

## North America 2015 9<sup>th</sup> - 11<sup>th</sup> of Nov

### AUTOMOTIVE LIGHTWEIGHT

# PROCUREMENT SYMPOSIUM

## Cobo Center, Detroit, USA



### SYMPOSIUM FOCUS

- Aluminum
- Carbon Fibre
- Composites
- High Strength Steel
- Magnesium

The 3<sup>rd</sup> Automotive Lightweight Procurement Symposium to be focused on automotive lightweighting, supply / process chain and procurement management, will take place in Detroit from the 9<sup>th</sup> – 11<sup>th</sup> of Nov 2015. The symposium is held in the days leading up to the "ALUMINUM USA" exhibition taking place at the Cobo Center, Detroit, Michigan (Walking distance to symposium venue)

### ATTENDING COMPANIES:



### ORGANIZING PARTNERS & SPONSORS



AluMag®  
 Europe 2016 27<sup>th</sup> - 29<sup>th</sup> of Nov  
 AUTOMOTIVE LIGHTWEIGHT  
**PROCUREMENT SYMPOSIUM**  
 Hilton Hotel in Duesseldorf, Germany

AluMag®  
 Asia 2016 6<sup>th</sup> - 8<sup>th</sup> of July  
 AUTOMOTIVE LIGHTWEIGHT  
**PROCUREMENT SYMPOSIUM**  
 Jumeirah Himalayas Hotel in Shanghai, China

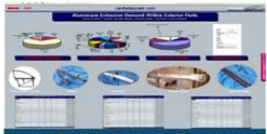
## AluMag® offers the four following services - worldwide:



Market Research

- Aluminium Extrusion Customer Database
- Foundry & Tool Maker Database
- Automotive Application, Material & Process Analyses
- Various Industrial Application Research & Analyses

AluMag as your provider of automotive research and forecasting studies, offers you and your business, the market intelligence you need to realize the best strategic decisions



Material - Process - Application Trend Analysis

### Large variety of market access, local & global:

- business database with 6,970+ companies and 18.700+ contacts
- 150+ satisfied customers worldwide
- Arranged 20+ roadshows/events since 2008



Extrusion Application

### Your Benefits:

- Learn about your [potential] clients and competitors
- Obtain an inside view of the market
- Identify opportunities and threats
- Minimize risk and optimize profits
- Position your company successfully
- Based on data off the shelf, secondary re-research and interviews, AluMag generates validated researches



Market Development

- Analysis & Development of Market Opportunities
- Accelerate Market Penetration
- Manage New Product Launches
- Establish a Sales Force Sales on Demand

AluMag guides and supports your organization globally through the different market development phases until we have successfully launched, implemented or executed your project.



Map of activity - SAMPLES

Manage and integrate each aspect of your organization by initiating, planning, controlling, executing and closing out a new project. AluMag offers liaison management services as an addition to our customer's staff by bringing in the resources that define us.



JATCO Head Quarters Meeting in Japan

### Your Benefits

- Analysis and development of Markets
- Realize opportunities
- Accelerate market penetration
- Establish a sales force
- Provide warehousing and distribution services
- Manage new product launches
- Sales on demand



Roadshows / Events

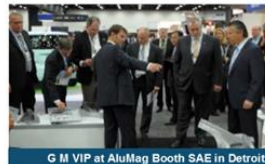
- Organization of Technical & Commercial Roadshows
- Oversea Commercial & Technical Events
- Host In-House Events & Presentation
- Common Technology Booth at Leading Exhibitions

AluMag roadshows, tech-meetings and symposia are the first class events used by exhibitors and guest as a unique benchmark platform.



Daimler Sindelfingen as Roadshow Location

The AluMag think tank events are bringing in decision makers and executives in EUROPE, ASIA and NAFTA.



G M VIP at AluMag Booth SAE in Detroit

### Upcoming Events:

- 2015 Nov: Automotive Light-weight Procurement Symposium in Detroit, USA
- 2016 April Common tech- booth at the SAE World Congress in Detroit, USA
- 2016 Jul: Automotive Light-weight Procurement Symposium in Shanghai, China
- 2016 Nov: Automotive Light-weight Procurement Symposium in Duesseldorf, Germany.



Strategic Localization

- Warehousing & Distribution Service
- Supplier & Tie-up Localization
- Identification & Trade-off of new Technology
- Foreign Market Business Cases and whose Realization

AluMag has the global expertise to search, identify, evaluate and validate potential strategic business opportunities for expansions and partnerships that will assist your business growth plans regionally and globally



On-Site Greenfield Planning Meeting

### Services for:

- Search, develop and present potential acquisition candidates for regional and global business expansions
- Localization of new manufacturing / service sites for business expansions
- Identification of new technology supplier development related to products, processes and materials
- Search, develop and present potential business partners / suppliers to support regional and/or global supply programs
- Evaluate potential competitor profiles for new or existing business in non-presence geographies
- Evaluate new emerging technologies and processes for business expansions

### Are you:

- looking for specific data, information and outlook about product, material, customer, supplier, technologies, ...
- want to discuss your project, increase sales, access new markets, ...
- interested to participate in one of our roadshows / events or organize your customized showcase ...
- looking to localize, expand into new markets, countries, tie-up targets, ...

please contact your AluMag Team to receive a quote or proposal

## CONTACTS & PROJECT TEAM



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## **N. America Automotive Lightweight Procurement Symposium 2015 9<sup>th</sup> – 11<sup>th</sup> Nov**

Cobo Center One Washington Blvd. Detroit, Michigan, 48226 USA



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# **AluMag<sup>®</sup>**

Europe ■ India ■ Americas ■ Asia  
**THE MARKET DEVELOPER**

## Company Speechs by:

Ford Research and Innovation Center

Carbon War Room and Meritor Headquarters

Striko Westofen America

Kurtz

Bharat Forge Aluminiumtechnik

C.P.C. USA

BOCAR Group

Ford Motor Company

Automotive Insight

EJOT Fastening Systems LP USA

UACJ Corp.

