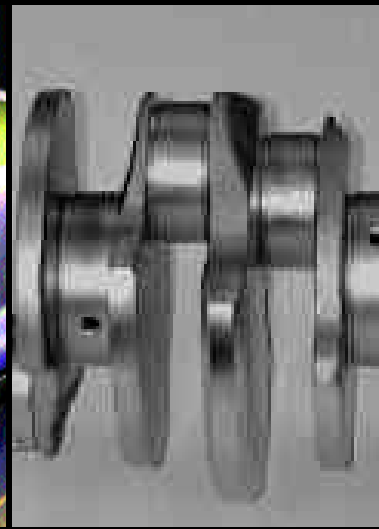
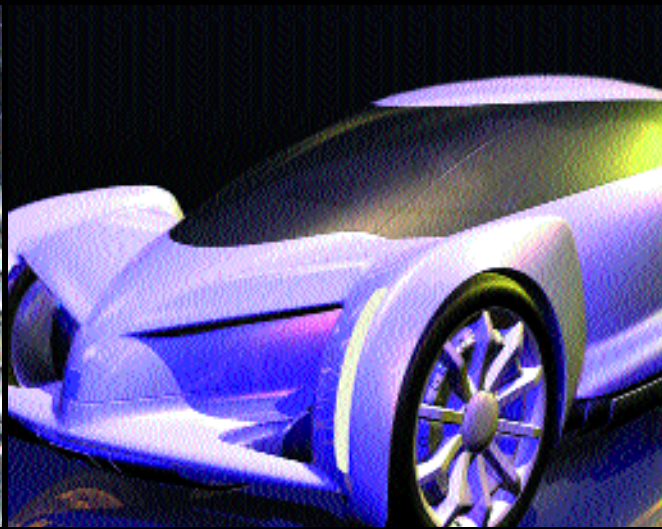
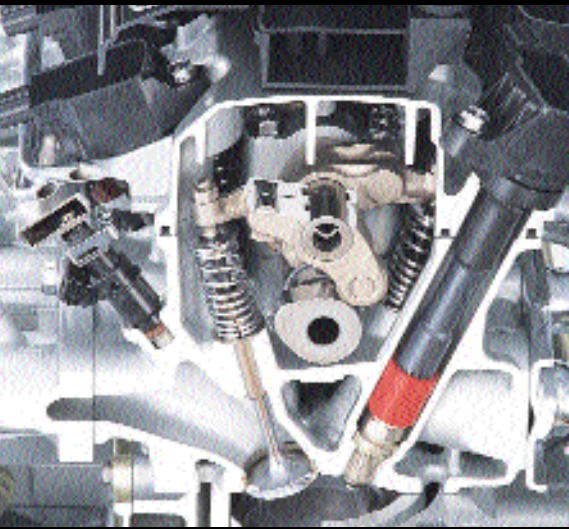


PROGRAM



2002 GLOBAL POWERTRAIN CONGRESS



# Alternative Fuel/Lightweight Vehicle Public Show

Register Now! Space Limited!!  
[www.gpc-icpem.org](http://www.gpc-icpem.org)



The World's Only Conference & Exposition Dedicated  
Exclusively to Total Powertrain Technology!

September 24-26, 2002

# General Information

Global Powertrain Congress 2002

## Advanced Registration

Due to the limited space, you are strongly advised to register before August 29, 2002. This will reduce your registration fees and save time. If you register on or before August 29, 2002, please collect your registration materials (badge, proceedings, meal tickets and other materials) from the designated area marked "Advanced Registration" at the foyer of Michigan Room - Sheraton Inn.

## On-site Conference & Exposition Registration Hours

Monday, September 23 .....	1:00 pm to 6:00 pm
Tuesday, September 24 .....	7:30 am to 3:30 pm
Wednesday, September 25 .....	8:00 am to 5:00 pm
Thursday, September 26 .....	8:00 am to 2:00 pm

## Directors of Advisory Board, Program & Session Chairs, Authors & Co-Authors Registration

Please collect registration materials from the designated area marked "Authors & Chairs."

