

# 2008 SAE *Motorsports Engineering* Conference

December 2-4, 2008

The Embassy Suites Charlotte-Concord Golf Resort & Spa  
Concord, North Carolina, USA

## **EVENT GUIDE**

Includes Final Program and  
Exhibit Directory



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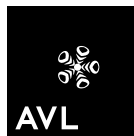
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Friend of the Industry



**Michael Royce**

Albion Associates LLC

These are trying times! The waves from the high price of oil followed by the credit debacle have the auto industry reeling. The likelihood of the demise of at least one of the "Detroit 3" automakers is front-page news every day. Things are tough, not only for the automakers, their suppliers and their dealers, but also for those who rely on a healthy domestic economy for their livelihood. The motorsports industry is also feeling the effects. Sponsorship is becoming hard to find, and many race teams and series are under heavy financial pressure.

The challenges facing both the automobile industry and the motorsports industry are significant. Not only from the general economy, but also from the pressures of global warming, the use of non-renewable resources, and the need for social responsibility. The major effect on both industries is the demand for improved fuel efficiency and with it, the introduction of new, "green" technologies.

The major technical challenge to the automobile industry is the need to develop these new technologies as rapidly as possible. At the same time, a major challenge for the motorsports industry is to show that it is socially relevant. By working together, both challenges can be met, and both industries can benefit.

The pace and urgency of motoring competition can help the OEM's and suppliers develop these new technologies, while at the same time demonstrating the social relevancy of motorsports. The key is cooperation and knowledge.

SAE believes that the Motorsports Engineering Conference (MSEC) can be an important bridge between the mobility industry and motorsports and provide a key catalyst to cooperation and the transfer of knowledge between these groups.

This is the eighth MSEC. Six of the previous conferences were held in Dearborn and the other in Indianapolis. In an effort to make the MSEC more available to engineers who work in motor sports, we have moved the conference here to Charlotte-Concord, NC, in the heart of the "motors sports valley" of the USA. With this move, we are hoping that many more people will take the time to attend the conference, even if they cannot be here for the whole three days.

There are now many motorsports "shows" throughout the world. However, the MSEC is the only one that has peer-reviewed technical papers. It is NOT a "trade show". It is a meeting centered around technical knowledge. It is a conference for engineers, an opportunity for each of us to expand our knowledge by attending the technical sessions, to understand what advanced technologies are being researched and deployed, to help set the path of research in a number of important motor sport related areas over the next 2-5 years, and to network with our peers. It is about "Keeping Ahead - Racing Technologies YOU Need to Know".

Welcome to the 2008 MSEC. I hope you find it valuable. I look forward to your participation.

**Michael Royce**

Albion Associates LLC

Motorsports Event Conference General Chair

Tuesday December 2	Wednesday December 3	Thursday December 4
8:00 – 9:00 a.m. <b>Opening Remarks &amp; Keynote Address</b>	8:00 – 10:00 a.m. <b>Safety Panel Discussion</b>	8:00 – 10:00 a.m. <b>Green Motorsports Panel Discussion</b>
9:00 – 9:30 a.m. <b>Networking Break</b> Tabletop Displays Open	10:00 – 10:30 a.m. <b>Networking Break</b> Tabletop Displays Open	10:00 – 10:30 a.m. <b>Networking Break</b> Tabletop Displays Open
9:30 a.m. – 11:30 a.m. <b>Sanctioning Bodies Panel Discussion</b>	10:30 a.m. – 12:30 p.m. <b>Technical Sessions</b>	10:30 a.m. – 12:30 p.m. <b>Technical Sessions</b>
11:30 a.m. – 12:30 p.m. <b>Technical Sessions</b>		
12:30 – 2:00 p.m. <b>Lunch</b> (Tabletop Displays Open)	12:30 – 2:00pm <b>Lunch</b> (Tabletop Displays Open)	12:30 – 1:00pm <b>Lunch</b> (Tabletop Displays Open)
2:00 – 5:00 p.m. <b>SAE Motorsports Aero Challenge Workshop</b>	2:00 – 5:00 p.m. <b>Technical Sessions</b>	2:00 – 5:00 p.m. <b>Technical Sessions</b>
2:00 – 5:00 p.m. <b>Technical Sessions</b>	5:00 – 6:00 p.m. <b>Networking Reception</b>	
5:00 - 6:30 p.m. <b>Networking Reception</b>	6:00 - 8:00 p.m. <b>Banquet</b>	

**Registration**  
*Convention Center Entrance*  
 Tuesday, December 2  
 7:00 a.m. - 4:00 p.m.  
 Wednesday, December 3  
 7:00 a.m. - 6:00 p.m.  
 Thursday, December 4  
 7:00 a.m. - 4:00 p.m.

## Conference Organizing Committee

Conference General Chairperson  
**Michael Royce**  
Albion Associates LLC

**Lee Carducci**  
President, Power-Tec Engineering

**David Finch**  
President, RAETECH Corp.

**Paul Haney**  
Owner, InfoTire

**Tim Holland**  
Director of Motorsports Initiatives,  
Lotus Engineering Inc.

**Wensi Jin**  
Automotive Industry Manager,  
The MathWorks Inc.

**Dr. Edward M. Kasprzak**  
Associate, Vehicle Dynamicist,  
Milliken Research Associates, Inc.

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**John Melvin**  
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Senior Engineer,  
Honda R&D Americas, Inc.

**J. Kirk Russell**

**Dr. Sandeep Dinkar Sovani**  
Technical Support ANSYS Inc.

**Don Taylor**  
Senior Technical Director, NHRA

**Peter Thomas Tkacik**  
Univ. of North Carolina Charlotte

**Jeremy Thoennes**  
Technical Manager, SCCA Pro Racing

**H. Robert Welge**  
Chief Engineer,  
Robert's Engineering Development

## Emergency Hotline

1-800-581-9295

## Hours of Operation

### Registration

#### Convention Center Entrance

Tuesday, December 2  
7:00 a.m. - 4:00 p.m.

Wednesday, December 3  
7:00 a.m. - 6:00 p.m.

Thursday, December 4  
7:00 a.m. - 4:00 p.m.

### On-Site Registration Fees

Member .....\$395

Non-Member .....\$695

Presenting Author.....\$149

Technical Program Participants .. Free  
(Organizer, Panelist, Moderator, Keynote)

SAE Student Member ..... Free

Non-Member Student .....\$25

Media ..... Free

### Message Center/Telephone Information

- There will not be a paging system.
- Messages for attendees and exhibitors will be posted on the message board located in the main registration area.
- To leave a message for someone attending or exhibiting, call the Message Center at 704-455-8200 and ask for the SAE Information Desk.
- Faxes can be sent to the Hotel Front Desk at: 704-455-8201.

### Breaks

#### Tabletop Display Area (Concord A):

Tuesday, December 2  
9:00 - 9:30 a.m.

Wednesday and Thursday,  
December 3-4  
10:00 - 10:30 a.m.

### Lunch

#### Tabletop Display Area (Concord A)

Tuesday, Wednesday, and Thursday  
December 2-4  
12:30 - 2:00 p.m.

### Evening Receptions

#### Tabletop Display Area (Concord A)

Tuesday, December 2  
5:00 - 6:30 p.m.

Wednesday, December 3  
5:00 - 6:00 p.m.

## On-site Services

### Business Center

*Embassy Suites Hotel, Lobby Level*

open 24 hours

Some services include: copy and fax services, internet/printing, express mail, and notary public. The business center is room key accessible.

Wireless internet is available in the hotel atrium/sleeping rooms at a charge of \$9.95 for a 24-hour period.

### Hotel Restaurants

- Complimentary cooked-to-order breakfast is available for all hotel guests in the Hotel Atrium.
- Rocky River Grille is open for lunch and dinner from 11:00 a.m. - 10:00 p.m.
- In-room dining is available 24 hours a day.
- Caffeina's Marketplace is available Monday-Friday 6:00 a.m. - 10:00 p.m. and Saturday - Sunday 6:30 a.m. - 10:00 p.m.
- Stonehouse Grille is open daily from 8:00 a.m. - 5:00 p.m.
- Manager's Reception features your favorite cocktails and nonalcoholic beverages from 5:30 - 7:30 p.m. daily.

### Presentation Ready Room

*Carolina C*

Main Level, Convention Center  
Open daily at 7:00 a.m. to review presentations.