Lightweight Innovations for Tomorrow

Aluminum Blanking Company

# Agenda

## Agenda: (Is Continuously Being Updated)

### Monday The 9th Of November – Cobo Center, Detroit

05:30pm - 07:30pm



Pre-registration and Welcome

Reception

### Tuesday The 10th Of November – Cobo Center, Detroit

08:30am – 09:15am



Registration

Morning Coffee / Tea

09:15am – 09:30am



Welcome:

Mr. Jost GAERTNER - Managing Partner At AluMag Automotive GmbH

09:30am – 10:25am



Opening Keynote: Mr. Craig RENNEKER - Chief Engineer, New A/T Programs & Component – Transmission & Driveline Engineering At Ford Research & Innovation Center

**Lightweight Transmission & Driveline Components: Practical Challenges**

10:25am – 11:00am

Break for Refreshments/Coffee/Tea, Snacks, Networking, Tech Exhibition

11:00am – 11:45am



Paper 1: Mr Mike ROETH – Executive Director At North American Council for Freight Efficiency (NACFE) & Operations Leader – Carbon War Room



Paper 1: Mr. Karl MAYER – Director Product Line Management At Meritor

**Lightweighting Heavy Duty Class 8 Tractors and Trailers**

11:45am – 01:45pm

Break for Lunch, Refreshments, Networking, Tech Exhibition

01:45pm – 02:25pm



Paper 2: Mr Ryan BROWN – Director Of Sales At StrikoWestofen America

**Analysis Of Cost Drivers When Buying Lightweight Solutions / Materials & The Elimination Of These**

02:30pm – 03:10pm



Paper 3: Mr. Lothar HARTMANN – Managing Director Foundry Machines & Trimming Presses At Kurtz GmbH

**Chassis & Suspension Weight Reduction By LPDC Aluminum With Hollow Cross Sections**



Mr. Kevin CROY - NAFTA Sales Manager Foundry Machines & Trimming Presses At Kurtz GmbH

03:15pm – 03:45pm



Paper 4: Mr. Jörg MANTWILL – Director Sales At Bharat Forge Aluminiumtechnik GmbH & Co. KG

**HCM And Aluminum Forging – Partnership To Birth Chassis Parts' Safety**

03:45pm – 04:15pm

Break for Refreshments/Coffee/Tea, Snacks, Networking, Tech Exhibition

04:15pm – 04:55pm



Paper 5: Mr. Gary F. RUFF - President and Chief Executive Officer, Ruff and Associates, LLC 8/12 - Present

**Advanced Counter Pressure Casting Process for Light-Weighting of Auto and Truck Chassis and Suspension Components**

05:00pm – 05:55pm



Closing Keynote: Mr. Gilberto SALDIVAR – New Projects Group Manager At Bocar Group

**Key Factors To Achieve Mechanical Properties In Lightweight Structural Parts**

05:55pm – 06:00pm



Summary:

Mr. Roberto BOEKER – Managing Partner At AluMag Automotive LLC

# Agenda

06:00pm - 08:00pm



Dinner Speech:

Mr. Richard KLEIN -  
Responsibility Strategic Planning -  
Business Development & German  
Business At BOCAR

**Wednesday The 11th Of Nov – Cobo Center, Detroit**

08:15am – 08:55am



Mr. Ali JAMMOUL – Global Director  
Body Exterior And Safety Engineering  
At Ford

**Body Lightweighting**

09:00am – 09:40am



Paper 1: Dr. Gerald COLE – President  
At Light Weight Strategies LLC

**Light Weighting the Automotive  
Industry - The Road to 2025 CAFÉ**

09:45am – 10:25am



Paper 2: Mr. Laurence CLAUS -  
President At NMI Training & Consulting  
Inc. & Technical Consultant To EJOT  
Fastening Systems LP USA

**EJOT Fastening Solutions Enable  
Lightweight Body-in-white Assembly**

10:25am – 11:00am

Break for Refreshments/Coffee/  
Tea, Snacks, Networking, Tech  
Exhibition

11:00am – 11:40am



Paper 3: Dr. Akio NIIKURA - General  
Manager R&D Division At UACJ Corp.

