THREE DAYS ON HOW TO COST-EFFECTIVELY JOIN, FORM AND DESIGN COMPOSITES AND LIGHTWEIGHT METALS INTO MULTI-MATERIAL VEHICLE ARCHITECTURES

4th Annual
GLOBAL AUTOMOTIVE LIGHTWEIGHT MATERIALS DETROIT 2015
NEXT GENERATION MULTI-MATERIAL JOINING, FORMING AND DESIGN CONGRESS FOR LIGHTWEIGHT VEHICLES

18-20 August 2015 | Detroit | MICHIGAN

Advancing Joining, Forming And Design Of Composites & Lightweight Metals To Drive Down Costs Of Multi-Material Vehicle Architectures

NEW THIS YEAR Detailed Technical Focus On Composites And Multi Material Joining

OEM CASE STUDIES TO COVER:

ADVANCES IN COMPOSITES
Scrutinizing joining, forming & design to evaluate the financial feasibility of introducing composites into high volume vehicles

DESIGN PHILOSOPHY
Design architecture case studies to optimize material selection for each component and introduce them into the production process

RECYCLING
Managing scrap from lightweight materials effectively to minimize material costs

MIXED MATERIALS JOINING
Uncovering the latest advances with mixed material joining techniques to examine their suitability for each application type

CORROSION MITIGATION
Exploring corrosion mitigation techniques for composite and mixed material joints to extend the life of the vehicle and minimize repair costs

LIGHTWEIGHTING BEYOND BW
Probing lightweighting solutions beyond body in white to explore other options for considerable weight savings

Brand New OEM Case Studies Delivered By:

David Wagner
Technical Leader Lightweight Vehicle Design
Ford

Surender Maddela
Sr. Research & Development Engineer, Materials Engineering
Nissan Motor Corporation

Mark Voss
Engineering Group Manager, Body Advanced Technical Works
General Motors

Stephen Logan
Senior Engineering Specialist
Chrysler

Gregory E. Peterson
Senior Technical Specialist
Lotus Engineering

Nir Khan
Director Of Design
Plasan

Glenn Daehn
Mars G. Fontana Professor Of Metallurgical Engineering, Executive Director Honda OSU Partnership Program

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WELCOME TO THE 11th GLOBAL AUTOMOTIVE LIGHTWEIGHT MATERIALS CONGRESS

THIS YEAR PROVIDING UNPRECEDENTED DETAIL ON COMPOSITES, JOINING, MULTI-MATERIAL DESIGN AND RECYCLING INNOVATION.

Minimizing the costs of adopting the latest materials and manufacturing advances to reduce vehicle weight is the key priority for every large scale OEM in the US.

To deliver the next generation of lightweight vehicles OEMs are critically racing to reduce the costs and cycle times of carbon-fiber composites, aluminium and magnesium. From design modeling and corrosion mitigation to recycling, technology is advancing at break-neck speed and each year OEMs must stay ahead of the learning curve to remain competitive on the forecourt.

In addition, the last 12 months has seen increasing pressure to further invest in lightweight solutions to adhere to EPA and NHTSA greenhouse gas emission standards.

THE LARGEST AND MOST TRUSTED LIGHTWEIGHT MATERIALS CONGRESS IS RETURNING TO DETROIT FOR THE 4TH TIME.

Bursting at the seams with OEM case studies, the expanded 3-day agenda for 2015 will provide more depth across composite joining, forming and design as well as corrosion mitigation for multi-material joining, aluminium and magnesium forming, material selection processes, design modelling and recycling. In addition new sessions will review opportunities to reduce weight through interior, seating and closure design.

Each presentation will focus on ultimately driving down costs and production times to ease the adoption of lightweight materials into mass-produced vehicle architectures.