### Local Attractions:

- Lowe's Motor Speedway
- Concord Mills Mall
- Nascar Speedpark
- US National White Water Rafting Center
- Verizon Wireless Amphitheatre
- Marion Andretti & Jeff Gordon Driving School

For further assistance with local sites, visit the concierge desk located in the hotel lobby.

### SAE International Officers

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### SAE International World Headquarters

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### Customer Service

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### Automotive Headquarters

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Troy, MI 48084  
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Fax: 1-248-273-2494

## TUESDAY

### Networking Break

Tabletop Display Area

Concord A

9:00 - 9:30 a.m.

Sponsored by



### Evening Reception

Tabletop Display Area

Concord A

5:00 - 6:30 p.m.

Sponsored by



## Keynote Address - Motorsport and the Environment - Challenge or Compromise

### Concord B

Tuesday December 2, 2008

8:00 a.m.

Featuring:

### Peter G. Wright

FIA Technical Consultant

FIA Institute for Motor Sport Safety



Peter Wright was educated at the Wellington College and later Trinity College, Cambridge, where he graduated with an MA in Mechanical Sciences. In 1967, he was recruited by F1 team British Racing Motors (BRM), where he was an aerodynamicist and vehicle development engineer. In 1969, he went to work for Specialised Mouldings Ltd., which designed and manufactured racing car bodies.

In 1974, Wright became General Manager of Technocraft, a company owned by Colin Chapman, the founder of Lotus. He was responsible for the F1 Team Lotus wind tunnel programme which led to the development of the first ground effect car, the Lotus 78. The car was an instant success and its successor, the Lotus 79, went on to the win the 1978 Formula One World Championship.

Wright later became director of Research and Development at Team Lotus and was responsible for the development of the Lotus T78, 79, 80, 81, 86, 87, 88, 91, 92 and 93 Formula One cars. In 1983, he became responsible for Active Suspension development in Lotus Engineering, and in 1987 for the development of Active Suspension on the Lotus F1 car. In 1988, he became Managing Director of Lotus Engineering, responsible for over 600 staff.

The following year, he was appointed Director for Group Lotus and would later go back to the track as Technical Director of Team Lotus from 1991 to 1994.

With a vast amount of experience in motor sport, Wright was asked to be a technical adviser for the FIA in 1995, a position he still holds today. He currently works across a number of FIA affiliated organisations including the FIA Foundation and the FIA Institute for Motor Sport Safety. He is President of the FIA GT and Sportscar Commissions, and of the FIA Safety Commission. He has served as a Director of EuroNCAP, a Member of the EuroNCAP Technical Committee, a Member of the PNCAP Technical Committee and a technical adviser on EU safety, emissions, and traffic legislation.

■ SAE Motorsports Engineering Conference Award will be presented immediately following the keynote address.

## Banquet Speaker

### Explaining Engineering To The Layman In Twenty Seconds Or Less - the Task of a Motor Sports TV Commentator

*Concord B*

Wednesday December 3, 2008

6:00 p.m.

Featuring:

#### **Bob Varsha**

Broadcast Journalist

Motorsports Industry



## WEDNESDAY

### Evening Reception

*Tabletop Display Area*

*Concord A*

5:00 - 6:00 p.m.

A former world-class runner and corporate attorney, Mr. Varsha accepted an invitation from Turner Broadcasting to cover a popular footrace in his home town. That performance led to an offer of a part-time job from TBS, and Varsha soon found himself with a new career. Over four years at Turner Broadcasting Mr. Varsha handled a wide variety of duties including hosting a WTBS public affairs program and serving as a weekday sports anchor on CNN. In 1982 he joined the cast of the first weekly motorsports program on television, "MotorWeek Illustrated," airing on WTBS. Two years later he accepted a job with the show's production company, World Sports Enterprises, and began to cover motorsports full-time.

Auto racing led him to ESPN. Mr. Varsha's assignments for ESPN and ABC Sports included a healthy portion of motorsports but not just motorsports. Among the major events Varsha has hosted are the World Alpine Championships, the Indianapolis 500 Time Trials, the U.S. Olympic Trials, and the New York City and Boston Marathons. Mr. Varsha has co-anchored the Sunday night motorports program "Speedvision News Raceweek," and hosted Speedvision coverage of Formula One, The 24 Hours of Le Mans, and the 12 Hours of Sebring. For Outdoor Life he hosted the network's acclaimed first-ever live coverage of the greatest events in cycling, the Tour de France and the Giro d'Italia.

In late 2001 Mr. Varsha joined Speedvision when it relaunched as SPEED Channel. There he has continued his long association with Formula One and Le Mans and added new programs including the ground-breaking automotive history series "Behind the Headlights". He is also the co-host of "Focus on Racing Radio", and serves as the Formula One correspondent for the program "Powershift" on XM Satellite Radio.

Mr. Varsha, is a native of Northport, New York and lives with his wife Karen and their three children, daughter Leslie and sons Matt and Chase, in Atlanta, Georgia.

■ The following awards will be presented at the banquet: SAE Award and the MSEC Motorsports Achievement Award.

## TUESDAY

December 2, 2008

9:30 a.m.

### **Sanctioning Bodies**

*Moderator:*

**Don Taylor**, NHRA, Senior Technical Director

*Panelists:*

**Scot Elkins**, IMSA, Vice President Technical Operations

**Michael Edward Fisher**, NASCAR, Managing Director, R & D

**Jeff H. Horton**, Indy Racing League, Director of Engineering

**Peter P.C. Riches**, Riches Technical Services, Partner

**Jeremy J. Thoennes**, SCCA Pro Racing, Technical Manager

## WEDNESDAY

December 3, 2008

8:00 a.m.

### **Safety**

*Moderator:*

**John W. Melvin**, NHRA, President

*Panelists:*

**Jim Downing**, Downing Atlanta Inc , President

**Daniel L. Jones**, Chapel Hill Fire Department, Fire Chief

**Arnold S. Kuhns**, SFI Foundation , President & CEO

**Andrew Mellor**, Federation Internationale de L'Automobil , Technical Consultant

**Stephen E. Olvey**, University of Miami, Director - Neuroscience Intensive Care

## THURSDAY

December 4, 2008

8:00 a.m.

