Industry Leading Mixed-Material Joining, Forming & Surface Treatment Techniques To Drive Scalable Lightweight Manufacturing

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4TH Lightweight Vehicle Manufacturing Summit
Advanced Joining, Forming & Surface Treatment Technologies

February 22 - 23, 2017 | Detroit, MI

Examine The Latest Joining & Forming Technologies & Their Applications For Mixed Material Structures

Driving Efficient, High Volume Lightweight Manufacturing For Passenger & Mid-Heavy Vehicles

Showcasing Innovations In Adhesives, Aluminum, Additive Manufacturing, Welding, Corrosion Mitigation & Surface Treatment

NEW FEATURES FOR 2017

TRUCKS AND HEAVY VEHICLES
To drive the development of lightweighting across the US automotive industry, we introduce specific focus on lightweighting for medium & heavy duty trucks alongside passenger vehicles, in light of recent EPA regulatory changes

LATEST ALUMINUM DEVELOPMENTS
This year’s program will cover the whole spectrum of aluminum related technology developments, including aluminum castings, sheets & extrusions, joining with aluminum, corrosion mitigation, recycling, and more

MANUFACTURING TECHNOLOGIES FOR MULTI-MATERIAL STRUCTURES
This edition will bring together manufacturing experts to share their expertise and evaluate the pros and cons of each new technology to support practical application in manufacturing contexts

FUTURE FOCUS
Showcasing the latest innovations, the 2017 event will scrutinize what opportunities lie ahead through advanced processes and technologies for automotive lightweighting, including additive manufacturing, machine learning, plastic & composite technologies

CORROSION MITIGATION CHALLENGES
To address your current challenges associated with corrosion mitigation for multi material combination, the program will focus on corrosion testing, prevention methods for mixed materials and management of corrosion & distortion issues

FORMABILITY CONSIDERATIONS
Explore the formability of new material grades, forming techniques and formability modelling

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HEADLINE SPONSOR

OEM-LED EXPERT SPEAKER FACULTY INCLUDES

Dr. Paul J. Wolcott
Body SMT Innovation
General Motors

Stacey Spencer
Materials Engineering Surface Treatment and Paint
Volvo Group Trucks

Mohamad S El-Zein
Manager, Advanced Materials and Mechanics
Deere & Company

Theresa E. Klix
Head of Metallic Materials Engineering
FCA US LLC

John Catterall
GSSST Leader Underbody Structure
General Motors

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

Pete Edwards
R&D Leader for Joining
Honda Engineering North America, Inc

Michael W Danyo
Aluminum Technology Supervisor
Ford

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www.global-lightweight-vehicle-manufacturing.com
Welcome To The 4Th Lightweight Vehicle Manufacturing Summit, Focusing On Advanced Joining, Forming & Surface Treatment

This Year Presenting An OEM Led Agenda With Added Sessions On Medium And Heavy Duty Trucks, Machine Learning, Aluminum Technology Developments And More

According to the latest automotive industry statistics, lightweight materials market size, in terms of value, is projected to grow at a healthy CAGR of 14.40% to reach $206.8 Billion by 2019.

The automotive industry is currently witnessing a widespread adoption of advanced technologies to increase fuel efficiency, reduce emission levels, and enhance the driving dynamics of the vehicle. As a result, scaling up multi-material joining technologies & advanced forming solutions and driving down the associated costs is becoming one of the key priorities in an industry driven by volumes.

As the industry is embracing developments in new lightweight materials, OEMs are racing to find appropriate manufacturing technologies to reduce cycle time and improve component quality to deliver the next generation of lightweight vehicles. From advancements in multi-material joining & forming to surface treatment, machine learning, additive manufacturing, materials development & manufacturing implications and more, OEMs must remain ahead of the learning curve to remain competitive in the industry.

THE 2017 EDITION OF LIGHWEIGHT VEHICLE MANUFACTURING SUMMIT RETURNS TO DETROIT IN FEBRUARY

Bursting at the seams with OEM case studies embedded within the strategic context, the detailed brand new agenda for 2017 has been developed in close collaboration with an expert advisory board comprising of lightweighting & technology experts from GM, Toyota and Ford.