WHAT’S SPECIAL ABOUT GLOBAL AUTOMOTIVE LIGHTWEIGHT MATERIALS DETROIT 2015:

FUTURE FOCUS
- Evaluating new processes, technologies and advanced materials that have been applied by OEMs and their partners to scrutinize what can be adopted in high volumes at optimal costs and revolutionize vehicle lightweighting

ADVANCES IN COMPOSITES EXPANDED
- Scrutinizing joining, forming & design to evaluate the financial feasibility of introducing composites into high volume vehicles

LIGHTWEIGHTING BEYOND BIW EXPLORED
- Probing lighting opportunities beyond body-in-white such as interior, seating and closures

EXCLUSIVE DISPLAY OF BIW
- Exploring the BIWs from the top leaders in the industry to practically evaluate the latest lightweighting practices they have adopted in their vehicles

COST REDUCTION DRIVEN
- With the automotive focus on cost competitiveness being ever more prominent, uncovering areas that could add substantial reductions in material sourcing, design, manufacturing and recycling costs become an exceptionally appealing angle that will be thoroughly scrutinized during GALM US 2015

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Venue Information:

Global Automotive Lightweight Materials 2015 will be held at:

Diamond Center
46100 Grand River Avenue Novi
Michigan 48374
Web: www.diamondbanquetcenter.com

GROUP Discounts Available
See Website For Details
The last 12 months has seen a plethora of lightweight innovation across composites and aluminium reaching the forecourt. At the 4th Global Automotive Lightweight Materials Congress 2015 we are delighted to extend our Body-In-White exhibition. For each of the below vehicles, we will be revealing what lies beneath the aesthetics and showcasing the core Body-In-White for attendees to inspect and discover.

**Tesla Model S**
This lightweight aluminium body reinforced with high strength, boron steel elements has been designed with electric powertrain in mind. Regularly in the spotlight for innovation, see how Tesla have brought together optimal material selection and joining methods to create this world-leading BIW.

**2014 Range Rover Sport**
The all-aluminium body of the 2014 Range Rover Sport outsold any other Jaguar or Land Rover model when it hit the forecourts. 800 pounds lighter, this BIW is a pinnacle of engineering.

**Ford F-150**
Having stormed its way through the US automotive market, the F-150 continues to sell as quickly as they are made. The new aluminium body has shaved 700 pounds off its former steel ancestor. Following the display of the full vehicle in 2014, the core BIW will now be revealed for 2015.

**Plus: Lotus Evora Full Vehicle**
We are also excited to announce the inclusion of a Lotus Evora in our exhibition showcase. Full details to be announced shortly.
CARBON FIBER AND ADVANCED COMPOSITES  
Leveraging Forming And Joining Innovation To Drive Down Costs And Time Of Producing Parts And Utilizing Design Modeling To Enable Mass Adoption Of Composites In Vehicle Architectures

9.20 Chair’s Opening Remarks

KEYNOTE: MULTI MATERIAL LIGHTWEIGHT VEHICLE ARCHITECTURE

9.30 Reducing The Weight Of Ford’s Flagship Five Passenger Sedan Through Cutting Edge Approach To Multi Material Vehicle Design And Manufacturing: Shaving 364kg Off Vehicle Weight
• Giving a project overview and explaining the MMLV design and material selection principals adopted in the project
• Detailing strategies adopted by OEM and Supplier partner to develop manufacturing strategies that enabled the multi material vehicle assembly
• Learning about methodology used to select material based on application type
• Sharing results from NVH, durability, safety and corrosion testing
• Examining life cycle assessment of the MMLV as compared to the baseline production vehicle in terms of Global Warming Potential and Total Primary Energy

David Wagner, Technical Leader Lightweight Vehicle Designer, Ford

10.00 Question & Answer Session

COMPOSITES
Applying The Latest Joining, Forming And Design Innovations To Reduce The Cost And Cycle Time Of Integrating Composites Into Multi-Material Architectures

COMPOSITES DESIGN & MODELING
10.10 Leveraging Modeling Tools To Predict Composite Behaviour And Design Parts For Next-Generation Vehicle Architectures
• Appraising available tools and methods to design composite parts more effectively to enable reduction of associated costs and cycle times
• Assessing full potential of design philosophy adjustments to enable transferability of parts across models
• Examining part and process requirements to evaluate the viability of the mass production of composite parts
• Enabling accuracy in computer modeling to predict composite behavior when designing a part

Venkat Aitharaju, Composite Material Modeling Expert, Staff Researcher, General Motors