**UACJ's Global Strategy And  
Approach To The Automotive  
Aluminum Market**

11:45am – 12:05pm



Paper 4:  
Mr. Lawrence E. BROWN – Executive  
Director At Lightweight Innovations For  
Tomorrow

**Lightweight Innovations For  
Tomorrow!!!!**

12:10pm – 12:40pm



Closing Keynote:  
Ms. Laura ANDERSON – CEO At  
Aluminum Blanking Company

**The Story Behind Aluminum's  
Sourcing Evolution: A North  
America Perspective**

12:40pm – 12:45pm



Summary:

Mr. Jost GAERTNER, Managing  
Partner At AluMag Automotive  
GmbH

12:45 pm – 01:30pm



Reception Speech With Snacks &  
Finger Food

Mr. Michael KOEHLER - Industry Vice  
President At Reed Exhibitions USA

01:30pm – 05:30pm



Individual Or Guided Visit At The  
2015 "Aluminum USA" Exhibition

# EXHIBITOR

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# Carbon War Room



**Mr. Mike ROETH**  
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**North American Council for Freight Efficiency**  
**(NACFE) & Operations Leader**

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**Tel.: +1 303 2451003**  
**[www.carbonwarroom.com](http://www.carbonwarroom.com)**

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## **TITLE**

**Lightweighting Heavy Duty Class 8 Tractors and Trailers**

## **ABSTRACT**

The North American Council for Freight Efficiency is a non-profit dedicated to doubling the efficiency of NA goods movement. It works with the Carbon War Room a Sir Richard Branson startup, which intervenes in markets to accelerate the adoption of business solutions that reduce carbon emissions at gigaton scale and advance the low-carbon economy. In August 2015, the group issued a Confidence Report on lightweighting Class 8 Tractor Trailers for Freight Efficiency. For heavy duty trucks, weight reduction helps fuel efficiency by lowering the rolling resistance of the vehicle, but also increases freight efficiency. Increased payloads, for those loads that max out in allowable weight, which in the USA is 80,000 pounds. Key trends in this area include the fact that the equipment is heavier due to emissions equipment and other fuel saving devices being added to the tractors and trailers as well as more features added as driver amenities. At the same time, freight is becoming denser and more pallets are being added to each trailer. Many products are available to lower weights, but have cost challenges as well as other barriers to adoption. The report findings can be found on [www.truckingefficiency.org](http://www.truckingefficiency.org) in technologies and operational practices and will be shared by the speakers.



# MERITOR



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**[www.meritor.com](http://www.meritor.com)**

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# Carbon War Room – Meritor Headquarters



**TRUCKING  
EFFICIENCY**

## Lightweighting HD Vehicles

November 10, 2015  
Lightweighting Symposium

An effort of the Carbon War Room and the North American Council for Freight Efficiency



## Today



Mike Roeth, Executive Director, NACFE & CWR  
Karl Mayer, Director, Meritor

- Trucking Efficiency
- Fleet Fuel Study
- LWing Confidence
- Manufacturer Perspective
- Questions and Answers



## Trucking Efficiency



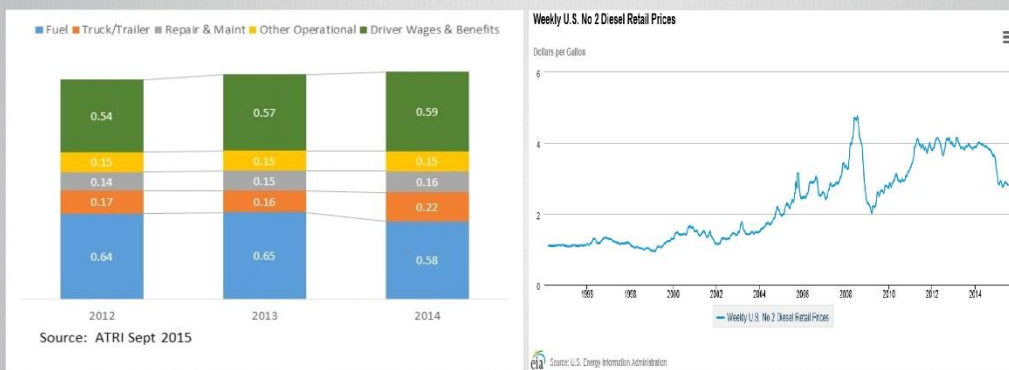
Dedicated to doubling the efficiency of North American goods movement

We pursue this goal in two ways:

1. By improving the quality of information flow and
2. By highlighting successful adoption of technologies



## Fuel Costs



**\$75,000/year 1% savings = \$750 year/truck**



## Annual Fleet Fuel Study



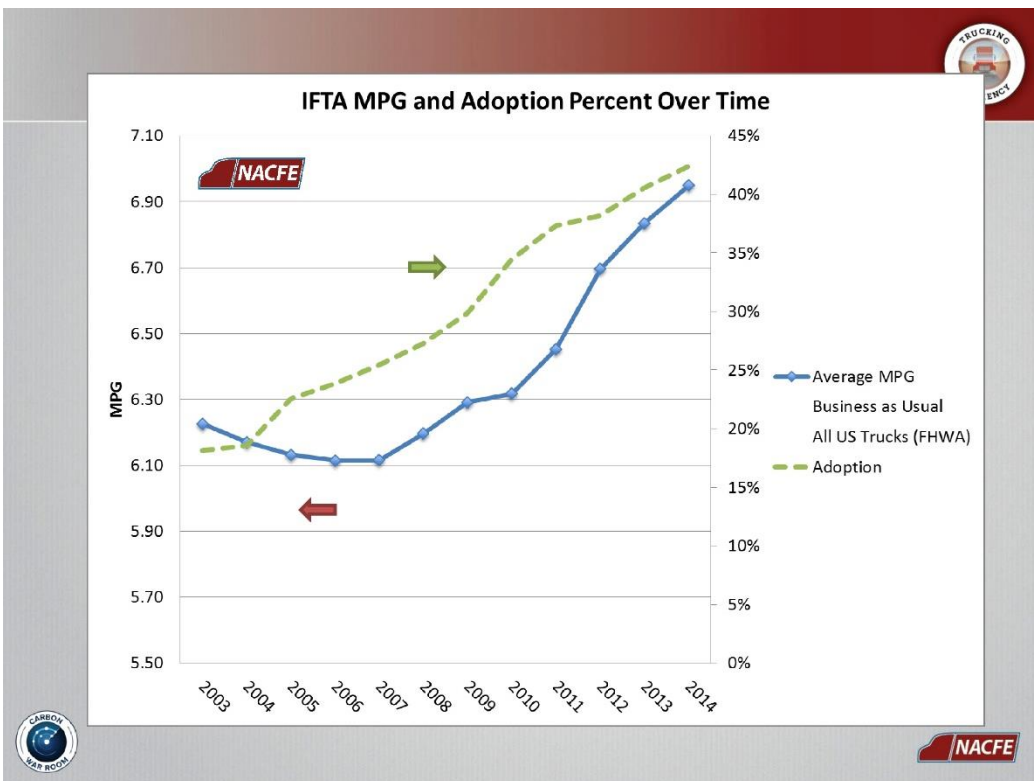
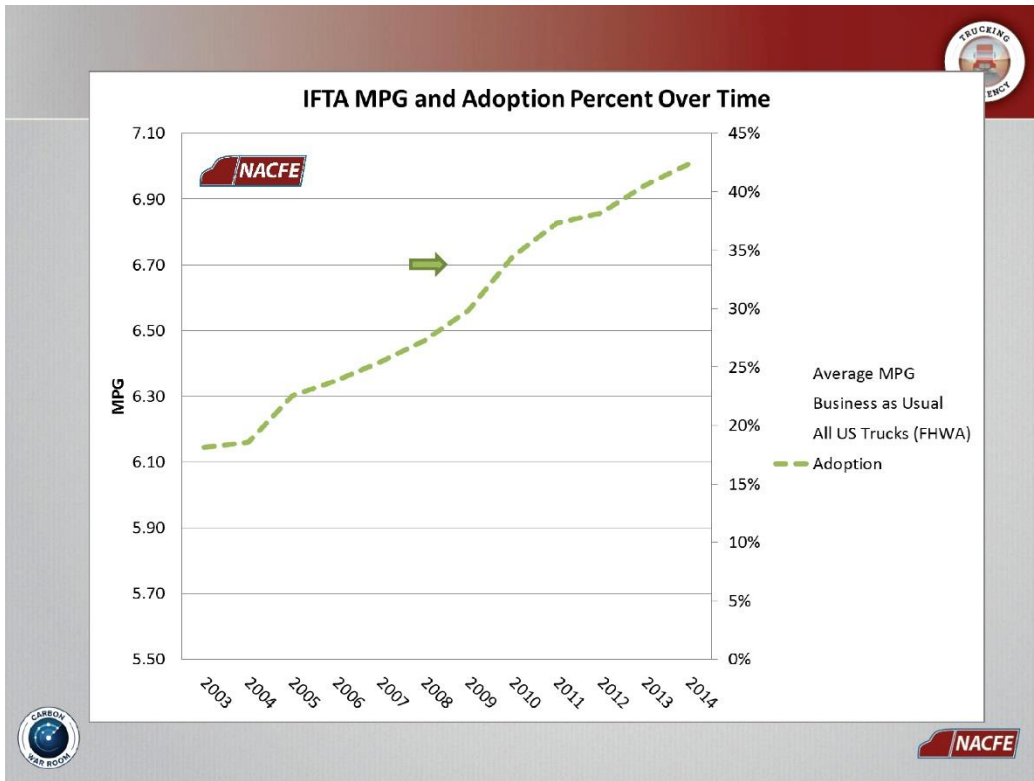
## Fuel Economy Technologies