### **Green Motorsports**

*Moderator:*

**Tim Holland**, Lotus Engineering Ltd., Director of Engineering

*Panelists:*

**Michael Austin**, Car and Driver Magazine, Technical Editor

**Ian Bamsey**, Race Engine Technology, Editor

**Douglas Cross**, Flybird Systems LLP, Technical Director

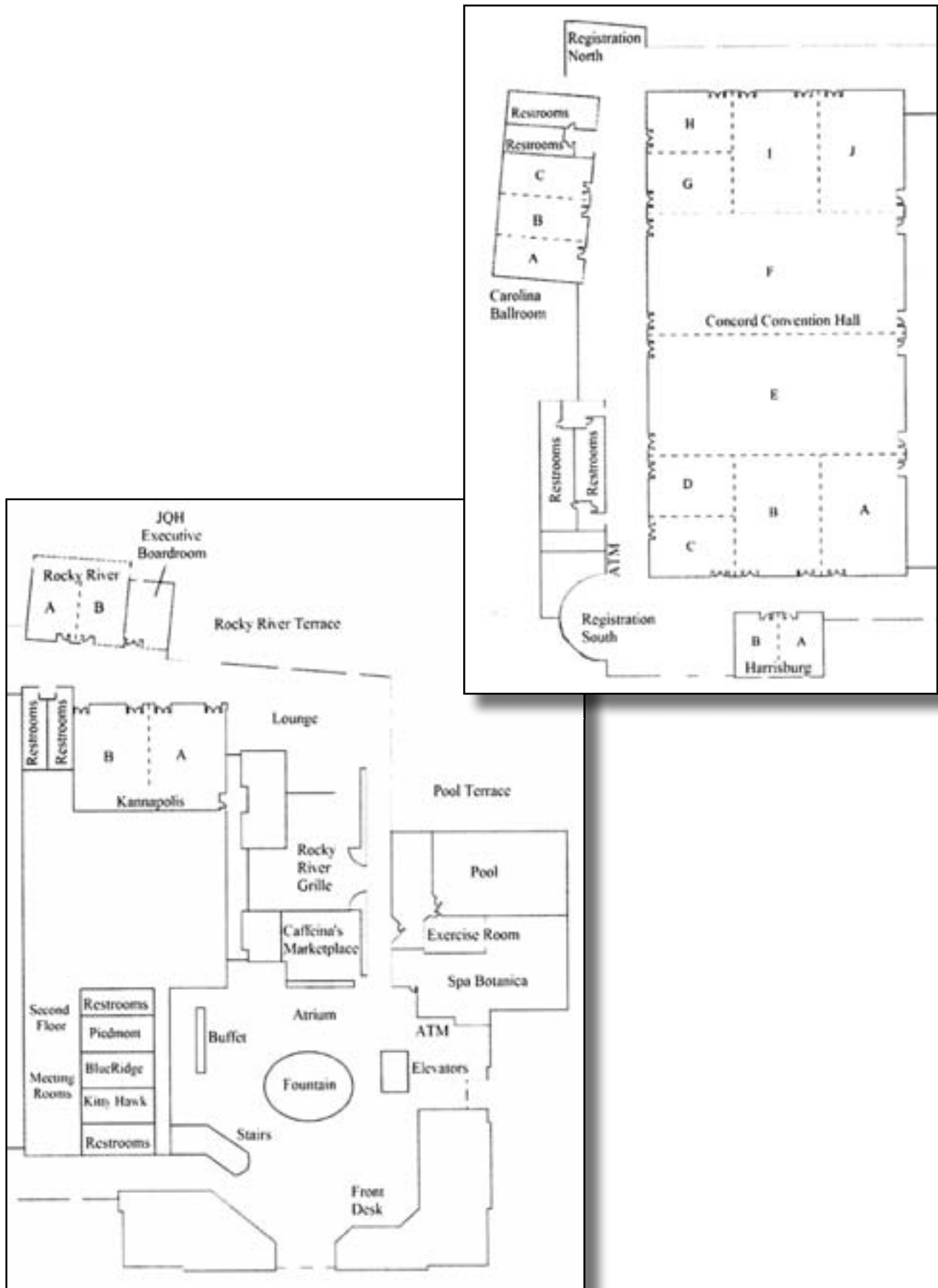
**Robert Paul Larsen**, Argonne National Laboratory, Center for Transportation Research

**Doug Robinson**, International Motor Sports Association, Executive Director

**James WG Turner**, Lotus Engineering Ltd., Senior Technical Specialist

**Peter G. Wright**, FIA Institute for Motor Sport Safety, FIA Technical Consultant

# FACILITY FLOORPLAN



# Tribute to **Steve Peterson**



Steve Peterson, NASCAR's technical director, died in July of 2008. Steve was a significant contributor to motorsports safety and a friend of the SAE Motorsports Engineering Conference and all of its attendees. He was greatly respected and will be missed.

Peterson spearheaded many of the sport's safety initiatives, including the evolution of drivers' head and neck restraints, and was instrumental in the development of the Car of Tomorrow now being raced today.

"Steve's (dedication) to increased safety will continue to be a benefit to every NASCAR driver that gets behind the wheel for generations to come," said NASCAR Chairman and CEO Brian France. "Our thoughts and prayers go out to Steve's family and friends. He will certainly be missed throughout the NASCAR community."

Peterson worked closely with many national and international racing organizations, and was the recipient of the 2006 Society of Automotive Engineers (SAE) Motorsports Achievement Award. SAE presents this award to individuals who have shown outstanding leadership or provided enduring contributions to racing over an extended period of time.

"Steve was a tireless worker and passionate about all aspects of safety – including the car, the track and the driver," said NASCAR Vice President of Corporate Communications Jim Hunter. "He was our research and development department long before we had a formal R&D department."

Peterson was a graduate of Western Michigan University in Kalamazoo, Mich. He began his NASCAR career in 1982 as a crew chief for Mark Martin and later gained experience as a team design engineer. He was an avid go-karter and a lifetime member of the World Karting Association.

He mentored many young drivers through karting and in their following careers. "As a researcher in racing car safety, I was always concerned about transferring our work to the drivers," says John Melvin, PhD, a consultant to NASCAR on driver safety. "Steve made that transfer happen quickly and effectively in his typical good-natured and low-key style. He was highly admired by all of us in this special field."

# TECHNICAL SESSIONS

## TUESDAY, DECEMBER 2 - MORNING Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM		
	Concord B	Concord C	Concord B
	<p><b>Sanctioning Bodies Panel (MSEC31)</b></p> <p>Is innovation being outlawed? The state of rules-making in the age of spec components and demands for competitive parity on the track will be discussed by technical personnel from a diverse group of sanctioning bodies</p> <p>9:30 a.m. - 11:30 a.m.</p> <p>Moderators: Don Taylor, NHRA</p> <p>Panelists: Scot Elkins, IMSA Michael Edward Fisher, NASCAR Jeff H. Horton, Indy Racing League Peter P C Riches, A1GP, BTCC Jeremy J. Thoennes, SCCA Pro Racing</p>	<p><b>Diesel Engines in Competition (MSEC10)</b></p> <p>This session covers all aspects of diesel engines in competition.</p> <p>11:30 a.m. - 12:00 p.m.</p> <p>Organizers: Lee Carducci, Power-Tec Engineering; Wiley R. McCoy, McLaren Performance Technologies; Michael J. Royce, Albion Associates LLC</p>	<p><b>Facility Safety and Event Management (MSEC26)</b></p> <p>Presentations cover the development of a trackside energy-attenuating barrier and Australian motor sport accident monitoring.</p> <p>11:30 a.m. - 12:30 p.m.</p> <p>Organizers: John W. Melvin, Tandelta; J. Kirk Russell</p>
11:30 a.m.		<p>Fast Prototyping of a Racing Diesel Engine Control System <b>(2008-01-2942)</b></p> <p>Enrico Corti, Giulio Cazzoli, Matteo Rinaldi, Luca Solieri, Univ. of Bologna</p>	<p>Australian Motor Sport Crash Data Collection and Analysis <b>(2008-01-2980)</b></p> <p>Thomas Gibson, Michael Henderson, Australian Institute of Motorsport Safety AIMSS; Christine Bethwaite, Confederation of Australian Motor Sport, CAMS</p>
12:00 p.m.			<p>Development of a Barrier for Perpendicular High Speed Impact <b>(Oral Only)</b></p> <p>Hubert Gramling, FIA Institute</p>

### Aerodynamics Focus Group Meeting

*Concord D*

December 3

10:30 a.m. - 12:30 p.m.

### Safety Focus Group Meeting

*Concord B*

December 4

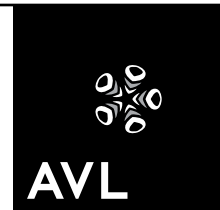
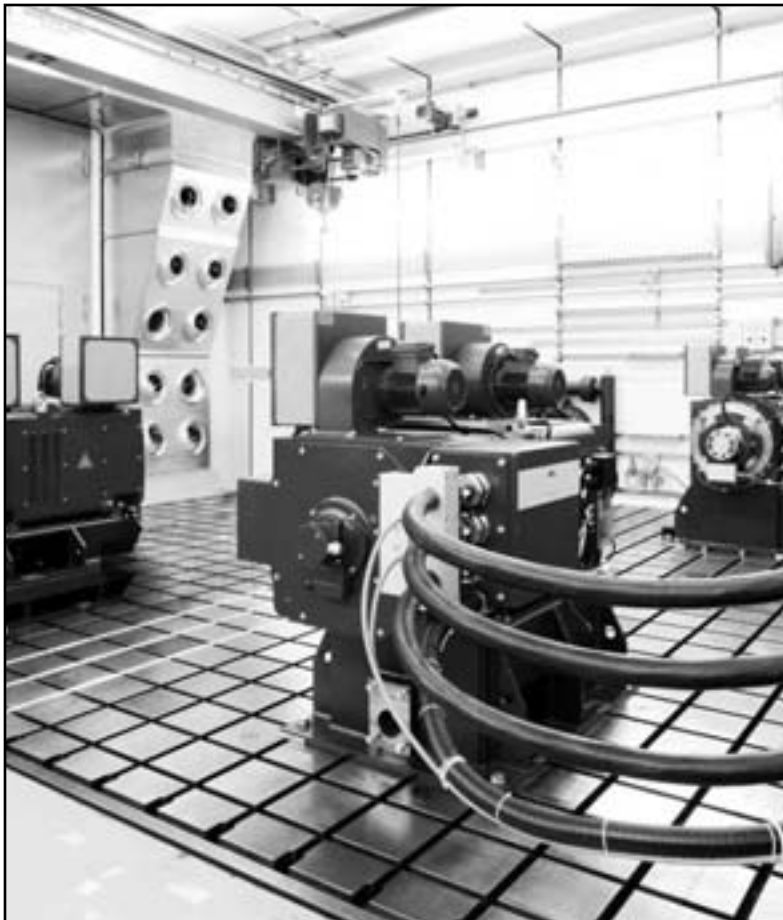
2:00 - 4:00 p.m.

