Now In Its 5th Year...

A GALM SERIES EVENT

Lightweight Materials And EV Body Structures Manufacturing Technologies 2018

February 21st, 22nd, 2018 | Motor City Casino Hotel, Detroit, MI

Strategies And Techniques For Multi-Material Joining, Forming And Corrosion Mitigation
For Conventional And Electric Vehicle Body Structures
Case Study Based Solutions On Composites To Metals, Aluminum To Steels, And Magnesiums

The Industry’s Leading Event On Advanced Joining, Forming & Manufacturing Technologies
For Lightweight Body Structures And Next Generation Electric Vehicles

Highlights Include:

- **Corrosion Mitigation Strategies:** The latest industry best practice and technologies for corrosion mitigation in mixed material structures.
- **EV/Hybrid Vehicle Design:** Future Vehicle Requirements; Understand How Joining And Manufacturing Processes Will Be Adapted For EV/Hybrid Vehicles.
- **Battery Pack Mounting:** Mounting And Integrating Battery Packs Into Lightweight Body Structures
- **Laser Welding:** Laser Welding Between Steel And Ductile Iron Dissimilar Materials
- **Welding Solutions For UHSS to Aluminum:** Solutions To Resistance Spot Welding Of AHSS & Novel Process For Welding Aluminum To Steel
- **Magnesium Focus:** Detailed analysis and evaluation of magnesium component manufacturing + Viability For Large Scale Roll Out
- **Thermal Expansion:** Addressing the expansion and implications of dissimilar materials after painting process.
- **UHSS Springback Prediction:** Detailed analysis of how to increase prediction performance of UHSS component following springback effect.
- **Aerospace Innovation:**
  - Advancement in composite material technologies and performance
  - Adhesive Joining With Mechanical Fasteners And Extreme Temperature Testing

SAVE $200
Register By December 22

2018 HEADLINE SPONSOR

www.global-lightweight-vehicle-manufacturing.com
Welcome To The 5th Global Automotive Lightweight Manufacturing Summit 2018 Focusing On Advanced Joining, Forming & Manufacturing Technologies For Lightweight Body Structures

This year’s OEM-led agenda will focus on providing solutions to the most current joining and forming issues for large-scale vehicle manufacturing with the added bonus of exploring how EV body structure will impact current and future joining and manufacturing technologies.

Currently, the Environmental Protection Agency (EPA) has set the requirement of fuel economy that would gradually increase the average miles per gallon requirements for cars to 54.5mpg by 2025.

As lightweighting technologies continue to impact the manufacturing of vehicle production, the resulting benefits of driving fuel efficiency, lowering carbon footprint and enhancing vehicle performance remains at the forefront. Thus, discovering the latest methodologies and technologies in joining dissimilar materials, and reducing production cycles for high-volume vehicle production continues to be the priority for the automotive industry.

The 2018 event will gather together knowledge and information from both leading traditional and new electric vehicle OEMs to showcase the latest case studies and discussions aimed at enhancing the performance of dissimilar material joining, corrosion mitigation strategies and eliminating thermal expansion issues, whilst at the same time improving manufacturing processes for lightweight materials: Magnesium, Aluminium, New-Age Steel and Composites.

The event theme is carefully contextualised to bring a 360-degree view on driving down costs and improving the scalability of new manufacturing technologies.

Alistair Ren-Healey
Content Director
Lightweight Manufacturing Summit USA & Europe

Sponsorship Opportunities:
The Global Automotive Lightweight Materials Summit 2017 offers an exclusive opportunity for your company to showcase your brand and services in a specialist environment.