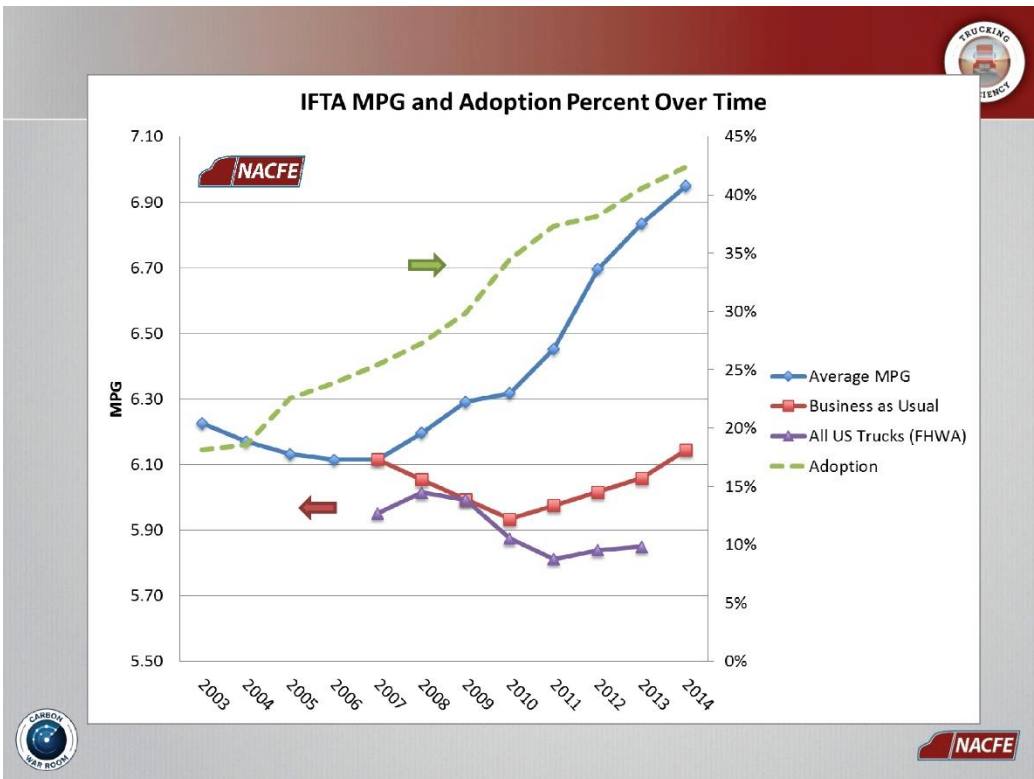
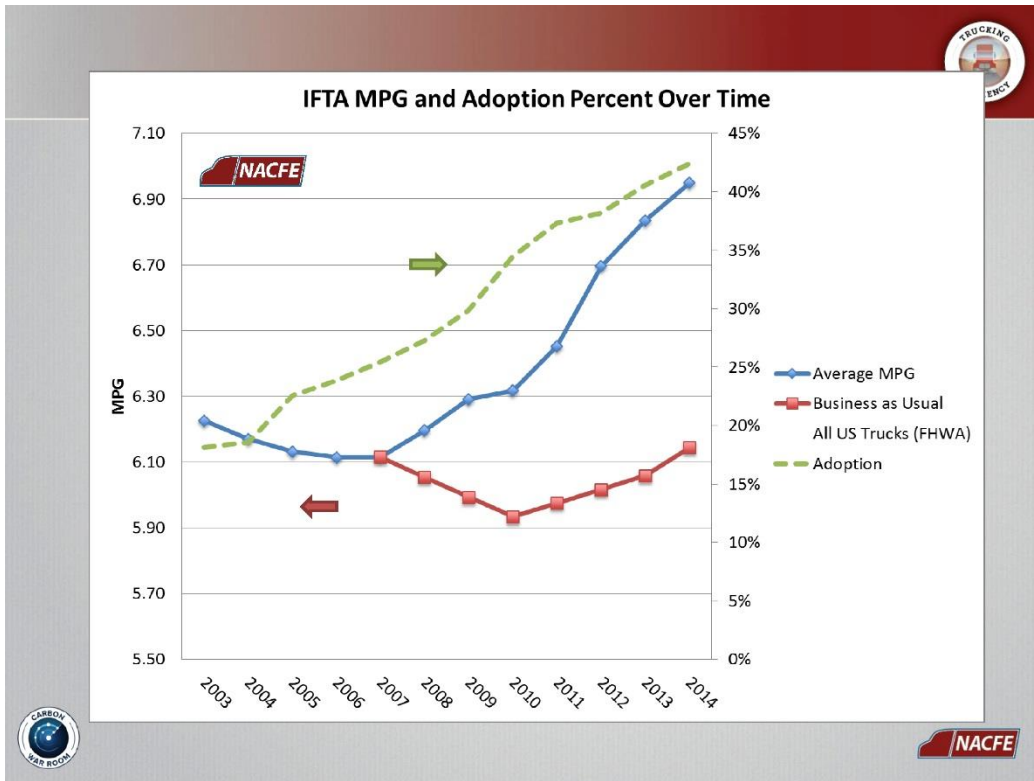
- Which ones are most popular on new trucks?
- Did they keep buying them?
- Are they delivering fuel savings?



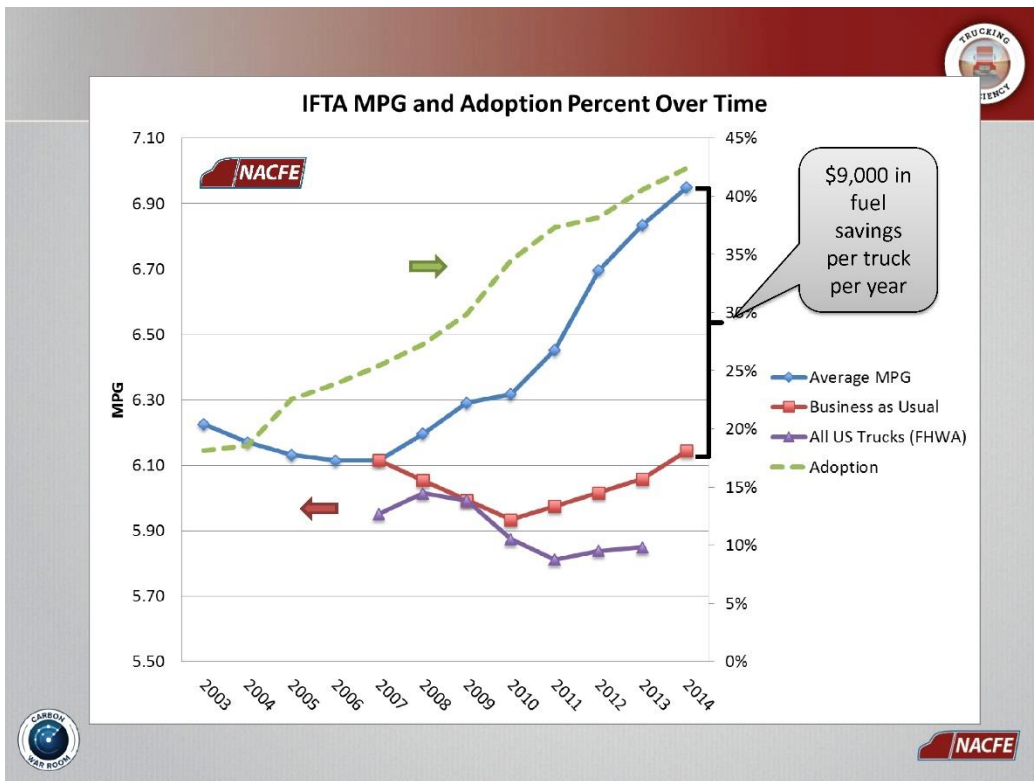
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## Gov't Interest in Fuel Efficiency