## Directors, Chairs, Authors & Co-Authors Ready Room - Petit I

The Petit I - Sheraton Inn is designated for Directors, Chairs, Authors and Co-Authors. Authors may review their presentation materials here.

## Message Center

The GPC 2002 Message Center is located at the foyer of Michigan Room. Messages will be posted on the message board located by the registration desk. Incoming messages for GPC 2002 will be received at (734) 996-0600 and you are asked to check for your messages during the registration hours (there is no public address system).

## Media Registration

Advanced Media Registration is required. Media representatives should go directly to the Advanced Registration Desk at foyer of the Michigan Room Sheraton Inn to collect their materials.

**Name badges must be worn at all times.**

*Although changes are not likely, the Directors and Program Chairs of GPC 2002 reserve the right to amend this program.*

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# GPC 2002 Conference & Exposition

Global Powertrain Congress 2002

## Who Should Attend

---

The three dedicated conferences and exhibits will be of particular benefit and interest to:

- Automotive Powertrain Engineering and Manufacturing Engineers, Managers and Executives
- Plant Engineers, Superintendents and Managers
- Purchasing, Marketing and Financial personnel
- Representatives from Government and Educational Institutions
- Educators
- Media
- Public -Alternative Fuel Vehicle Show Only

## Who Should Exhibit at GPC 2002 Product Showcase

---

Companies specializing in powertrain design, engineering, manufacturing, testing, materials, powertrain components and systems, fuels and others have the opportunity at the GPC 2002 Exposition to feature the latest developments in their industry with a global emphasis. This 2002 year will focus on alternative fuel vehicles, advancement or new developments in conventional engines, and lightweight vehicles.

## Who Should Exhibit at GPC 2002 Alternative Fuel/Lightweight Vehicle Show

---

OEM's & suppliers specializing in:

### Alternate Fuel Vehicles

- EV (Battery Powered)
- EV (Fuel Cell Powered)
- Hybrid
- Hydrogen
- Public Transport (EV & HEV)
- Vehicle Fleets
- Public Education
- Other Non-Conventional Fuel Vehicles

### Advanced/New Development in Conventional Engines that:

- Reduce Emissions
- Increase Fuel Economy
- Enhance Overall Performance
- Enhance Safety

### Lightweight Vehicles

- Lightweight Materials (Ferrous, Non-Ferrous, Aluminum, Plastics)
- Lightweight Structures & Design
- Lightweight Technology & Processes

## Conference and Exposition Center - Sheraton Inn Ann Arbor

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All technical sessions and the expositions of GPC 2002 will be held at the Sheraton Inn, Ann Arbor, Michigan. The floor plan and room locations are illustrated for your convenience (see page 5). For Coat Check, Currency Exchange, Telex, Fax, Copy Services and Local Attractions inquire at the Front Desk.

## Discounted Hotel for GPC 2002 - [www.sheratonannarbor.com](http://www.sheratonannarbor.com)

---

A block of rooms has been reserved at the Sheraton Inn, 3200 Boardwalk, Ann Arbor, MI 48108, Phone: 734 996 0600 Fax: 734 996 8136 Web: [www.sheratonannarbor.com](http://www.sheratonannarbor.com), at a discounted rate. Please make your reservation by August 21, 2002 directly with the hotel and provide the code "GPC 09" to receive the discounted rate. Discounted Rate is valid for reservations on or before August 21, 2002.