### Powertrain/Green Racing Focus Group Meeting

*Concord C*

December 4

3:00 - 5:00 p.m.



## INTEGRATE REALITY

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# TECHNICAL SESSIONS

TUESDAY, DECEMBER 2 - AFTERNOON				
Technical and Business Sessions				
TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Concord C	Concord C	Concord D	Concord B
	<p><b>The Quest for Speed (MSEC29)</b></p> <p>This is a session that describes the engineering involved in many of the systems of the vehicle and how they are brought together to produce the final racing machine. It covers competitions in general and speed record attempts in particular.</p> <p>12:00 p.m. - 12:30 p.m.</p> <p>Organizers: Lee Carducci, Power-Tec Engineering; Wiley R. McCoy, McLaren Performance Technologies; Michael J. Royce, Albion Associates LLC</p>	<p><b>Advanced Materials and Manufacturing Processes (MSEC19)</b></p> <p>This session covers advanced materials and processes that are, or could be used in high performance and race powertrains.</p> <p>2:00 p.m. - 4:30 p.m.</p> <p>Organizers: Lee Carducci, Power-Tec Engineering; Wiley R. McCoy, McLaren Performance Technologies; Michael J. Royce, Albion Associates LLC; Christopher E. Shaw, Visteon Corp.</p>	<p><b>Aero Challenge Workshop (MSEC33)</b></p> <p>The SAE Motorsports Aero Challenge topic for 2008 is Race Cars in Proximity and is a comparison and evaluation of aerodynamic tools for the racecar industry. Interest in participating has been expressed from a full spectrum of industry including racing teams, engineering companies, universities, wind tunnel facilities and the CFD developers. We will meet in person as a working group to solidify the details and begin to produce results. Please join us and participate.</p> <p>2:00 p.m. - 5:00 p.m.</p> <p>Organizers: H. Robert (Bob) Welge, Robert's Engineering Development; Thomas N. Ramsay, Honda R&amp;D Americas Inc.</p>	<p><b>Designing Safer Racecars (MSEC27)</b></p> <p>Presentations look at systems and materials that help improve racecar safety performance.</p> <p>2:00 p.m. - 5:00 p.m.</p> <p>Organizers: John W. Melvin, Tandelta; J. Kirk Russell</p>
12:00 p.m.	<p>Design and Development of the BUB 7 Land Speed Record Motorcycle <b>(2008-01-2983)</b></p> <p>Joseph H. Harralson, California State Univ-Sacramento</p>			
2:00 p.m.		<p>Extremeions Type V Carbon Raptor Nano-Crystalline Diamond Thin Film Coating for Exhaust Valve Applications <b>(Oral Only)</b></p> <p>Darren R. Burgess, George Barr, Anatech, Ltd.</p>		<p>Stock Car Racing Driver Restraint Development and Implementation of Seat Performance Specification <b>(2008-01-2974)</b></p> <p>John Patalak, NASCAR; John Melvin, Tandelta</p>
2:30 p.m.		<p>Determining the Effect of Material Properties on Operating Temperatures of Fiber Reinforced Internal Combustion Engine Poppet Valves <b>(2008-01-2946)</b></p> <p>Donald W. Radford, Colorado State Univ.</p>		<p>Strength Testing of Inside Nets <b>(Oral Only)</b></p> <p>Gregg S. Baker, GTP</p>
3:00 p.m.		<p>Aluminum Casting Materials Processes <b>(Oral Only)</b></p> <p>Paul James Fricker, Grainger &amp; Worrall, Ltd.</p>		<p>RallyCar Occupant Protection <b>(Oral Only)</b></p> <p>Andrew Mellor, Federation Internationale de L'Automobil</p>
3:30 p.m.		<p>Hone and Surface <b>(Oral Only)</b></p> <p>Chris P. Sauer, Nagel Precision Inc.</p>		<p>Shape Memory Composites Applied to the Construction of a Conformable Racing Car Seat <b>(2008-01-2973)</b></p> <p>Patrick Devin Leahy, Allyson Antonio, Donald W. Radford, Colorado State Univ.</p>
4:00 p.m.		<p>Fastener Technology - How Fastner Science Effects Cyl Head Lifting <b>(Oral Only)</b></p> <p>Don Trapp, A1 Technologies</p>		<p>IMPAXX* Energy Absorbing Foam for Enhanced Driver Safety in Motorsports Door Applications <b>(2008-01-2971)</b></p> <p>Myron John Maurer, Dow Chemical Co.</p>
4:30 p.m.				<p>Self-Reinforced Polypropylene Composites - A New Class of Material for the Motorsports Industry <b>(2008-01-2947)</b></p> <p>Heather Hayes, Milliken &amp; Co.</p>

**TUESDAY, DECEMBER 2 - AFTERNOON  
Technical and Business Sessions**

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	<b>Carolina B</b>	<b>Written Only Session</b>		
	<p><b>Suspension and Handling (MSEC2)</b> Analysis, design, development, and manufacturing of suspension systems and components</p> <p>2:00 p.m. - 5:00 p.m.</p> <p>Organizers: Paul Haney, InfoTire; David A. Finch, Raetech Corp.</p>	<p><b>Sanctioning Bodies and Event Management (MSEC23)</b> This session includes presentations and papers featuring technical issues facing sanctioning bodies in their rules and conduct of race events.</p> <p>Organizers: Don Taylor, NHRA; Jeremy J. Thoennes, SCCA Pro Racing</p>		
<b>2:00 p.m.</b>	<p>Suspension Geometry: Theory vs K &amp; C Measurement <b>(2008-01-2948)</b> William C. Mitchell, William C Mitchell Software</p>			
<b>2:30 p.m.</b>	<p>A New Method to Evaluate Bump Steer and Steering Influence on Kinematic Roll and Pitch Axes for All Independent Suspension Types <b>(2008-01-2949)</b> Ganesh Mohan, Claude Rouelle, OptimumG</p>			
<b>3:00 p.m.</b>	<p>An Application of Traction Vectoring to a Formula SAE Car <b>(2008-01-2944)</b> Rob Tarlton, Steven Ward, Michael Bentz, Univ of Illinois at Urbana-Champaign; Norman R. Miller, Univ. of Illinois at Urbana-Champaign; David Cox, Thomas Becker, Univ of Illinois at Urbana-Champaign</p>			
<b>3:30 p.m.</b>	<p>Exploring the Effect of Manufacturing Tolerances on the Front Suspension Performance of a Formula SAE Vehicle Relative to Design Targets <b>(2008-01-2952)</b> Andrew John Prusinowski, Univ. of Michigan</p>			
<b>4:00 p.m.</b>	<p>Design and Development of an Optimized, Passive Camber System for Vehicles <b>(2008-01-2950)</b> James F. Cuttino, Maruti Nandan Sinha, Univ. of North Carolina Charlotte</p>			
<b>4:30 p.m.</b>	<p>State Transition Diagrams of Transient Roll and Pitch <b>(2008-01-2951)</b> Austin Dvorak, Patrick Fitzhorn, Colorado State Univ</p>			
		<p>Changes to FIM-MOTOGP Rules to Reduce Costs and Make Racing More Directly Relevant to Road Motorcycle Development (Written Only -- No Oral Presentation) <b>(2008-01-2957)</b> Alberto Boretti, Univ. of Melbourne</p>		