Your presence at this event will ensure your organization is a recognised solutions provider for the attending OEMs. There are a number of exclusive opportunities available to leverage your company’s expertise. Please contact the ABC team at sponsorship@american-business-conferences.com or call us on (1) 800 721 3915

Eliminate Joining & Forming Robotics and replace with Joining Technologies Add Manufacturing Technologies Add Automation

- Joining & Forming Robotics
- E Coating Robotics
- Adhesives Joining Robotics
- Forming, Stamping & Casting
- Surface Treatment
- Welding Robotics
- Automation Technology For Joining & Forming Process
- Automation For Assembly Line Technologies
- Adhesive Technology
- Laser Welding
- Resistance Spot Welding
- Joining Simulation
- Crash Worthiness Simulation
- Corrosion Technology
- Advanced Aluminum & Steel Joining Technologies
- Advanced Composite Joining Technologies

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“Concept directly in line with challenges I face everyday. Great to hear other OEMs/Tiers speaking about these issues.
Advanced Materials Research, Honda R&D Americas”

“Lightweighting being the hot topic of the time, the panel discussion by the OEMs was the best of all I have attended, with good and frank lively dialogue.
Project General Manager, Toyota”

“It is a great networking opportunity.
Engineer, Ford Motor Company”

“Good mix of talks and speakers and there was more technical content than I expected. This was a pleasant surprise. Food, resources and media were excellent.
Technical Fellow, General Motors”

“OEN-LED EXPERT SPEAKER FACULTY INCLUDES:

Elie M. Tohme
Director of Body Engineering
Karma Automotive LLC

Antonio Mercado
BIW Manufacturing Engineering Manager
Faraday Future

Dr. Huaxin Li
Material/Welding Technical Specialist
General Motors

Dr. Salman Kahn
Senior CAE Lead
Faraday Future

Abhay (Abe) Vadhavka
Senior Technical Manager, Supplier Technical Assistance
Ford Motors

Dr. Paul J. Wolcott
Applications Engineer - Additive Manufacturing
General Motors

Michael W Danyo
Technical Specialist - Aluminum Structures
Ford Motor Company

Farid Haddadi
Process Engineer Specialist - BIW Manufacturing
Faraday Future

Raj Sohmshetty
Group Leader - Advanced Steel Technology, Manufacturing Research Department, R&A Engineering

Venue
MotorCity Casino Hotel
2901 Grand River Ave, Detroit, MI, 48201

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Lightweight Materials And EV Body Structures
MANUFACTURING TECHNOLOGIES 2018

A GALM SERIES EVENT
Assessing The Future Of Joining And Manufacturing Technologies For EV/Hybrid Vehicles Multi-Material Joining Strategies For: Aluminum, Next-Generation Steel And Composites

08:50 Chair Opening Remarks

DAY 1 Chair: Jim Erhardt, President, Rifast Systems LLC

OPENING KEYNOTE PANEL SESSION

09:00 Assessing The Structural Requirements Of Electric Vehicle BIW’s And The Impact On Joining, Forming And Manufacturing Technologies Of The Future

- How does vehicle electrification impact overall body engineering; how will it transform the joining and manufacturing currently available?
- What joining technologies are currently being utilized for EV vehicles?
- How the production of EV vehicle will impact the overall existing manufacturing assembly?
- What are the advancements in body engineering in new series built vehicles: what is the future?

Panelist: Elie Tohme, Director of Body Engineering, Karma Automotive
Panelist: Antonio Mercado, BW Process Engineering Manager, Faraday Future

09:40 Question And Answer Session

09:50 RESERVED FOR DEPRAG

10:20 Question And Answer Session

10:30 Refreshments Network Session - SPONSORED BY DEPRAG

CASE STUDY: JOINING DISSIMILAR MATERIALS FOR EV BATTERY INTEGRATION IN NEW MODEL VEHICLE STRUCTURE

11:00 Mounting And Integrating Battery Packs Into Lightweight Body Structures

- Evaluation of different joining techniques and manufacturing technologies for mounting and integrating battery pack casing
- Structural design features and enhanced joint performance to safeguard battery packs integration
- Improved CAE process, simulation and prediction