## Directions to Sheraton Inn Ann Arbor

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From Detroit/Detroit Metro Airport I-94 West to Exit 177 (State Street). Turn right off exit onto State Street. Turn right again onto the first street, Victors Way. Go one block to Boardwalk, turn left and go one half block-the Sheraton Inn Ann Arbor is on the left. For directions from other locations and map of Ann Arbor, please visit our website: [www.gpc-icpem.org](http://www.gpc-icpem.org)

# Exhibition Details

Global Powertrain Congress 2002

## Product Showcase

### Location

Sheraton Inn, Ann Arbor, Michigan USA

### Exhibition Space

The floorplan contains exhibit booths in 6 ft. x 6 ft. spaces. Booths can be configured to multiples of 6 ft. x 6 ft. to meet company specifications.

### Rental Rate

\$2700.00 U.S. per 6 ft. x 6 ft. booth.

### Rental Rate Includes

- Company ID sign
- Complete Exhibitor Service Manual
- Removal, storage and return of empty crates
- 24-hour peripheral security
- Company/Product Listing in the Exhibitors Directory
- Complimentary Exhibit Coupons (value \$35 U.S. each)
- Listing in issues of Powertrain International Magazine

### Exposition Dates & Hours

#### Move In

Monday, September 23.....1:00 pm–5:00 pm  
Tuesday, September 24.....8:00 am–10:00 am

#### Exposition Hours

Tuesday, September 24.....11:00 am–1:30 pm/2:30 pm–4:30 pm  
Wednesday, September 25.....11:00 am–1:30 pm/3:00 pm–6:00 pm  
Thursday, September 26.....11:00 am–2:00 pm

#### Move Out

Thursday, September 26 .....2:00 pm–Midnight

## Alternative Fuel/Lightweight Vehicle Show (AFV)

### Location

Sheraton Inn under outside tent - Ann Arbor, Michigan USA

### Exhibition Space

The floorplan contains exhibit booths in 20 ft. x 20 ft. spaces. Booths can be configured to multiples of 20 ft. x 20 ft. to meet company specifications.

### Rental Rate

Minimum rate \$50 per sq.ft.

### Rental Rate Includes

- Company ID Sign
- Complete Exhibitor Service Manual
- Removal, Storage, and Return of Empty Crates
- 24 Hour Peripheral Security
- Company/Product listing in the Exhibitors Directory
- Company/Product listing in Powertrain International
- Company/Product listing in local Newspapers

### Exposition Dates & Hours

#### Move In

Monday, September 23 .....8:00 am – 5:00 pm  
Tuesday, September 24.....8:00 am – 10:00 am

#### Exposition Hours

Tuesday, September 24 .....11:00 am – 9:00 pm  
Wednesday, September 25 .....11:00 am – 9:00 pm  
Thursday, September 26.....11:00 am – 9:00 pm

#### Move Out

Thursday, September 26 .....9:00 pm – Midnight  
Friday, September 27.....8:00 am – 5:00 pm

## Exhibit Reservations

To reserve your space, contact: GPC 2002

166 South Industrial

Saline, Michigan 48176

Phone: (734) 994-5850 • Fax: (734) 944-5840

For GPC 2002 Floorplan and other details, visit our website at [www.gpc-icpem.org](http://www.gpc-icpem.org)



# Exhibitors List (as of April 19, 2002)

Global Powertrain Congress 2002

## Alternative Fuel/Lightweight Vehicle (AFV)

**DaimlerChrysler**

**Ford**

**General Motors**

---

### Product Showcase Exhibitors

**AJ Rose Manufacturing**

**Lunt Manufacturing**

**ALTO Products**

**Minnesota Rubber Co.**

**Amtec Precision Products**

**MPI International**

**Automotive Technology Group**

**Nuvonyx**

**Becker CAD-CAM-CAST**

**Power Chips plc**

**Bosal International**

**Powertrain International**

**Crotty Corporation**

**Preco Laser Systems**

**DMG**

**Rofin-Sinar**

**Engineered Machine Products**

**Rogers Corp.**

**ERC/University of Michigan**

**Schenk Pegasus**

**Feintool**

**SPX Filtran**

**Filtertek, Inc.**

**Tekfor USA**

**Fraunhofer IWS**

**UQM**

**HBM**

**Wacker Ceramics**

**Inductoheat**

**Wacker Silicones**

**JATCO**

**Welduction**

**Laser Machining, Inc.**

**WJR**



# Exposition Only Registration Form

Global Powertrain Congress 2002

**(For Conference & Course Registration, please fill out the form on page 23)**

**No cost for Exposition registration prior to August 21, 2002**

Please attach business card, print or type

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Company: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_