# TECHNICAL SESSIONS

WEDNESDAY, DECEMBER 3 - MORNING				
Technical and Business Sessions				
TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Concord B	Concord D	Concord B	Concord C
	<p><b>Safety Panel - Safety is no Accident. (MSEC30)</b></p> <p>Safety is no accident - The world's leading motorsports safety engineers want to share the results of their research with you.</p> <p>8:00 a.m. - 10:00 a.m.</p> <p>Moderators: John W. Melvin, Tandelta</p> <p>Panelists: Jim Downing, Downing Atlanta Inc. Daniel L. Jones, Chapel Hill Fire Department Arnold S. Kuhns, SFI Foundation Andrew Mellor, Federation Internationale de L'Automobil Stephen E. Olvey, Univ. of Miami</p>	<p><b>Aerodynamics Focus Group Meeting (MSEC34)</b></p> <p>SAE is focused on providing leading edge technical information. This focus group will follow a process of open discussion, brainstorming and prioritization. At the end of the day we hope to have a calendar of events and a list of products that will help you become a leader in the motorsport industry. This focus group is open to all attendees and will be facilitated by SAE staff or a conference leader.</p> <p>10:30 a.m. - 12:30 p.m.</p> <p>Moderators: John Miller, SAE International</p>	<p><b>Prepare to Race - The Driver/ Crew Environment and Accessories (MSEC25)</b></p> <p>Presentations covering a variety of subjects that affect motor sport safety.</p> <p>10:30 a.m. - 12:30 p.m.</p> <p>Organizers: John W. Melvin, Tandelta; J. Kirk Russell</p>	<p><b>Testing and Simulation - Powertrain Part 1 (MSEC24)</b></p> <p>Simulation enables engineers to predict how a new design will perform by combining math-based methods with insight into to existing designs. Testing serves to confirm the behavior of the new design using physical hardware. Testing and simulation as two essential engineering methods for motorsports go hand in hand. This session discusses leading edge applications of testing and simulation as well as best practices for leveraging a combination of the two to achieve ever greater performance.</p> <p>10:30 a.m. - 12:00 p.m.</p> <p>Organizers: Wensi Jin, The MathWorks Inc.; Edward M. Kasprzak, Milliken Research Associates, Inc.; Ethan Woodruff, The MathWorks Inc.</p>
10:30 a.m.			<p>Engineering The Driver</p> <p><b>(2008-01-2968)</b></p> <p>Ross Bentley</p>	<p>Top Fuel Dragster Powertrain Modeling</p> <p><b>(2008-01-2958)</b></p> <p>Thomas Charles Stone, Lex Joon Racing; Matthew Best, Loughborough Univ; Sebastian Visser , Lex Joon Racing</p>
11:00 a.m.			<p>Crash Recorders in Racing - An Overview</p> <p><b>(2008-01-2972)</b></p> <p>Thomas W. Gideon, General Motors Corp.</p>	<p>A Nonlinear Model for Top Fuel Dragster Dynamic Performance Assessment</p> <p><b>(2008-01-2961)</b></p> <p>Pol Spanos PhD, Rice University; David Hernández, Tecnológico de Monterrey; Richard Tapia PhD, Rice University</p>
11:30 a.m.			<p>Occupant Compartment Updates for Side to Side Vibration in a Fuel Funny Car</p> <p><b>(2008-01-2969)</b></p> <p>Trevor Ashline, Safety Solutions; John Melvin, Tandelta; Kris Vangilder, ISP Innovative Safety Products</p>	<p>Presentation of EXCITE simulation software-rotating systems. Rotating assembly analysis &amp; simulation</p> <p><b>(Oral Only)</b></p> <p>Andrew C. Martin, AVL Powertrain Engineering Inc.</p>
12:00 p.m.			<p>Jack Stands in North American Rally A Design Proposal</p> <p><b>(2008-01-2970)</b></p> <p>Mike Johnston, Kevin Martin, Jennifer Johrendt, Univ. of Windsor</p>	

**WEDNESDAY, DECEMBER 3 - MORNING  
Technical and Business Sessions**

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	<b>Carolina B</b>			
	<b>Vehicle Design (MSEC1)</b> Analysis, design, manufacture, and development of racecar structures. 10:30 a.m. - 12:30 p.m.  Organizers: Paul Haney, InfoTire; David A. Finch, Raetech Corp.			
10:30 a.m.	Welding in Racecar Design  <b>(Oral Only)</b> Jeffrey R. Mallat, Siemens Power Generation Inc.			
11:00 a.m.	3D Laser Scanning in Racing Vehicle Design  <b>(Oral Only)</b> Kevin N. Outz, Matrix CAD Design Inc.			
11:30 a.m.	Mechanical Coupling Due to Composite Structural Damage and Repair <b>(2008-01-2940)</b> Donald W. Radford, Colorado State Univ.			
12:00 p.m.	Terminology and Manufacturing Methods of MIL/AMS-T-6736B Frame Tubing <b>(2008-01-2941)</b> Eric Rayner, Plymouth Tube Co			

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# TECHNICAL SESSIONS

WEDNESDAY, DECEMBER 3 - AFTERNOON Technical and Business Sessions				
TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Concord C	Concord D	Concord B	Carolina B
	<p><b>Advanced Combustion (MSEC9)</b></p> <p>This session covers some of the many aspects of airflow and combustion as they apply to high performance and race engines.</p> <p>2:00 p.m. - 3:30 p.m.</p> <p>Organizers: Lee Carducci, Power-Tec Engineering; Wiley R. McCoy, McLaren Performance Technologies; Michael J. Royce, Albion Associates LLC</p>	<p><b>Aerodynamics Technical Opportunities, Needs and Testing (MSEC6)</b></p> <p>The Session will contain technical discussions on progress toward understanding aerodynamic technical issues that are contributors to improved racing vehicle performance. Current research unknowns and research opportunities will be discussed. Improved testing techniques and facilities will be presented.</p> <p>2:00 p.m. - 4:30 p.m.</p> <p>Organizers: H. Robert (Bob) Welge, Robert's Engineering Development; Peter Thomas Tkacik, Univ. of North Carolina Charlotte; Thomas N. Ramsay, Honda R&amp;D Americas Inc.</p>	<p><b>The Science of Safety - Part 1 (MSEC28)</b></p> <p>This sessions presentations cover research and development activities on a variety of safety related issues.</p> <p>2:00 p.m. - 4:00 p.m.</p> <p>Organizers: John W. Melvin, Tandelta; J. Kirk Russell</p>	<p><b>Virtual Tools, Data Acquisition, Instrumentation (MSEC4)</b></p> <p>The software, hardware, sensors, and methodology needed to gather and analyze vehicle data.</p> <p>2:00 p.m. - 4:00 p.m.</p> <p>Organizers: Paul Haney, InfoTire; David A. Finch, Raetech Corp.</p>
2:00 p.m.	<p>Tumble Meter Development</p> <p><b>(2008-01-3004)</b></p> <p>Patrick H. Baer, Chrysler LLC</p>	<p>The use of a Bluff Body Wake Generator for Wind Tunnel Studies of NASCAR Drafting Aerodynamics</p> <p><b>(2008-01-2990)</b></p> <p>Robert G. Dominy, Durham Univ.; Geoffrey Le Good, G L Aerodynamics Ltd</p>	<p>Recognition, Treatment, and Prevention of Mild Traumatic Brain Injury in Motorsports</p> <p><b>(Oral Only)</b></p> <p>Stephen E. Olvey, Univ. of Miami</p>	<p>Tire-Ground Interaction Model for Suspension Analysis and Optimization</p> <p><b>(2008-01-2984)</b></p> <p>Arnaud Dufournier, DUFURNIER Technologies</p>
2:30 p.m.	<p>The Effects of Intake Plenum Volume on the Performance of a Small Normally Aspirated Restricted Engine</p> <p><b>(2008-01-3007)</b></p> <p>Leonard Joseph Hamilton, Jasen Lee, US Naval Academy</p>	<p>Design of a Continuous Flow Water Channel for Fluid Dynamics Research</p> <p><b>(2008-01-2994)</b></p> <p>Sam Hellman, Peter Thomas Tkacik, Univ. of North Carolina Charlotte</p>	<p>New Sensors to Track Head Acceleration During Possible Injurious Events</p> <p><b>(2008-01-2976)</b></p> <p>Ted Knox, US Air Force</p>	<p>Advanced Triaxial Accelerometer for Race Car Performance Enhancement</p> <p><b>(2008-01-2985)</b></p> <p>Thomas Connolly, Measurement Specialties</p>
3:00 p.m.	<p>A Technique for Processing Cylinder Pressure and Test Bed Data Sets for Engine Speed-Sweep Tests to Allow Reduced Testing Time with Enhanced Interpretation of Results</p> <p><b>(2008-01-3006)</b></p> <p>Gary J. Patterson, AVL North America Inc.</p>	<p>Racecar Front Wing Aerodynamics</p> <p><b>(2008-01-2988)</b></p> <p>Wael Mokhtar, Jonathan Lane, Lake Superior State Univ.</p>	<p>Improving Earpiece Accelerometer Coupling to the Head</p> <p><b>(2008-01-2978)</b></p> <p>Robert Salzar, Univ of Virginia; Joseph A. Pelletiere, US Air Force; Cameron Bass, Univ of Virginia</p>	<p>Trail-Braking Driver Input Parameterization for General Corner Geometry</p> <p><b>(2008-01-2986)</b></p> <p>Efstathios Velenis, Brunel Univ.; Panagiotis Tsiotras, Georgia Institute of Technology; Jianbo Lu, Ford Motor Co</p>
3:30 p.m.		<p>The Influence of Model Motion on the Simulation of Vehicle Dynamics - presentation from SAE 2008 World Congress (SAE paper # 2008-01-0657)</p> <p><b>(Oral Only)</b></p> <p>Peter Aschwanden, RUAG Aerospace</p>	<p>Wireless Acceleration and Impact Recording Chips</p> <p><b>(2008-01-2979)</b></p> <p>Ted Knox, AFRL; Navid Yazdi, Evigia Systems; John A. Plaga, Wright-Patterson Air Force Base</p>	<p>Avoiding the Pitfalls in Motorsports Data Acquisition</p> <p><b>(2008-01-2987)</b></p> <p>Steve Southward, Virginia Tech.; Holley Conner, Virginia Tech</p>
4:00 p.m.		<p>The Windshear Full-Scale Wind Tunnel: Initial Overview and Status</p> <p><b>(Oral Only)</b></p> <p>Joel Walter, Jacobs; Jeffrey Bordner, Windshear Inc</p>	<p>Recent Developments in Karting Safety</p> <p><b>(Oral Only)</b></p> <p>Hubert Gramling, FIA Institute</p>	
4:30 p.m.			<p>Failure Analysis of NASCAR Racecar Components</p> <p><b>(Oral Only)</b></p> <p>Samuel C. Pendergrass, Metallurgical Technologies Inc.</p>	
	<p>Top Land Crevice and Piston Deflection Effects on Combustion in a High Speed Rotary Valve Engine (Written Only -- No Oral Presentation)</p> <p><b>(2008-01-3005)</b></p> <p>Harry Watson, Univ of Melbourne; Alberto Boretti, Univ. of Melbourne</p>			