- US EPA's SmartWay "voluntary" in 2004
- CARB legislation implemented in early 2010
- EPA / NHTSA Heavy Duty Greenhouse Gas Rule: Phase 1
- EPA / NHTSA Heavy Duty Greenhouse Gas Rule: Phase 2





## Helping YOU Make Decisions



- Confidence Reports
- Decision-Making Tools
- Workshops
- Tech Guide at [www.truckingefficiency.org](http://www.truckingefficiency.org)
- Thought Leadership
- Industry Events
- Collaboration



## Study Released August '15



**EXECUTIVE SUMMARY**

Emissions regulations combined with fuel economy benefits and driver amenities on today's commercial vehicles have added 2,000 lbs. to the Super Duty 4-truck. Carbon Footprint Data indicates vehicle weight savings more than other segments of the market.

To understand the true benefits of reducing vehicle weight, Fleet Analysts took beyond fuel economy improvements to freight efficiency gains that add to the bottom line to gain the true benefit of reduced weight. Fleet can save 2,000 lbs. by meeting to a limited degree in lightweighting and as much as 4,000 lbs. with an aggressive investment. Lightweighting can take place in various areas of the tractor and trailer including the suspension, axle assemblies, wheel ends, drive shafts, frame, drive shafts, and more.

BENEFITS	CHALLENGES
Fuel Savings	Lift/Load Data
Increased Weight Efficiency	Negative Impacts On Resale Value
Driver Retention	Higher Maintenance Costs
Additional Fuel Efficiency Technology	Difficulty Calculating The True Value Offered

**VIDEO**

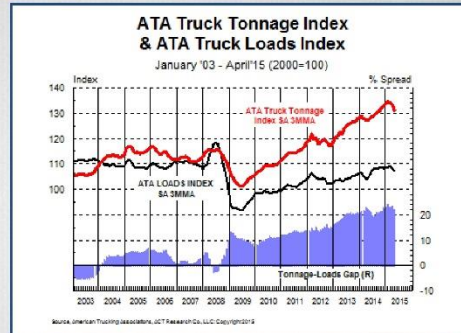
Details [here](#)  
including free  
downloadable  
report



## Why Lightweighting?



- Industry Trends
  - Tractors and Trailers have gotten heavier
  - Denser Freight
  - More Pallets/Trailer
- Shippers asking for more Payload
- Three “Categories”



**Category 1**

- Bulk
- Grosses Out Every Trip

**Category 2**

- Reefer & Dry Van
- Sometimes Gross Out

**Category 3**

- Reefer & Dry Van
- Seldom Gross Out



## Weight over Time



- Tractors, and to some extent Trailers, have gotten heavier
  - Emissions
  - Driver Amenities
  - Fuel Economy Features
- Actions
  - Mild Lightweighting
  - Aggressive Lightweighting



## Benefits and Challenges



### Benefits & Enablers

- Regulations
- Increased Freight Efficiency
- Improved Fuel Economy
- Sustainability Goals
- Additional FE Technologies

### Challenges & Consequences

- Upfront Cost
- Residual Value
- Maintenance Costs
- Redundant Product Testing
- Driver Retention
- Ability to take Advantage
- Over-spec



## Fuel Efficiency Technology




Feature	Estimated Weight (lbs.)
Full chassis fairings	360
Trailer skirts	180-250
Tail skirts	120-175
APU (Federal law allows 400 lb. exemption for this weight)	400-500
AMT	150-500
<b>TOTAL WEIGHT ADDED FOR FUEL ECONOMY</b>	<b>1,210 lbs.</b>

+ Compressed natural gas (CNG) 1500-2000 lbs


Measurable fuel savings, at the expense of weight.