State/Province: \_\_\_\_\_ Zip: \_\_\_\_\_ Country: \_\_\_\_\_

Daytime Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

**The reception dinner is \$ 125 per person. Table of 10 is \$1,250**

I/we will attend RECEPTION DINNER on Sept. 24  1 Ticket \$125  \_\_\_#of table(s)\_\_\_ x \$1,250 = \_\_\_\_\_

**Plenary Session, International Reception & Dialogue Session on Sept. 25 is \$395 per person**

I will attend

**Fee schedule for exposition**

Registration Fee is \$0 before August 21, 2002

Registration Fee is \$35 after August 21, 2002

**Total Amount Submitted \$** \_\_\_\_\_

**Payment Methods:** *(All checks must be drawn from U.S. banks in U.S. funds only)*

**For Credit Card Payment:**  MasterCard  VISA  American-Express

Account #: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

(Cardholders' name & billing address if different from the above)

**Make Check Payable to:** GPC (Global Powertrain Congress) in the amount of, US\$ \_\_\_\_\_

Mail or FAX Registration Information by August 21, 2002 to: GPC, 166 South Industrial, Saline, MI 48176, USA.

Phone: (734) 944-5850 Fax: (734) 481-1423 Refund Policy: No Refunds after August 21, 2002. There is a 45% service charge on cancellation(s) on or before August 21, 2002



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Global Powertrain Congress 2002

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General Motors

## **David Anderson**

DIRECTOR  
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Toyota

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RESEARCH PROJECT MANAGER  
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Editor-in-Chief,  
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AWARDS AND SCHOLARSHIPS  
Director, PSA Peugeot Citroen