From mixed material joining, corrosion mitigation & paintability to quality control, machine learning, composite manufacturing and 3D printing, case studies and technical sessions will deliver a competitive edge to manufacturing experts offering them solutions to their evolving needs.

Each presentation will focus on driving down costs and improving scalability of new manufacturing technologies to ease the adoption of lightweight materials into mass-produced vehicle architectures.

I really liked the advanced bonding discussions and networking interactions

Advanced Materials Engineer, Local Motors
DEEP DIVE: PANEL: MULTI-MATERIAL JOINING
• Basics of building numerical applications dedicated to multi-material joining
• Development of an Online Numerical Simulation for Jointing Technologies Benchmarking
• Networking Break In The Exhibition Showcase Area
10.20 Question & Answer Session

NEW MATERIAL & MULTI-MATERIAL JOINING: Review The Latest Advancements In Multi-Material Joining Techniques To Enable High Volume Lightweight Manufacturing

DEEP DIVE: PANEL: MULTI-MATERIAL JOINING TECHNOLOGIES BENCHMARKING
9.15 Join Leading OEMs To Consider The Potential Of Each Joining Technology To Meet Your Individual Requirements
As design teams select new materials to drive light weighting across new vehicles, the impact to manufacturing must also be appraised to ascertain the operational and cost implications of mixed-material joining.
• Understand how OEMs have deployed the latest joining technologies to integrate new materials into manufacturing lines with minimal infrastructure adjustments
• What delivers most value? Debate how to best meet your manufacturing requirements through transitional and facilitating approaches.
• Evaluate innovative, mixed material structures and their required manufacturing technologies to appraise their impact to current operations
• Examine what kind of tooling can accommodate new structure requirements and enable high-volume manufacture without adding assembly stations

Chair: Theresa Klix, Head of Metallic Materials Engineering, FCA US LLC

PETE EDWARDS, R&D Leader for Joining, Honda Engineering North America, Inc.

Shawn M. Morgana, Global Vehicle Architecture Manager, Ford Motor Company

OEM KEYNOTE CASE STUDY: TAILOR WELDED BLANKS
9.50 Learn About Implementation Of Tailor Welded Blanks Into An Aluminum Intensive Vehicle
With the start of high volume aluminum production, the auto industry has truly competing materials. To remain as a competitive material in automotive, aluminum must keep progressing by adopting new processes and higher yield alloys. One such process is implementing Tailor Welded Blanks into vehicles for improved material utilization and/or weight reduction. This presentation will focus on material utilization using Tailor Welded 6XXX series blanks.

Take on board the lessons learned by this OEM in order to:
• Consider how steps taken in this case study apply to your current situation - what can be taken forward within your organization?
• Assess the pitfalls encountered and how to effectively overcome them
• Gain insights into the specificity related to working with all aluminum vehicle

Michael Danys, Aluminium Technology Leader, Ford

10.20 Question & Answer Session

10.30 Networking Break In The Exhibition Showcase Area

MIXED MATERIAL JOINING, CORROSION MITIGATION: Learn About Corrosion Mitigation & Surface Treatment For New Materials And Joining Technologies

11.00 Development of an Online Numerical Simulation Platform for the Design of Corrosion Resistant Components & Assemblies
• Basics of building numerical applications dedicated to corrosion mitigation & deployment architecture to customers
• How constitutive equations can be dressed to take into consideration real road conditions?
• Establishment of a unique materials & coatings database with polarization curves as building blocks for models;
• Collection of on-road data for calibration of numerical models, as the best approach to improve prediction capabilities;
• Live demonstration

Daniele Gallant, Technical Leader, Corrosion Control and Performance Validation of Lightweight Materials and Assemblies, National Research Council Canada

11.30 Question & Answer Session

WELDING
11.40 Explore The Opportunities Offered By Civilized Explosive Welding When Joining Steel To Aluminum
• Explore solid state welding, offering the ability to join similar or dissimilar metals without loss in strength due to heat affected zones
• Learn about multi-material systems produced by collision welding
• Discuss how lightweighting can be achieved by joining the strongest steel and aluminum materials to produce strong and durable joints without third bodies