Dr. Salman Khan, Senior CAE Lead, Faraday Future

11:30 Question And Answer Session

11:40 RESERVED FOR SEMBLEX

12:10 Question And Answer Session

12:20 Networking Lunch Session - SPONSORED BY SEMBLEX

INNOVATION: METHODOLOGY FOR ALUMINUM TO STEEL STRUCTURES

13:30 Solutions To Resistance Spot Welding Of AHSS & Novel Process For Welding Aluminum To Steel

- Resistance spot weld micro-structure and properties characterization of AHSS
- Resistance spot welding of Hot-stamped boron steel with Zn and Al-Si coatings
- Resistance spot welding of complex steel stack-ups

- Development of new method for welding aluminum to steel

Menachem Kimchi, Advanced Materials Joining, Ohio State University

14:00 Question and Answer Session

MATERIAL JOINING

14:10 Material Joining Research & Development At Oak Ridge National Laboratory

Feng Zhi, Group Leader Processing & Joining, Oak Ridge National Laboratory

14:40 Question and Answer Session

LASER WELDING FOR DISSIMILAR MATERIAL JOINING

14:50 Laser Welding Between Steel And Ductile Iron Dissimilar Materials

- Laser Welding SAE D5506 ductile iron to SAE 5120M steel for front wheel drive differential carrier.
- 360 degree circular weld and effect of weld overlap quality on welding defects.
- Effect of weld geometries and welding parameters on weld cracking.
- Weld quality requirement.

Huaxin Li, Technical Specialist - Ferrous Matl & Welding, General Motors

15:20 Question and Answer Session

FASTENERS FOR AHSS

15:30 Clinch Nut Applications For Advanced High Strength Steels (Rm > 800 Mpa)

- Development of Class 10 fasteners for installation in AHSS (800 Mpa and beyond)
- Clinched joint characteristics:
  - Class 10 joint for assembly
  - Minimal deformation of stamping material
  - ZERO cracking on the fastener features during clinching process

Viral Varshney, Director of Engineering, Rifast LLC

16:00 Question and Answer Session

16:10 Refreshments Network Session - SPONSORED BY Rifast

CASE STUDY: RESISTANCE SPOT WELDING

16:40 Resistance Spot Welding and Structural Adhesive Applications in a Low Throughput/ Medium Level of Automation Body Line

- Resistance spot welding (RSW) process control and verification practices used in a low throughput/medium level of automation body line.
- Structural adhesive application process control, and how to improve & decrease valuation for the application of adhesive.
- Understand the best practices of adhesive applications in a non robotic application

Mohamad Elkafafay, Operational Excellence Specialist, GM

17:00 Question and Answer Session

MULTI-MATERIAL JOINING PROCESSES

17:10 Joining of Similar and Dissimilar Engineered Materials

- TOX joining of aluminum
- TOX joining of high strength steels
- Other joining processes supported by TOX

Troy Waldher, North American Sales Manager, Tox Pressotechnik

17:30 Question and Answer Session

CASE STUDY: BIW ADHESIVE BONDING FOR BODY ENGINEERING

17:40 Successfully Joining Composites To Aluminum Using Structural Adhesive: To Achieve Flexibility And Thicker Bond Line

- The performance and durability of structural adhesive bonded joints
- Evaluate the performance of adhesive bonding joints after it goes through hot and cold cycle
- How to match / compensate for differences in coefficient of thermal expansion between metal and composite parts
- Improve the performance of structural adhesive joints in a high impact scenario
- Improve prediction simulation of adhesive joints to understand crashworthiness and safety

Farid Haddadi, Process Engineering Specialist, Faraday Future

18:10 Question and Answer Session

SUPPLIER CASE STUDY: ROBOT ADHESIVE DISPENSING SYSTEM

18:20 Discover Advances In Robot Dispensing In The Assembly Line To Enhance Adhesive Performance

- Determine the latest advances in assembly line robots
- Discover what quality check systems are in place following the robot application of adhesive bonds to ensure correct volume is applied