### **Thomas W. O'Boyle**

MEMBER  
Senior Vice President, Eaton

### **André Rault, PhD**

MEMBER  
Director, PSA Peugeot Citroen



# Mark Your Calendar for GPC 2003

## September 23-25, 2003

# Maps & Floor Plans

Global Powertrain Congress 2002

## Room Locations

## Activities

Michigan Room

Exhibits

Foyer of Michigan Room

Registration/Breakfasts

Grande Ballroom

Plenary Session/Dinner

Grande I

Advanced Powertrain Materials & Manufacturing

Grande II

Advanced Engine Design & Performance

Grande II

Advanced Transmission/Drivetrain Systems

Grande III

Advanced Propulsion Systems

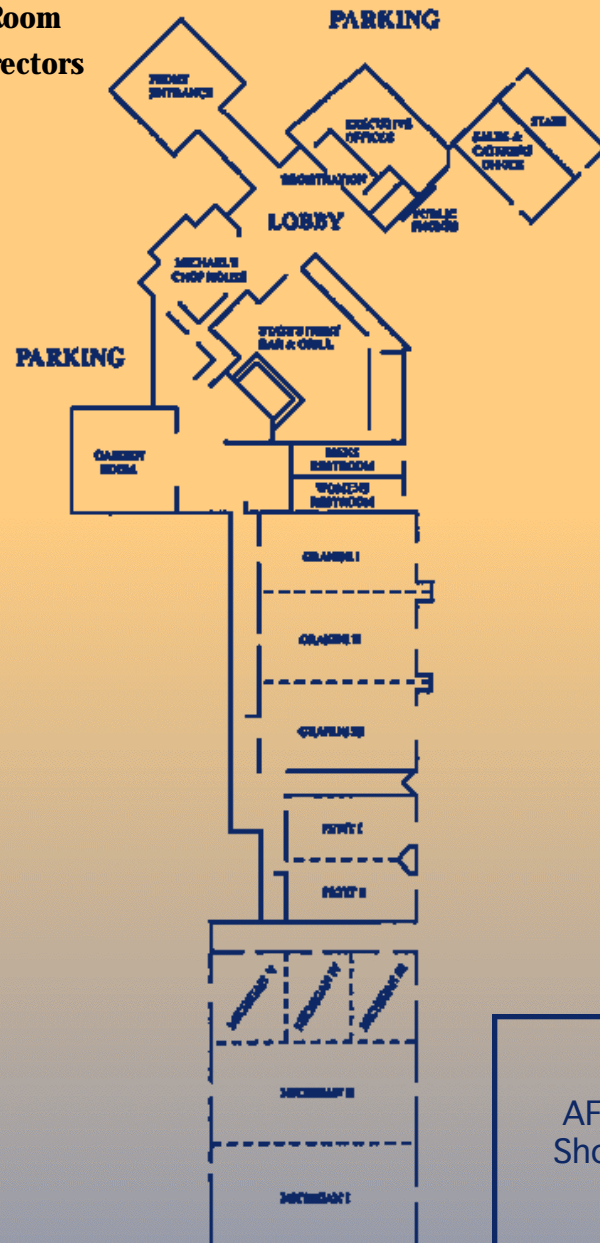
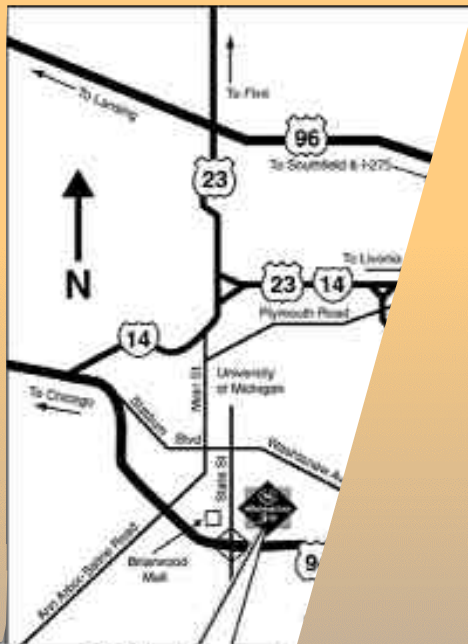
Petit I

Media Room/Ready Room

Authors, Chairs & Directors

Petit II

GPC Courses







# Powertrain Excellence Award Entry Form

Global Powertrain Congress 2002

The Technical Program Committee and the Advisory Board of the 2002 Global Powertrain Congress (GPC 2002) will present awards for the best powertrain innovations. The areas of powertrain design, engineering, materials, manufacturing, processes, systems, components, hardware, software, testing and diagnostic systems will be considered.

I am /We are contributors for the innovation described in this entry form.

Submitted by: \_\_\_\_\_

Developed by: \_\_\_\_\_

Name of Innovation: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Daytime phone: \_\_\_\_\_

Was this Innovation submitted anywhere before? Yes  No

Date: \_\_\_\_\_

Where? \_\_\_\_\_

Date completed: \_\_\_\_\_

Date commercialized: \_\_\_\_\_

Patented? \_\_\_\_\_

Patent # \_\_\_\_\_

## The Powertrain Excellence Award Entries will be judged based upon the following criteria:

1. Concept- an innovative idea or process that stimulates new ways of creating and implementing substantial improvement in Powertrain Technology.
2. Uniqueness- the difference that the idea or process will make compared to present methods.
3. Feasibility- the ability of the concept or process and its applicability and overall effects in the Powertrain area.
4. Benefit to users- Improvement that concept or process will have on cost, timing and productivity and environment.

Please provide GPC with information that will help identify how your entry affected these four areas. Examples that provide this information are a report summarizing your entry, drawings, case studies, technical reports, etc.