## Lightweighting




Value in Dollars per Pound



Category 1

- Bulk
- Grosses Out Every Trip


\$6-11 / lb saved



Category 2

- Reefer & Dry Van
- Sometimes Gross Out


\$2-5 / lb saved




Category 3


- Reefer & Dry Van
- Seldom Gross Out

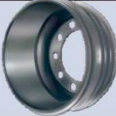



\$0-2 / lb saved







## Material Conversion



Product	Baseline	Conversion	Weight Savings per Tractor
<b>BRAKE DRUM</b> 	Iron	Steel shell with iron liner	168 lbs
<b>WHEEL</b> 	Steel	Aluminum	307 lbs
<b>FRAME RAILS</b> 	Steel	High Strength Steel	200 – 300 lbs
<b>LEAF SPRINGS</b> 	Steel	Composite	125 lbs per Trailer



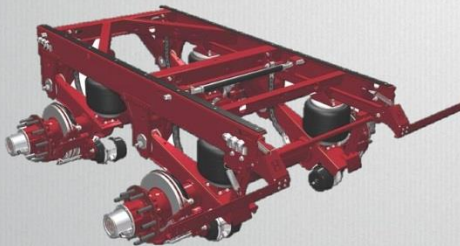


## Design Integration



### Wide Base Wheels

Weight Savings 400 lbs / tractor  
308 lbs / trailer



### Trailer Slider Box

Optimized steel design  
Weight savings 100 lbs  
Lower cost



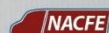
## Right-Sizing

### Fuel Tanks



Hours of Service (HOS) = 11    Average fuel economy = 6 mpg    Average speed = 55 mph  
11 hours \* 55 mph / 6 mpg = 101 gallons

@ 7 lbs / gal diesel, an extra 50 gal = 350 lbs    → Equivalent to weight of trailer skirts or AMT



## Future Innovations



- Materials
- Design
- Improve quality of current offering to increase take rate

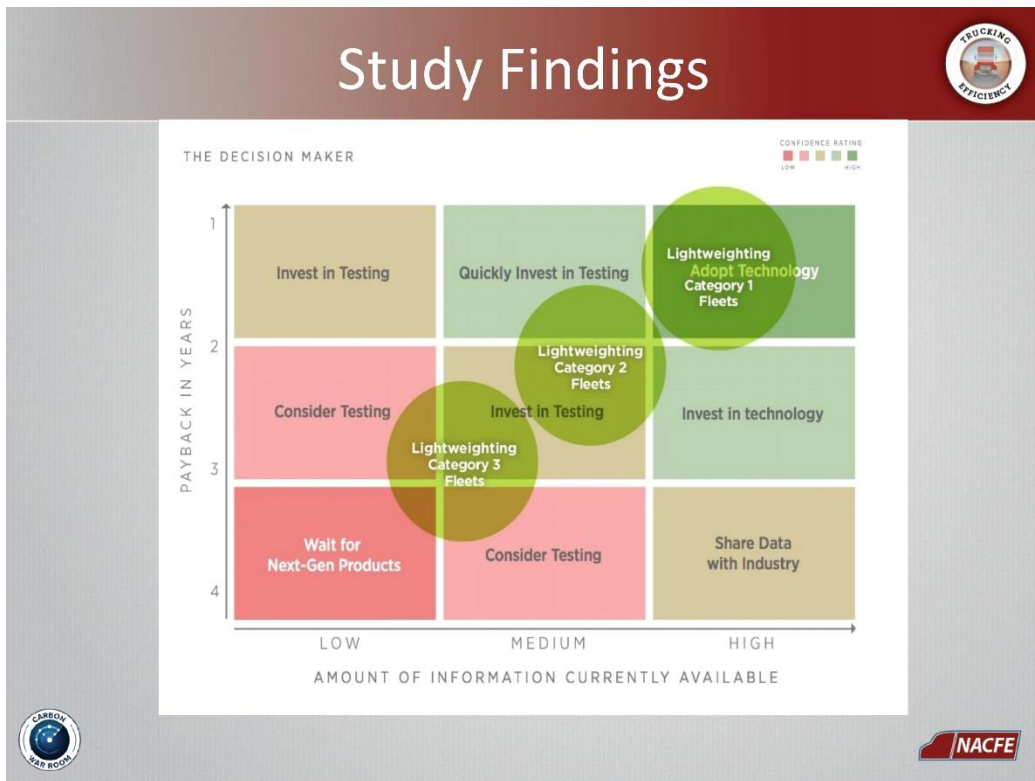


## Study Findings



- Findings
  - Heavier equipment
  - Denser freight
  - Fleets hesitant to LW
  - Industry trends indicate need for LWing will increase
  - Fuel economy and freight efficiency
  - Opportunities exist, and more coming
- Recommendations
  - Category 2 and 3 fleets should begin to explore LWing (lightweighting).
  - Supply chain collaboration can bring down costs and shorten lead time.
  - Fuel efficiency depends on lightweighting due to other technologies







**MERITOR**

## Meritor Business Overview & Lightweight Solutions

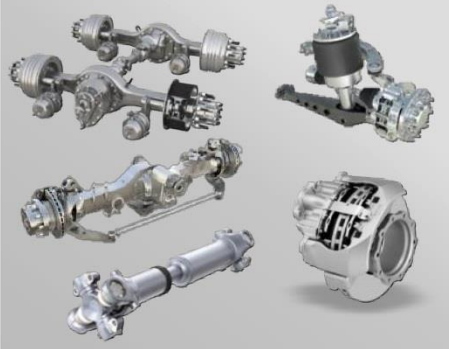
# Carbon War Room - Meritor Headquarters

## Business Segments



### Commercial Truck & Industrial

- Drivetrain systems and components, including axles, drivelines, braking and suspension systems
- Medium- and heavy-duty truck markets in North America, South America, Europe and Asia Pacific
- Truck, defense and specialty