18:40 Question and Answer Session

ADHESIVE INNOVATION

18:50 Multi-Substrate Adhesives for Automotive Production - US Market

Gino Mariani, Marketing - Automotive & Metals Industries, Henkel Adhesive Technologies

AEROSPACE FOCUS: MECHANICAL AND ADHESIVE JOINING

19:00 Question and Answer Session

19:10 Day One Conclusion Remarks From Jim Erhardt, President, Rifast Systems LLC

19:15 - 20:15 Networking Drinks Reception In Exhibition Area Sponsored By Rifast Systems LLC
Discussing Technologies And Methodologies To Mitigate Galvanic Corrosion; Thermal Expansion Challenges And Optimise Manufacturing Of Lightweight Material Body Structures

08:30 Chair Opening Remarks - Auto/Steel Partnership introduction
The chair will present the latest trends of in the auto/steel partnership and give a break down on the latest industry intelligence associated with competitive lightweight steel solutions for current and future requirements of automotive OEMs
Chair: John Catterall, Executive Director, Auto/Steel Partnership

ADHESIVE INNOVATIVE PRODUCTS
10:40 Automated Stud Gluing Without Adhesive Application
- Motivation behind Stud Gluing System (SGS)
- Process Benefits and Bonding Performance
- Next Generation SG
Dr. Sascha Gramsch-Kempkes, R&D Team Leader - Adhesive Technologies, Stanley Engineered Fastening

Focus A: Magnesium Manufacturing Techniques
CASE STUDY: DIE CAST MAGNESIUM
11:20 Magnesium Sheets Panels Forming And Discover Whether It Is Viable For Mass Production
- Advancements in the current stamping techniques available for magnesium sheets
- Evaluate the challenges involved in manufacturing magnesium components and discover potential solutions
- Understand how to form magnesium components for high volume production
- Examine the ductility of magnesium components in overall vehicle structure
- How to join magnesium components to a steel or AHSS part
Fadi AbuFarha, Assistant Professor, Clemson University

Focus B: UHSS & AHSS -Stamping Methodologies
CASE STUDY: HOT STAMPING FOR UHSS HIGH VOLUME VEHICLE PRODUCTION
12:00 Improve Methodology For UHSS High Volume Hot Stamping Production
- How to streamline hot stamping process to reduce overall cycle time
- What type of high strength steel is more suited for stamping to achieve better elongation
- How to process a reduction in gradient on hot forming high strength steel to achieve less than 0.7 gradient
Abhay Vanhakar, Senior Site Manager - Supplier Technical Assistance, Ford Motors

Focus B: UHSS & AHSS -Stamping Methodologies
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Abhay Vanhakar, Senior Site Manager - Supplier Technical Assistance, Ford Motors

12:20 Question and Answer Session
CAN STEEL IMPROVE THE AFFORDABILITY OF ELECTRIC CARS?
12:30 How AHSS can contribute to reducing the weight of complex components, a crucial element of improving driving range for EV batteries. The presentation will also examine further AHSS benefits to EV manufacturing, such as strong but lightweight battery protection and affordable cost levels.
- What role do advanced lightweight materials play in future cars?
- How can materials affect BIW stiffness in BEVs

09:20 Introduction On Material Joining Initiatives And Programs At Department Of Energy
Feng Zhili, Group Leader Processing & Joining, Oak Ridge National Laboratory

09:40 Question and Answer Session

STRUCTURAL ADHESIVE CORROSION
09:30 Strategies And Technologies Currently Available To Eliminate Galvanic Corrosion For Metallic Body Structure
- Assess the adhesive bonding performance between composite and metal
- How to avoid water properties from entering the adhesive joints during application
- Assess the best approach for two or three dissimilar materials joining to avoid galvanic corrosion
Michael Danyo, Technical Specialist - Aluminum Structures, Ford Motor Company