## Please submit 17 copies of all materials to:

Andre Rault, PhD  
Chairman, Powertrain Excellence Award Committee  
166 South Industrial  
Saline, MI 48176 USA

**Last date for submission: August 21, 2002**



**Bruce Chehroudi, PhD**  
Principal Scientist  
Raytheon

Dr. Chehroudi, is currently a Principal Scientist and Group Leader at the Engineering Research Corporation Inc. He has been a Chief Scientist at Raytheon STX (formerly Hughes Aircraft STX) and is a former Professor of Mechanical Engineering. Dr. Chehroudi previously served as a Senior Research Staff Member at Princeton University where he engaged in experimental research in combustion engines. His R&D works at Princeton resulted in discoveries to improve engine performance, innovative fuel injection processes, and he received the Arch. T. Colwell Merit Award from the Society of Automotive Engineers (SAE) in recognition of an outstanding contribution to the SAE literature. He was actively involved in the DISC (direct injection stratified charged) Engine Program for nearly five years, a cooperative R&D project between the Department of Energy, General Motors Research Laboratory, Sandia Livermore Combustion Laboratory, and Los Alamos Scientific Laboratory. Dr. Chehroudi has established and directed an Engine Research Laboratory at the Univ. of Illinois where he conducted numerous R&D projects on formation of the pollutants and heat transfer/fluid mechanical aspects of combustion occurring in internal combustion and gas turbine engines. He is a member of Ta Beta Pi and the recipient of several awards including the SAE Arch T. Colwell Merit, the SAE Ralph R Teeter, and the SAE Recognition Awards. He has also received the SAE Forest R. McFarland Award in recognition of his efforts and leadership in contributions to the Continuing Professional Development Seminars.

## Advances in Internal Combustion Engines Course

Monday, Sept. 23 - Tuesday Sept. 24, 2002, Petit II Room

### From Ignition to Emission: A Journey Into A Combustion Engine

#### BRUCE CHEHROUDI, PhD

This two-day seminar is designed to take the attendees to a journey in which the key elements and requirements of a successful and efficient combustion cycle are introduced in an effective and concise manner. Any combustion system requires, fuel, air, and an ignition source. The journey begins with a succinct information on fuel, air, and combustion thermodynamics and continues with a description of the minimum requirements for an ignition system. Then the exploration heats up when the initiation and propagation of the flame are observed and discussed. Environmental impacts of these series of events are investigated combined with the mechanism of formation of major pollutant species. Effects of key ignition system and engine design and operating conditions are surveyed. Finally, the voyage ends with some aftertreatment measures in the exhaust system.

- Air
- Fuel
- Combustion Thermodynamics
- Ignition
- Flame propagation
- Combustion and flame propagation in engine
- Formation of major pollutant species
- Effects of some key ignition and engine design and operating parameters
- Exhaust aftertreatment choices
- Summary and conclusion

**Fee Schedule: \$1295 (after August 29, \$1495)**

**Includes lecture sessions, course materials, breakfasts, lunches and access to the GPC 2002 Exposition**

## Advances in Internal Combustion Engines Course for Management of Research and Development Organizations

**Wednesday Sept. 25, 2002 Petit II Room**

**BRUCE CHEHROUDI, PhD**

Innovation is in the core of the survival of the fittest organization in today's technology-driven global economy. Innovation process begins with identification of the market needs or technology opportunity and then goes through stages such as adopting or adapting existing technology that satisfies the identified need or opportunity, inventing when needed, and finally transferring this technology by commercialization or other instrumental means. Considering the key role R&D plays in the economic health of a nation and the world as a whole, the profitability of a business enterprise, the effectiveness of a technology-based governmental agencies, and the enormous investment nations make in R&D activities, effective and efficient R&D management can have profound and determining consequences. Today, the complexity of the technology created complex organizations in which many disciplines have to be coordinated. It is the manager's primary responsibility to bring components together so they can operate smoothly and harmoniously, each making an optimal contribution to the R&D organization. Managing R&D organizations and concentrating on their productivity and excellence offers a unique set of problems and unusual challenges which is amplified when the team is scattered spatially in a global economy. The uniqueness arise primarily from two basic facts: (1) the character of the enterprise and (2) the highly-specializes, articulate, and autonomous people involved in R&D. As American economist and noble laureate Kenneth J. Arrow stated, "the central economic fact about the processes of invention and research is