Dr. Glenn S. Daehn, Marc G. Fontana Professor of Metallurgical Engineering, Department of Materials Science and Engineering, The Ohio State University

12.10 Question & Answer Session

CLINCHED FASTENERS
12.20 Explore The Benefits Of Lightweight Clinch Nut System – Weight Reduction In Class 10 Joints
• Examine lightweight clinch nut design with primary purpose of reducing weight in a class 10 joint with material thickness greater than 1mm
• Evaluate in-die installation using Rifast equipment
• Utilise offline installation using Rifast developed servo drive for optimal force and speed control

Viral Varshney, Director of Engineering, Rifast Systems LLC

12.50 Question & Answer Session

1.00 Networking Lunch In The Exhibition Showcase Area

TOX JOINING PROCESSES
2.00 Reviewing The Anatomy And Advantages Of The TOX Joint and Other Mechanical Joining Processes To Evaluate the Potential In Modern Materials
• Presenting joining in modern materials - including mixed materials AL and MG [sheet and castings], HSLA, TRIP and TWIP steels
• Understanding electrical conductivity in joining and how TOX joints have the lowest electrical resistance
• Riveting methods TOX Tongs for TOX Joining, TCR, SPR, FPR

Dr. Wolfgang Pfeiffer, Managing Director, TOX® PRESSTECHNIK Gmbh & Co. KG Germany

2.20 Question & Answer Session

FATIGUE RESISTANT STEEL & ALUMINUM WELD WIRE
2.30 Overview Of The Development Progress Of A Fatigue Resistant Steel Weld Wire And A 7085 Aluminum Weld Wire

TBC

3.00 Question & Answer Session
EVALUATE THE MANUFACTURABILITY & FORMABILITY OF THE LATEST MATERIALS
GRADES & EXPLORE FUTURE MANUFACTURING TECHNIQUES
Examine Technological Developments To Enable Scaling Up New Joining & Forming Technologies

10.15 Question & Answer Session
APPLICATION OF X-RAY FLUORESCENCE
10.25 Utilizing Hand Held X-Ray Fluorescence (XRF) To Verify The Chemical Composition Of Aluminium And Other Alloys And Ensure Quality Control of Materials Used Throughout The Automotive Manufacturing Process
• Including the role of XRF to accurately measure the thickness of electro plating, passivation and conversion coatings
• Assessing the capability of XRF to measure the chemical composition of High Strength Steels, Magnesium and Titanium alloys
Mark Leonard, Business Development Manager, Thermo Fisher Scientific Messestechnik GmbH
10.35 Networking Break In The Exhibition Showcase Area Sponsored by Thermo Fisher Scientific Messestechnik GmbH

SURFACE TREATMENT
11.05 Understand The Latest Developments In Laser Surface Preparation Of Metals And Composites
• General introduction of opportunities and benefits of laser cleaning technology
• Evaluate current use of laser cleaning surface treatment for metals and composites to improve their performance
Georg Heidelmann, President, Adapt Laser Systems
11.25 Question & Answer Session
IMPULSE MANUFACTURING
11.35 Discover Impulse Manufacturing - Fundamentals And Applications
• Learn about the primer in the processes of electromagnetic, electrohydraulic, explosive and vaporizing foil processes for shaping, cutting and joining metals
• Examine how these methods can dramatically reduce capital expenditure while enabling new complex components.
Dr. Glenn S. Daehn, Mars G. Fontana Professor of Metallurgical Engineering, Department of Materials Science and Engineering, The Ohio State University
12.05 Question & Answer Session
FINITE ELEMENT MODELING
12.15 Finite Element Modeling using ABAQUS for Double-Sided Incremental Forming
• Overview of Double-Sided Incremental forming (DSIF) as a subcategory of incremental sheet metal forming (ISF)
• Examine the advancements of the process, including its flexibility, zero die cost, and enhanced material formability to achieve low-production, highly-customized automotive and aerospace parts
Dr. Zhong Chen, Rapid Prototype Sheet Metal Forming, Manufacturing Research Department, R&A Engineering, Ford
12.45 Question & Answer Session
FASTENERS
12.55 An Overview Of Specialty Fastening Methods In Lightweight Assembly
• Examine cold formed fastening specialty solutions for aluminum, magnesium, steel, plastic and CFRP materials
• Review the benefits specialty thread designs for lightweight purposes including flow drilling, thread rolling and thread forming
• Assess productivity and cost improvement opportunities resulting from adoption of these methods in normal and mixed material joints
Terry Tripp, Technical Marketing Manager, Semibex Corporation
1.05 Networking Lunch In The Exhibition Showcase Area; Sponsored By Semibex Corporation