**WEDNESDAY, DECEMBER 3 - AFTERNOON  
Technical and Business Sessions**

SESSION TITLE, DESCRIPTION, AND ROOM				
TIME	Concord C	Carolina B	Concord B	Written Only Session
	<p><b>Powertrain Testing and Measurement (MSEC18)</b></p> <p>This session covers some of the advanced techniques being used in engine dynamometer test and development.</p> <p>3:30 p.m. - 5:00 p.m.</p> <p>Organizers: Lee Carducci, Power-Tec Engineering</p>	<p><b>SAE Motorsports Engineering Conference Vehicle/Chassis Group Meeting (MSEC37)</b></p> <p>SAE is focused on providing leading edge technical information. This focus group will follow a process of open discussion, brainstorming and prioritization. At the end of the day we hope to have a calendar of events and a list of products that will help you become a leader in the motorsport industry. This focus group is open to all attendees and will be facilitated by SAE staff or a conference leader.</p> <p>4:00 p.m. - 5:00 p.m.</p> <p>Organizers: John Miller, SAE International</p>	<p><b>Explaining Engineering To The Layman In Twenty Seconds Or Less - the Task of a Motor Sports TV Commentator (MSECBANQ)</b></p> <p>6:00 p.m. - 8:00 p.m.</p>	<p><b>Direct Injection in Competition (MSEC11)</b></p> <p>This session covers all aspects of the use of direct injection on gasoline engines in motorsports.</p> <p>Organizers: Lee Carducci, Power-Tec Engineering; Wiley R. McCoy, McLaren Performance Technologies; Michael J. Royce, Albion Associates LLC</p>
<b>3:30 p.m.</b>	<p>Crank Angle Resolved Friction Measurements on a Motored Floating Liner Engine <b>(Oral Only)</b></p> <p>Bryan O'Rourke, Colorado State Univ; Donald W. Radford, Colorado State Univ.</p>			
<b>4:00 p.m.</b>	<p>Advantages and benefits of transient dyno testing to accelerate engine development <b>(Oral Only)</b></p> <p>Don Swetzig, AVL North America Inc.</p>			
<b>4:30 p.m.</b>	<p>Techniques and hardware for hi-speed combustion measurement and analysis <b>(Oral Only)</b></p> <p>Gary J. Patterson, AVL North America Inc.</p>			
				<p>Comparison of PFI and DI Superbike Engines (Written Only -- No Oral Presentation) <b>(2008-01-2943)</b></p> <p>Alberto Boretti, Univ. of Melbourne; Harry Watson, Univ of Melbourne</p>

# TECHNICAL SESSIONS

## THURSDAY, DECEMBER 4 - MORNING Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Concord B	Concord D	Concord C	Carolina B
	<p><b>Green Motorports Panel (MSEC32)</b></p> <p>This panel will feature a discussion on advancing environmental technologies in motorsports while maintaining the spectacle, the sport and the safety requirements.</p> <p>8:00 a.m. - 10:00 a.m.</p> <p>Moderators: Tim Holland, Lotus Engineering, Ltd.</p> <p>Panelists: Michael Austin, Car and Driver Magazine Ian Bamsey, Race Engine Technology Douglas Cross, Flybrid Systems LLP Robert Paul Larsen, Argonne National Laboratory Doug Robinson, International Motor Sports Association James W G Turner, Lotus Engineering, Ltd. Peter G. Wright, FIA Institute for Motor Sport Safety</p>	<p><b>Aerodynamics - Computational Methods and Modeling - Part 1 (MSEC8)</b></p> <p>This motorsports session includes papers with analyses and investigations that cover the full range of aerodynamic topics from a computational point of view. Papers on numerical techniques, comparative studies, improved performance, race car design, and even a historical paper regarding the 1955 LeMans disaster are presented.</p> <p>10:30 a.m. - 12:30 p.m.</p> <p>Organizers: Thomas N. Ramsay, Honda R&amp;D Americas Inc.; Sandeep Dinkar Sovani, ANSYS Inc.; H. Robert (Bob) Welge, Robert's Engineering Development</p>	<p><b>Green Motorsports - Part 1 (MSEC22)</b></p> <p>The Green Motorsports session includes papers and oral presentations on the environmental issues the sport faces today with comments on the possible solutions. Topics include the use of alternative fuels, energy recovery, and energy governance as ways to improve both the dedicated racing fan's, as well as the general public's, perception of racing. How and why these technologies are transferred into mainstream transportation will also be explored.</p> <p>10:30 a.m. - 12:30 p.m.</p> <p>Organizers: Tim Holland, Lotus Engineering Inc.</p>	<p><b>Testing and Simulation - Chassis Part 2 (MSEC24)</b></p> <p>Simulation enables engineers to predict how a new design will perform by combining math-based methods with insight into existing designs. Testing serves to confirm the behavior of the new design using physical hardware. Testing and simulation as two essential engineering methods for motorsports go hand in hand. This session discusses leading edge applications of testing and simulation as well as best practices for leveraging a combination of the two to achieve ever greater performance. Sim *****</p> <p>10:30 a.m. - 12:00 p.m.</p> <p>Organizers: Wensi Jin, The MathWorks Inc.; Edward M. Kasprzak, Milliken Research Associates, Inc.; Ethan Woodruff, The MathWorks Inc.</p>
10:30 a.m.			<p>The Road to the Green Challenge One Way to Make Racing Relevant By John Glenn, Environmental Specialist USEPA, and other members of the Green Racing Work Group (tbd)</p> <p><b>(Oral Only)</b></p>	<p>Application of System Identification for Efficient Suspension Tuning in High-Performance Vehicles: Quarter-Car Study</p> <p><b>(2008-01-2962)</b> Chris Boggs, Steve Southward, Mehdi Ahmadian, Virginia Tech</p>
11:00 a.m.		<p>The Role of Aerodynamics in the 1955 Le Mans Crash</p> <p><b>(2008-01-2996)</b> Peter Gullberg, Lennart Löfdahl, Chalmers</p>	<p>The Application of Energy-Based Fuel Formulae to Increase the Efficiency Relevance and Reduce the CO2 Emissions of Motor Sport</p> <p><b>(2008-01-2953)</b> James Turner, Richard Pearson, Lotus Engineering Ltd</p>	<p>Comparison of the Performance of 7-Post and 8-Post Dynamic Shaker Rigs for Vehicle Dynamic Studies</p> <p><b>(2008-01-2966)</b> Steve Southward, Chris Boggs, Virginia Tech</p>
11:30 a.m.		<p>Experimental and CFD Comparative Case Studies of Aerodynamics of Race Car Wings, Underbodies with Wheels, and Motorcycle Flows</p> <p><b>(2008-01-2997)</b> Sachin Desai, Betty Chi Man Lo, Cornell Univ; Emily Leylek, Oren Breslouer, Cornell Univ.; Aleksandr Bychkovsky; Punith Doddegowda; Albert R. George, Cornell Univ.</p>	<p>Advanced &amp; Future Fuels in Motorsports</p> <p><b>(Oral Only)</b> Richard Karlstetter, Shell Global Solutions UK</p>	<p>Simulation with a Vertical Oscillating Race Car Model</p> <p><b>(2008-01-2963)</b> Michael Graf, D.A.T.A.S., Ltd.; Steffen Kosuch, DATAS Ltd</p>
12:00 p.m.		<p>Improving the Cooling Airflow of an Open Wheeled Race Car</p> <p><b>(2008-01-2995)</b> Lasse Christoffersen, Chalmers Univ. of Technology; David Söderblom, Chalmers Univ of Technology; Lennart Löfdahl, Chalmers</p>	<p>Optimisation of Hybrid Kinetic Energy Recovery Systems (KERS) for Different Racing Circuits</p> <p><b>(2008-01-2956)</b> Douglas Cross, Flybrid Systems LLP</p>	