that they are devoted to the production of information." Obviously, the generation of information requires research. And in addition to the R&D organizations' focus on information, research involves considerable uncertainty because the outcome can never be predicted perfectly from the different inputs used. Therefore, it will be clear in this seminar that why managing an R&D organization is largely the art of integrating the efforts of diverse, creative, intelligent and independent individuals. The ideas presented in this seminar consist of the condensed works of multitude of experts focusing on ways to improve the productivity of R&D and foster excellence and innovation in organizations.

- R&D organizations and research classification
- Components required for an R&D organizations
- Creating an effective and productive R&D Organizations
- Leadership and issues in R&D organizations
- Technology transfer issues
- Strategic planning for R&D organizations
- Case studies and discussion
- Summary and conclusions

**Fee Schedule: \$895 (after August 29, \$1195)  
Includes lecture session, course materials, break-  
fast, lunch and access to the GPC 2002 Exposition**

# GPC 2002 Schedule at a Glance

Global Powertrain Congress 2002

	Monday September 23, 2002	Tuesday September 24, 2002	Wednesday September 25, 2002	Thursday September 26, 2002
<b>Registration</b>	1:00 pm to 6:00 pm	7:30 am to 5:00 pm	8:00 am to 5:30 pm	8:00 am to 4:30 pm
<b>Morning Concurrent Technical Sessions</b>		Laser Beam Technologies Simulation and Analysis of Drivetrain Systems Hydrogen Propulsion	Variable Valve Actuation Transmission/Drivetrain Management Lightweight Materials	Advanced Product/Engine Manufacturing Processes & Analyses Hybrid Electric I
<b>Luncheons</b>		12:30 pm to 1:30 pm	12:30 pm to 1:30 pm	12:30 pm to 1:30 pm
<b>Afternoon Concurrent Technical Sessions</b>  <b>Plenary Session</b>		Advanced Manufacturing Processes Novel Transmission Systems 42V Systems	Plenary Session: Floyd Allen <i>Vice President</i> DaimlerChrysler  Gerhard Schmidt, PhD <i>Vice President</i> Ford  Doug Patton <i>Senior Vice President</i> DENSO	Economic Modeling Emission & Exhaust Systems  Hybrid Electric II  Manufacturing Systems Analyses & Controls
<b>Exhibit Hours</b>		Open 11:00 am to 1:30 pm 2:30 pm to 6:00 pm	Open 11:00 am to 1:30 pm 3:00 pm to 6:00 pm	Open 11:00 am to 2:00 pm
<b>Special Events</b>		GPC 2002 Reception 4:30 pm to 6:00 pm  Dinner 6:15 pm to 8:00 pm  Guest Speakers:  John McElory <i>Radio, TV &amp; Print Media Journalist</i>  Bernard Robertson <i>Senior Vice President</i> DaimlerChrysler	International Reception & Dialogue Session  Wine & Cheese Reception 3:30 pm to 6:00 pm	Powertrain Excellence Award Luncheon 12:30 pm to 1:30 pm  Guest Speaker:  Andre Rault, PhD <i>General Secretary</i> Eucar