FUTURE DEVELOPMENTS:
Understand Which Manufacturing Innovations Offer Significant Potential For Streamlining And Cost Reduction

ADITIVE MANUFACTURING
2.05 Review Challenges And Opportunities For Additive Manufacturing In The Automotive Industry To Examine How It Can Be Used To Innovate High Volume Production
• Review recent developments in Additive Manufacturing beyond SLA prototyping
• Evaluate challenges remain for attaining production AM parts meeting automotive requirements for mechanical properties and volumes
• Identify opportunities for production AM in automotive applications
Paul Wolcott, Body SMT Innovation, General Motors
2.35 Question & Answer Session
COMPOSITES
2.45 Optimizing Parts And Process For Weight Saving And Manufacturability
Dr. Subir Roy, Senior Technical Director - Manufacturing Solutions, Altair USA
3.05 Question & Answer Session
HOT FORM QUENCH
3.15 Hot Form Quench (HFQ®) - A Disruptive Technology For Forming Ultra-High Strength, Lightweight & Complex Aluminum Pressings
• Introduction of the HFQ® process and technology
• Highlighting of the benefits of HFQ® for cost effective automotive lightweighting.
• Discussion of a range of automotive and transport applications
• Outline of the collaborative & strategic partnership between Impression Technologies Ltd, and Bear Diversified, for introduction of HFQ® into North America
John Sellers, Chief Applications Engineer, Impression Technologies
Matthew Freedman, President And CEO, Bear Diversified
3.35 Networking Break In The Exhibition Showcase Area Sponsored By Impression Technologies

NEW FORMING TECHNOLOGY
3.55 Examine Fiber Lasers Applications For Automotive Industries
• Understand Innovation with fiber laser beam delivery, including:
  • Static beam forming
  • Dynamic beam forming
  • Combined static and dynamic beam forming
  • TBC, IJP Photonics
4.15 Question & Answer Session
TOOL DEVELOPMENTS FOR HIGH VOLUME ADDITIVE MANUFACTURING
4.25 Explore The Capabilities Of Additive Manufacturing Machinery To Evaluate High Volume Automotive Application Potential - Focus On Speed. Limitations, Quality And Availability Of Options
• Review capabilities of the tooling industry in additive manufacturing, including wire-based additive manufacturing, plastic, carbon 3D
• Learn how small piece tooling inserts helped with the advancement of additive manufacturing
• Learn how Tool & Die is able to ensure good repeatable quality of parts every time additive manufacturing is applied
4.55 Question & Answer Session
5.05 CONCLUDING REMARKS
5.15 Close Of Conference

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I Would Like To Register the Delegate(s) Below for the 2 Day Conference
www.global-lightweight-vehicle-manufacturing.com
February 22– 23 2017
Detroit, MI

Details PLEASE USE CAPITALS - PHOTOCOPY FOR MULTIPLE DELEGATES

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BRING YOUR TEAM & RECEIVE UP TO *20% OFF
3 Delegates: *10% OFF (Discount code: GROUP3)
4 Delegates: *15% OFF (Discount code: GROUP4)
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Limited Number Of Discounted VIP Passes Available For OEMs. Email customerservices@lbcg.com for more information

Delegate Rates GUESTS ARE RESPONSIBLE FOR THEIR OWN TRAVEL AND ACCOMMODATION ARRANGEMENTS

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Payment must be received in full prior to the event.

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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-lightweight-vehicle-manufacturing.com