**THURSDAY, DECEMBER 4 - MORNING  
Technical and Business Sessions**

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	<b>Concord B</b>			
	<b>The Science of Safety - Part 2 (MSEC28)</b> This sessions presentations cover research and development activities on a variety of safety related issues. 10:30 a.m. - 12:30 p.m.  Organizers: John W. Melvin, Tandelta; J. Kirk Russell			
<b>10:30 a.m.</b>	Determination of the Pressure Distribution Beneath Two and Three Inch Wide Racing Safety Belts <b>(2008-01-2977)</b> John W. Melvin, Tandelta			
<b>11:00 a.m.</b>	Development of the MADYMO Race Car Driver Model for Frontal Impact Simulation and Thoracolumbar Spine Injury Prediction in Indianapolis-type Racing Car Drivers <b>(2008-01-2975)</b> Tara Amenson, Motorsports Impact Biomechanics Consulting, LLC; Paul Begeman, Wayne State University; John Melvin, Tandelta, Inc.; Michele Grimm, Wayne State University			
<b>11:30 a.m.</b>	Vertical Impact to an Open Wheel Racecar and Development of a Crash Test to Simulate the Driver Response <b>(2008-01-2981)</b> James Chinni, Indiana Mills & Mfg. Inc.; Jeff Horton, Indy Racing League; Terry Trammell, Orthopaedics Indianapolis			
<b>12:00 p.m.</b>	Hybrid III Response in a SAE Baja Vehicle under Frontal Impacts <b>(2008-01-2982)</b> Kin Yuen, Duane Cronin, Christopher George Thom, Univ. of Waterloo			

*"Don't judge each day by the harvest you reap, but by the seeds you plant."*

Robert Louis Stevenson

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# TECHNICAL SESSIONS

THURSDAY, DECEMBER 4 - AFTERNOON				
Technical and Business Sessions				
TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Concord D	Concord C	Concord B	Carolina B
	<p><b>Aerodynamics - Computational Methods and Modeling - Part 2 (MSEC8)</b></p> <p>This motorsports session includes papers with analyses and investigations that cover the full range of aerodynamic topics from a computational point of view. Papers on numerical techniques, comparative studies, improved performance, race car design, and even a historical paper regarding the 1955 LeMans disaster are presented.</p> <p>2:00 p.m. - 3:30 p.m.</p> <p>Organizers: Thomas N. Ramsay, Honda R&amp;D Americas Inc.; Sandeep Dinkar Sovani, ANSYS Inc.; H. Robert (Bob) Welge, Robert's Engineering Development</p>	<p><b>Green MotorSports - Part 2 (MSEC22)</b></p> <p>The Green Motorsports session includes papers and oral presentations on the environmental issues the sport faces today with comments on the possible solutions. Topics include the use of alternative fuels, energy recovery, and energy governance as ways to improve both the dedicated racing fan's, as well as the general public's, perception of racing. How and why these technologies are transferred into mainstream transportation will also be explored.</p> <p>2:00 p.m. - 3:00 p.m.</p> <p>Organizers: Tim Holland, Lotus Engineering Inc.</p>	<p><b>Safety Focus Group Meeting (MSEC35)</b></p> <p>SAE is focused on providing leading edge technical information. This focus group will follow a process of open discussion, brainstorming and prioritization. At the end of the day we hope to have a calendar of events and a list of products that will help you become a leader in the motorsport industry. This focus group is open to all attendees and will be facilitated by SAE staff or a conference leader.</p> <p>2:00 p.m. - 4:00 p.m.</p> <p>Moderators: John Miller, SAE International</p>	<p><b>Testing and Simulation - General Part 3 (MSEC24)</b></p> <p>Simulation enables engineers to predict how a new design will perform by combining math-based methods with insight into to existing designs. Testing serves to confirm the behavior of the new design using physical hardware. Testing and simulation as two essential engineering methods for motorsports go hand in hand. This session discusses leading edge applications of testing and simulation as well as best practices for leveraging a combination of the two to achieve ever greater performance. Sim *****</p> <p>2:00 p.m. - 5:00 p.m.</p> <p>Organizers: Wensi Jin, The MathWorks Inc.; Edward M. Kasprzak, Milliken Research Associates, Inc.; Ethan Woodruff, The MathWorks Inc.</p>
2:00 p.m.	<p>Development of New Turbulence Models and Computational Methods for Automotive Aerodynamics and Heat Transfer <b>(2008-01-2999)</b></p> <p>Scott Holloway, Clemson Univ.; Mary Holloway, James Leyle, Clemson Univ</p>	<p>A Selective Retrospective of Alternative Engines and Fuels in Motorsports: You're Burning What? And How? <b>(Oral Only)</b></p> <p>Dennis Simanaitis, Road &amp; Track Magazine</p>		<p>Speed in Design Equals Speed at the Track <b>(Oral Only)</b></p>
2:30 p.m.	<p>A Fast and Fully Automated Cartesian Meshing Solution for Dirty CAD Geometries <b>(2008-01-2998)</b></p> <p>Santosh Kini, Richard Thoms, Fanglin Zhu, ESI Group</p>	<p>The future of speed <b>(Oral Only)</b></p> <p>Eric S. Wilson, Innovation MotorSports Development Group</p>		<p>Keeping Your Simulation Models from Changing Teams <b>(Oral Only)</b></p> <p>Ethan Woodruff, The MathWorks Inc.; Brett Shoelson, Vinod Reddy, The MathWorks Inc</p>
3:00 p.m.	<p>HPC-LES for the Prediction of Unsteady Aerodynamic Forces on a Vehicle in a Gusty Cross-flow Condition <b>(2008-01-3001)</b></p> <p>Makoto Tsubokura, Hokkaido Univ.; Takuji Nakashima, Takeshi Ikenaga, Hiroshima Univ.; Keiji Onishi, AdvanceSoft Corporation; Kozo Kitoh, Kozo Kitoh Technology; Nobuyuki Oshima, Hokkaido Univ.; Toshio Kobayashi, Univ. of Tokyo</p>			<p>Virtual Motorsports as a Vehicle Dynamics Teaching Tool <b>(2008-01-2967)</b></p> <p>Rob Rieveley, Bruce Minaker, University of Windsor</p>
3:30 p.m.				<p>Development of an Effective, Low-Cost Internet-Based Motorsport Driver Simulation <b>(2008-01-2960)</b></p> <p>David Kaemmer, Ian Berwick, iRacing.com Motorsport Simulations; Steve Potter, iRacing.com</p>
4:00 p.m.				<p>Racing Simulation of a Formula 1 Vehicle with Kinetic Energy Recovery System <b>(2008-01-2964)</b></p> <p>Aldo Sornioti, Univ. of Surrey</p>
4:30 p.m.				<p>Application of the Optimal Maneuver Method for Enhancing Racing Motorcycle Performance <b>(2008-01-2965)</b></p> <p>Vittore Cossalter, Matteo Massaro, Simon Bobbo, Martino Peretto, University of Padova</p>
	<p>Design and CFD Analysis of an NHRA Funny Car Body (Written Only -- No Oral Presentation) <b>(2008-01-3003)</b></p> <p>Dan Engel, Kevin Golsch, General Motors Corp.; Mike Green, Don Prudhomme Racing; Ed Smith, Applied Technologies, Inc.; Cem Albukrek, Exa Corporation</p>	<p>Cost Effective Sustainable Fuels for Performance Vehicles (Written Only -- No Oral Presentation) <b>(2008-01-2954)</b></p> <p>Kevin Dwyer</p>		