09:50 Question and Answer Session

ALUMINUM JOINING APPLICATION
10:00 Joining Of Aluminum Extrusions In Automotive Applications
- Structural joining methods in BIW components
- E-mobility: challenges for joining techniques
- Battery boxes, el. motor casings, enclosures, electric cables
- Joining dissimilar materials:
- Desired combinations
- Current and Prospective technologies
David A. Lukasak, Director Innovation & Technology, Hydro Extruded Solutions North America
10:10 Question and Answer Session
10:50 Refreshments Network Session - SPONSORED BY STANLEY ENGINEERED PRODUCTS

CASE STUDY: UHSS MILD STAMPING AND MITIGATION OF SPRINGBACK
14:00 How To Achieve Dimensional Quality Without The Challenge Of Springback
- What technologies are currently available improve prediction of final UHSS component geometry?
- What tools are required to compensate springback effect?
- What are the current methods or strategies in mitigating springback in forming high strength steel?

RESERVED FOR GM

CASE STUDY: HOT STAMPING PROCESS PARAMETER
14:30 Influence of Hot Stamping Process Parameters on Downstream Manufacturing Processes
- Understanding which available parameters for optimizing hot stamping quality of Ultra High Strength Steel components
- Discover the complexity of challenge for production and how up and down stream heating processing can affect stamping, joining and corrosion protection
- How the heating process parameters affect the coating development and subsequent resistance spot weldability of homogenous stackups
- Empirical and analytical model results on Al-Si coated Boron steels
Raj Sohnsbyetty, Group Leader - Advanced Steel Technology Manufacturing Research Department, Ford Motors

14:50 Question and Answer Session
15:00 Networking Break In Exhibition Hall - SPONSORED BY HYDRO EXTRUDED SOLUTIONS NORTH AMERICA

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Discussing Technologies And Methodologies To Mitigate Galvanic Corrosion; Thermal Expansion Challenges And Optimise Manufacturing Of Lightweight Material Body Structures

Focus C: Composites - Gain Confidence In The Manufacturing Of Next Stage Of Lightweight Materials To Stay One Step Ahead
ENERGY SAVINGS WITH RESISTANCE WELDING (RPW)

15:30 Resistance Projection Welding (RPW) is a welding technology that uses a rectangular projection (dimple) formed in one of the mating parts to create the electrical connection and focus the welding energy in a concentrated area.
- 33% of the force
- less than 20% of the weld duration
- up to 200% more current

Marc Auger, Director of Sales, Arplas USA LLC.
15:45 Question and Answer Session

CASE STUDY: 3D MANUFACTURING

15:55 Assess The Current Trends In 3D Metal Laser Sintering
- Understand how 3D metal laser sintering can improve current manufacturing scenario for lightweight material components

Focus E: Aluminum - Improve Aluminum Forming Efficiencies Without Increasing Overall Infrastructure

CASE STUDY: ALUMINUM STAMPING

16:25 Discover How To Improve Aluminum Stamping Process For A Better Quality Of Finished Product
- Analyzing the current manufacturing trends and processes for aluminum 5xxx, 6xxx and 7xxx series
- Understand how to maintain a quality finish for aluminum and avoiding burr material getting into the die

Speaker: Impression Technologies
16:45 Question and Answer Session

ALUMINUM JOINING APPLICATION

16:55 Joining Of Aluminum Extrusions In Automotive Applications
- Structural joining methods in BIW components
- E-mobility: challenges for joining techniques
- Battery boxes, el. motor casings, enclosures, electric cables
- Joining dissimilar materials:
- Desired combinations
- Current and Prospective technologies

David A. Lukasak, Director Innovation & Technology, Hydro Extruded Solutions North America
17:15 Question And Answer Session

17:25 HYDRO EXTRUDED SOLUTIONS NORTH AMERICA Concluding Remarks + Apple TV Draw

17:35 - 18:35 Networking Drinks Reception In Exhibition Area
SPONSORED BY HYDRO EXTRUDED SOLUTIONS NORTH AMERICA
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