10.40 Question & Answer Session

COMPOSITE WHEELS
10.50 Learning About The Use Of Composite Wheel Technology To Provide Significant And Measurable Weight Savings
• Understanding the specifics of composite wheel systems to learn about mass saving opportunities
• Learning how weight saving can be enacted while using composite wheel systems without revising infrastructure

James Ardern, General Manager, Lacks

11.00 Morning Refreshments In Exhibition Showcase Area Sponored by Lacks

COMPOSITES FORMING
11.30 Examining Composite Forming Processes And Advanced Technologies To Leverage Their Use In Vehicle Weight Reduction Practices
• Learning how to design vehicle architectures for composites, and investigating predictive structural analysis
• Choosing and integrating the right composite manufacturing technologies to allow cost effective mass production, and efficient weight reduction
• Showing examples of high volume composite components applied to vehicles, and testing their effectiveness

Nir Kahn, Director of Design, Plasan

12.00 Question & Answer Session

COMPOSITE PARTS DESIGN
12.10 Increasing Composite Usage In Lightweight Cars By Eliminating “Black Metal” Design
• Defining how parts design impacts producibility of automotive composite parts
• Understanding how to be more selective in use of expensive materials to lower cost without lowering performance
• Examining concurrent design of part features and process/tolerancing parameters
• Studying the impact of engineering software on part design to measure producibility trade-offs

Ed Berrigan, Vice President, Strategic Automotive Initiative, Siemens PLM Software

12.25 Question & Answer Session

CARBON FIBER COMPOSITES: REDUCING COSTS
12.30 Evaluating Opportunities To Optimize Value Of Automotive Composite Structures
• Describing emerging open access manufacturing R&D facilities and public private partnerships to commercialize composite technology and products
• Reviewing cost reduction strategies throughout the value chain from carbon fiber precursors to components and assemblies
• Describing opportunities for reduce cost of carbon fiber and associated market impacts
• Describing emerging and potential transformational materials and processes for composites to improve value
• Describing the challenges of rapid growth in the carbon fiber industry to accommodate potential demand

Raymond Boeman, Program Director, Energy Partnerships, Oak Ridge National Laboratory

1.00 Question & Answer Session

1.10 Networking Lunch In Exhibition Showcase Area Sponsored by Bolhoff

FIBER-REINFORCED POLYMERs
2.10 Demystifying Automotive Composites To Evaluate Full Potential For Significant Mass Saving
• Examining Fiber Reinforced Polymer (FRP) composite materials to understand their offerings in modulus and specific strength
• Learning about major advantages of FRP that offer broad range of materials and processes that can be tailored to meet mass, cost and performance requirements
• Understanding intricate details of the specific processes to select the right materials and processes for each application
• Summarizing diverse nature of automotive structure requirements and complexity involved in selection of the right material and process to provide cost effective customized solutions

Bhavesh Shah, Senior Advanced Technology Design Release Engineer, General Motors

2.40 Question & Answer Session

ALUMINUM APPLICATIONs
2.50 Examining The Increasing Role Of Aluminum In Automotive Lightweighting To Define Its Stance Among Other Materials
• Understanding automotive aluminum usage developments over the past decade and the role of aluminum in the new automotive industry
• Reviewing the effectiveness of aluminum in automotive applications with respect to lightweighting, safety and sustainability
• Examining the role of partnerships between material suppliers and OEMs to address the five primary concerns of styling, strength and safety, durability, supply risk and sustainability

Tom Honey, Vice President and General Manager, Automotive Value Stream, Novellis

3.05 Question & Answer Session

3.10 Afternoon Refreshments In Exhibition Showcase Area Sponsored by Novellis

MULTI MATERIAL JOINING
4.50 Evaluating Different Joining Techniques To Understand Which Can Deliver The Most Cost And Time Effective Solution For Mixed Material Joining For Lightweight Vehicles
• Evaluating the optimal joining techniques for when you have steel, aluminum and carbon fiber in the same car
• Determining what can be done at the level of joining to prevent corrosion when dissimilar materials come into contact
• Determining which joining techniques offer the optimal time- and cost-efficiencies for mixed material applications
• Overcoming the key challenges of optimizing mixed material joining techniques at mass produced scales