**THURSDAY, DECEMBER 4 - AFTERNOON  
Technical and Business Sessions**

TIME	SESSION TITLE, DESCRIPTION, AND ROOM		
	Concord C		
	<p><b>Powertrain/Green Racing Focus Group Meeting (MSEC36)</b></p> <p>SAE is focused on providing leading edge technical information. This focus group will follow a process of open discussion, brainstorming and prioritization. At the end of the day we hope to have a calendar of events and a list of products that will help you become a leader in the motorsport industry. This focus group is open to all attendees and will be facilitated by SAE staff or a conference leader.</p> <p>3:00 p.m. - 5:00 p.m.</p> <p>Moderators: John Miller, SAE International</p>		

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# AWARDS

## SAE AWARD

### Description

Selection Committee. It was established to recognize the organization(s) that have developed a product or process that is considered by the selection committee to be “the outstanding contribution to the state-of-the-art of motorsports engineering” in the period since the previous Motorsports Engineering Conference (December 2006 to August 2008).

The award consists of a crystal trophy which is presented to the organization that wins the award. The award will be announced and presented at the banquet during the 2008 Motorsports Engineering Conference, Wednesday, December 3, in Concord, NC USA.

## MSEC MOTORSPORTS ACHIEVEMENT AWARD

This award is presented by the MSEC Planning Committee to an individual that has shown outstanding leadership or contribution to Motorsports over an extended period of time.

## SAE MOTORSPORTS ENGINEERING CONFERENCE AWARD

This award recognizes significant contributions to the racing community through research and engineering by an organization.

## A

### Anvil Prototype & Design

4101 Stuart Andrew Blvd Ste F  
Charlotte, NC 28217  
United States  
www.anvilprototype.com

#### Booth #8

Anvil Prototype & Design is a rapid prototyping service bureau and a Z Corporation partner in the Mid-Atlantic and Southeast focusing on the fastest and most affordable RP technologies. Anvil possesses extensive experience in color 3D Printing and can help you succeed sooner with advanced prototyping tools.

## B

### Bodycote HIP

155 River St  
Andover, MA 01810  
United States

#### Booth #7

Densal II provides a cost effective method of eliminating internal porosity and voids in aluminum castings. Castings that require repeatable performance such as suspension arms, turbo impellers, bearing housings and gearbox casings, can benefit from the improved microstructural homogeneity and material properties resulting from this process.

## C

### CAPE

18881 US 31 N  
Westfield, IN 46074  
United States  
capetesting.com

#### Booth #6

The Center for Advanced Product Evaluation (CAPE) is a modern crash-test facility, offering advanced technology and engineering expertise to support its customers' most complex decisions. Testing Services: Barrier Crash, Dynamic Deceleration Sleds, Rollover Impact, Quasi-Static Load, Mechanical Applied Mechanics Support, Rolling Lab. capetesting.com

### CD-adapco

60 Broadhollow Road  
Melville, NY 11747  
United States  
www.cd-adapco.com

#### Booth #4

CD-adapco is the leading global provider of full-spectrum engineering simulation (CAE) solutions for fluid flow, heat transfer and stress, including Computational Fluid Dynamics (CFD) software, CAD-embedded CFD options, CAE consulting services and training. Its principal offices are in New York, London and Yokohama with subsidiary offices across the world.

## D

### Dodge Motorsports Engineering Street and Racing Technology

2301 Featherstone Rd  
Auburn Hills, MI 48326  
United States

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#### Booth #3

Chrysler LLC manufactures and distributes Chrysler, Dodge, Jeep/E and Mopar/E vehicles and products to customers worldwide. Dodge Motorsports Engineering is part of the Street and Racing Technology group of engineers, designers, data analysts and technology experts focused on developing new ways to make Dodge race cars and trucks go faster. <http://www.dodge.com/motorsports>

### Clemson University Computational Center for Mobility Systems

7A Research Dr  
Greenville, SC 29607  
United States  
www.clemson.edu/cu-ccms

#### Booth #9

Clemson University's Computational Center for Mobility Systems (CU-CCMS) is a comprehensive computational center dedicated to solving problems in the automotive industry. Our world-class, massive high-performance computing (HPC) infrastructure, creative modeling techniques, and experienced PhD & MS engineers combine to deliver real solutions to tough automotive problems.

## D

### DS SolidWorks Corp.

300 Baker Avenue  
Concord, MA 01742  
United States  
www.solidworks.com

#### Booth #1

Dassault Systèmes SolidWorks Corp., a Dassault Systèmes S.A. subsidiary, develops and markets software for design, analysis, and product data management. It is the leading supplier of 3D CAD technology, giving teams intuitive, high-performing software that helps them design better products.

## E

### Exa Corporation

3 Burlington Woods  
Burlington, MA 01803  
United States

#### Booth #2

Exa Corporation offers a full suite of CFD/CAE simulation design optimization software applications with aerodynamic, thermal and aeroacoustic simulation capabilities in addition to engineering consulting services. Exais products and services enable engineers to integrate simulation early in the design process, therefore creating competitive designs, shortening product design cycles and speeding time-to-market.

## I

### iRacing.com Motorsport Simulations

34 Crosby Dr  
Bedford, MA 01730  
United States  
iRacing.com

#### Booth #11

iRacing.com is a subscription-based racing simulation service designed as a driver training tool for people who race in the physical world and for those who aspire to do so. iRacing is also a platform for the newest form of global motorsport - real-time, online competition, known as internet racing.

## O

### OPTIMUM Power Technology

3117 Washington Pike  
Bridgeville, PA 15107  
United States

#### Booth #14

OPTIMUM Power Technology is an innovative company with the mission of developing the world's best simulation-based engine design tools (Virtual 2-Stroke and Virtual 4-Stroke), engine management systems, and Design of Experiments (DOE) optimization tools (DoeOPTIMIZER Excel plug-in and DoeOPTIMIZER Expert System).

### Ozen Engineering Inc

Icar 5 Research Dr  
Greenville, SC 29607  
United States  
www.ozeninc.com

#### Booth #5

The consulting engineers of Ozen Engineering, Inc are Finite Element Analysis and Computational Fluid Dynamics specialists who are expert in the use of Optimization software and techniques. Projects include CFD optimization for lift and drag; muscular-skeletal simulation for driver fatigue minimization; suspension optimization; crash simulation. Locations at CU-ICAR and California.

## R

### Raetech Corporation Raetech Motorsports Inc.

4750 Venture Dr Ste 100  
Ann Arbor, MI 48108  
United States  
raetech.com

#### Booth #13

RAETECH Corporation provides innovative engineering solutions for the OEM transportation and motorsport industries. RAETECH delivers twenty-five years of specialized expertise in design, analysis, testing, race team support and management. Our history is rich in, road racing, stock car racing, drag racing as well as production car and aviation development.

## T

### The MathWorks Inc

3 Apple Hill Dr  
Natick, MA 01760  
United States  
www.mathworks.com

#### Booth #12

Testing and simulation are two essential engineering methods for motorsports engineering. Simulation enables engineers to predict how new designs will perform using math-based models. Testing confirms the behavior of new designs using physical hardware. To make sense out of volumes of test data and perform fast design iterations, motorsports engineers use MATLAB/E and toolboxes for data acquisition, analysis, visualization, simulation, and optimization. For more information, visit [www.mathworks.com](http://www.mathworks.com)

## W

### Windshear Inc

1050 Ivey Cline Rd  
Concord, NC 28027  
United States  
www.windshearinc.com

#### Booth #10

Based in Concord, North Carolina, Windshear opened its doors June 2008 as the first commercially available full-scale, rolling road wind tunnel in the world. Windshear offers the advantages of a full-scale rolling-road wind tunnel with boundary layer management, temperature control, and uniform aerodynamics to race teams and production builders alike.

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