### Aftermarket & Trailer

- New and remanufactured axles, brakes, suspensions, transmissions and components for all-makes aftermarket customers
- Wide variety of undercarriage products and systems for trailer applications

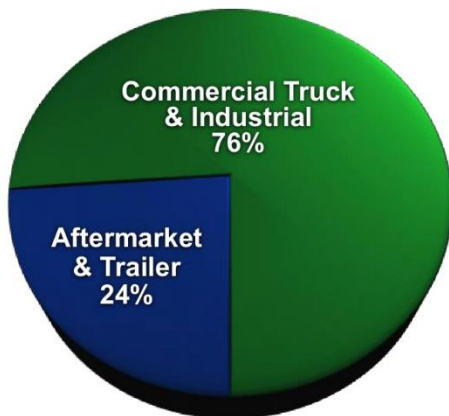


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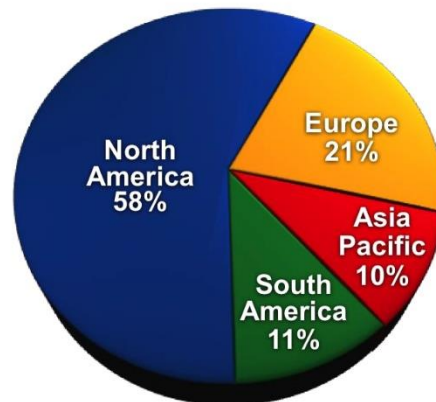
## Globally Diverse Business Portfolio



FY14 Sales by Segment



FY14 Sales by Region



FY14 Sales \$3.8B

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# Carbon War Room - Meritor Headquarters

## Lightweight Solutions – Available Today



Meritor has multiple solutions that can save 400 lbs or more

**Front Axles**  
Optimized designs  
30-60lbs per truck

**Air Cam Brakes**  
Stamped brake spiders can  
save 6.5 lbs per wheel end

**Aluminum Axle Carriers**  
Saves 90lbs per truck

**Steelite X30**  
Spincast process saves  
12-18 lbs. per drum

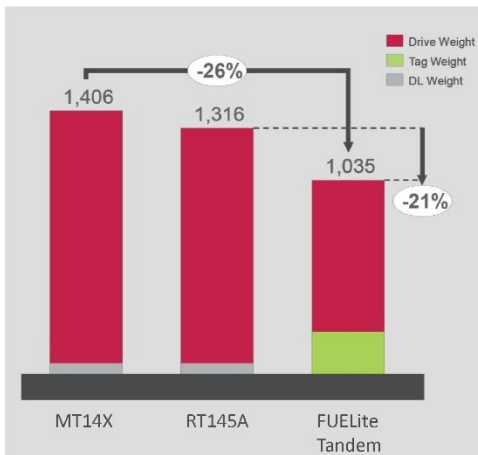
**MTec6™**  
Saves 80lbs per trailer

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## FUELite 6x2 Tandem Drive Axle- Benefits



### LIGHTER WEIGHT FUELite Tandem



<sup>1</sup>Weights will vary based on configuration and ratio (this weight based on std. track, 9.5mm wall housing, std diff carrier, 17T yokes and std angle interaxle propshaft)

<sup>2</sup>Weights will vary based on configuration and ratio (this weight based on dualtrac, 12.7mm wall housing, DCCL carrier, 17T yoke & torque rod bracket on tag axle)

- Weight savings:  
- Nearly 400lbs lighter than typical linehaul tandem

**400**  
**lb. WEIGHT REDUCTION**

- Fuel Efficiency  
- Estimated 2% fuel savings

**2%**  
**INCREASE IN FUEL EFFICIENCY**

\* Actual fuel savings may vary and will depend on a variety of factors beyond Meritor, Inc.'s control, including load, vehicle type, driver performance, distances traveled, vehicle speed, road conditions, etc.



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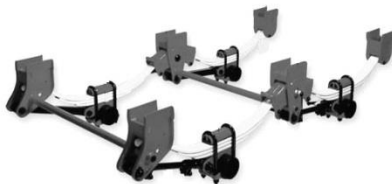
## Future Opportunities for Lightweighting



Meritor will continue to research and develop components with the following in mind:

- Alternative steel types
- Aluminum
- Composites
- Design optimization and component integration

Use of aluminum structures for trailer suspensions



Suspension and Axle Interface



Integration of brake structure and knuckle

- The challenge of alternative materials is the cost benefit equation.
  - OEM customers want products at same/similar price.
- Limited market (bulk haulers) in the industry will pay a premium for lightweighting

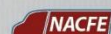
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## Questions?



Mike Roeth, Executive Director, NACFE & CWR  
Karl Mayer, Director, Meritor

- Trucking Efficiency
- Fleet Fuel Study
- LWin Confidence
- Manufacturer Perspective
- Questions and Answers



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AUTOMOTIVE LIGHTWEIGHT

**PROCUREMENT SYMPOSIUM**

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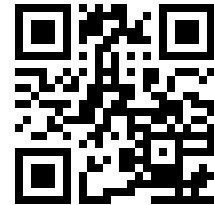
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AUTOMOTIVE LIGHTWEIGHT

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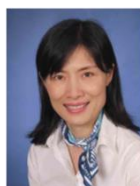
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