Craig Cawaz, President, RB&W

5.05 Question & Answer Session

5.10 Chair’s Closing Remarks

“ I was attracted by increasing my knowledge of material choice as well as discussing in depth issues such as cost and recyclability. Good scope of presenters. ”

Engineer - Roof Systems, Bentley Motors

www.global-automotive-lightweight-materials-detroit-2015.com  + (1) 800 721 3915  info@american-business-conferences.com
ADHESIVES WITH MINIMAL REQUIRED PRE-TREATMENT
10.35 Identifying Adhesives Which Require Minimal Pre-Treatment And Provide High Lateral Joint Strength
• Evaluating performance of advanced adhesives with minimal or no required pre-treatment vs. adhesives with required pre-treatments to examine the resulting number of joints, joint strength and advancements in cycle times.
• Examining the impact of advanced adhesives with minimal treatment on the cure time to and adjustments in production schedules.
• Inspecting future availability and application of adhesives with minimal or no pre-treatment to evaluate their impact on the multi-material vehicle product.
11.05 Question & Answer Session

CLINCHED FASTENERS
2.15 Optimizing The Clinched Fastener/Clinced Component Design And Interface Required For Reduced Mass Applications
• Optimizing the clinched fastener/clinced component design and interface to meet requirements for reduced mass applications.
• Showcasing improvements in the existing product lines and presenting new products [Light - Weight Nut and Aluminum clinched fastener element] to allow better joint performance in harder and less ductile material.

Viral Varshney, Engineering Manager, Rifast Systems LLC
2.25 Networking Break Sponsored by Rifast Systems LLC

MODELING MULTI-MATERIAL JOINING
2.55 Integrating Novel Material Joining, Modeling and Vehicle Design to Optimize Vehicle Mass and Durability
• Examining proliferation of new jointing techniques which have the potential to change the way vehicles are designed and manufactured.
• Learning about new joining methods as case studies to understand how to concurrently mature technologies and vehicle and production system design.
• Exploring availability of tools to model materials behaviour in multi materials structure.
• Proving fidelity of different types of modeling software to predict failures in composites, magnesium, aluminum and steel when joined together.
• Learning about the next steps in using advanced multi material modeling to reduce vehicle costs and optimize overall manufacturing process.

Dr. Glenn S. Dechin, Mark G. Fontana Professor Of Metallurgical Engineering, Executive Director Honda OSU Partnership Program

3.25 Question & Answer Session

SELF PIERCING RIVETS (SPR)
3.35 Exploring Henrob Self-Pierce Riveting (HSRP) To Understand Its Application On Aluminum Intensive And Mixed Material Programs
• Explaining what SPR is to understand how it can be applied in lightweight automotive production.
• Learning about current status of materials being joined with HSPR in BW / CIW applications and the trend in the near future.
• Clarifying what is critical to the application, and optimization of SPR when considering an aluminum intensive or mixed metal program.

Michael LaPensee, VP Applications Engineering, Henrob Corporation

3.45 Glancing Inside Aluminum Technological Innovation To Understand What Is Happening in Alloy Development, Pretreatment Solutions and Process Advancement
• Examining R&D activities that are yielding advancements in aluminum vehicle applications and enabling aluminum adoption into high volume vehicle production.
• Comparing existing alloy capabilities with future state alloy functionality to support increased safety and durability.
• Revealing industry partnerships that will enhance pretreatment solutions and adhesive bonding technologies to enable use of aluminum in high-volume vehicles.
• Discussing how and why the rolling process speeds production timelines.

Todd Summe, Global Technology Director, Automotive, Novelis
3.55 Question & Answer Session

4.00 Closing Remarks: Examining The Increasing Role Of Aluminum In Automotive Lightweighting
Martin Schön, Director Corporate R&D & Americas, Sapa Technology
4.10 Chair’s Closing Remarks
4.20 – 5.20 Networking Drinks In The Exhibition Showcase Area Sponsored By Sapa Extrusions North America
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
Enquiries And More Information

Should you have any enquiries or if you would like to request more information contact our friendly Customer Service Team on (1) 800 721 3915 or visit the conference website at www.global-automotive-lightweight-materials-detroit-2015.com

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