO ALL STANDARDS AND PRACTICES WORKSHOPS WEEK 2

$29

RETIREES & STUDENTS

ACCESS TO ALL TECHNICAL SESSIONS WEEK 1
ACCESS TO ALL STANDARDS AND PRACTICES WORKSHOPS WEEK 2

NOTE: All sessions for the entire Tech Fair Event will be held on Zoom. We recommend creating a Zoom account to make the experience easier. Links to sessions will be sent to attendees prior to each event. If you have any questions please email
Tech Fair techfair@sawe.org
or
Tech Fair technical support techfairhelp@sawe.org

REGISTER AT THE FOLLOWING LINK

https://www.sawe.org/registration/