# Special Events

Global Powertrain Congress 2002

## Group Breakfasts

**Tuesday, September 24 – Thursday, September 26**  
**7:30 am to 8:30 am**

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## Group Luncheons

**Tuesday, September 24 – Wednesday, September 26**  
**12:30 pm to 1:30 pm**

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## Reception & Dinner

**Reception: Tuesday, September 24, 4:30 pm Michigan Room**

**Dinner: Tuesday, September 24, 6:00 pm Grande Ballroom**



**DISTINGUISHED SPEAKER**

**John McElroy**

TV, Radio and Print Journalist

### **INTRODUCTION AND OPENING REMARKS: JOHN McELROY**

John McElroy is Editorial Director of Automotive Industries magazine and is widely known through his regular radio reports, TV programs and journalism as an authority on the automotive industry. He has won numerous awards for editorial excellence and, in 1997, was named "Communicator of the Year" by the Sales and Marketing Executives of Detroit. He received a Bachelor's degree in English from Wayne State University.



**DISTINGUISHED SPEAKER**

**Bernard Robertson**

Senior Vice President  
DaimlerChrysler

### **DISTINGUISHED SPEAKER: BERNARD ROBERTSON**

Bernard I. Robertson was appointed Senior Vice President - Engineering Technologies & Regulatory Affairs at DaimlerChrysler Corporation in 2001, following a succession of positions of increasing responsibility since joining Chrysler Corporation in England in 1965. He has Master's degrees in Mechanical Sciences (Cambridge University, UK, 1967), Automotive Engineering (Chrysler Institute, 1967) and Business Administration (Michigan State University, 1976). He is also a member of numerous professional societies and organizations, including the National Academy of Engineering.

# Special Events

Global Powertrain Congress 2002

## GPC 2002 Plenary Session

Wednesday, September 25, 2002

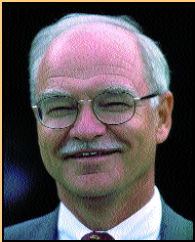
1:30 pm to 3:30 pm

Grande Ballroom



**Floyd Allen**  
Vice President  
DaimlerChrysler

Floyd E. Allen is Vice President, Powertrain Product Engineering at DaimlerChrysler Corporation. He joined Chrysler in 1964 as a Chrysler Institute student engineer, since then, he has served in a wide variety of Power Train engineering positions, including advanced engine and race program assignments. He received a Bachelor's degree in Mechanical Engineering from Purdue University in 1964, a Master's in Automotive Engineering from the Chrysler Institute of Engineering in 1966, and an MBA from Wayne State University in 1973.



**Gerhard Schmidt, PhD**  
Vice President  
Ford

Dr. Gerhard Schmidt is vice president - Research at Ford Motor Company. He joined Ford Motor Company April 1, 2001. In his position, Dr. Schmidt leads a worldwide research organization based in Dearborn, Michigan, and Aachen, Germany. Prior to his arrival at Ford, Dr. Schmidt served as senior vice president Vehicle Integration at BMW AG, following a 10-year-tenure as the senior vice president of Powertrain Development. During his 21 years at BMW, Dr. Schmidt held a wide range of leadership roles in engine research and development. Dr. Schmidt received his degree in mechanical engineering in 1971 from the University of Aachen, and his Ph.D. in Investigations on Stratified Charge - Internal Combustion Engines in 1979 from the Faculty of Mechanical Engineering at the University of Aachen.



**Doug Patton**  
Senior Vice President  
DENSO

Doug Patton is responsible for overseeing the operation of development facilities, production engineering, testing and technical services, engineering administration and product engineering for DENSO International America. Patton is a member of DENSO's Top Management Committee charged with guiding overall operations of the company, including managing business development for new business segments. Past responsibilities include overseeing BMW North American business and directing DaimlerChrysler sales activity in both the U.S. and Europe. Patton holds a Bachelor of Science degree in Electrical Engineering (1976) and a Master of Business Administration (1984) from Bradley University.

# Special Events

Global Powertrain Congress 2002

## International Reception & Dialogue Session

### Wine & Cheese Reception

Wednesday, September 25, 2002

3:30 pm to 5:30 pm

Michigan Room

A special time to meet and greet, to renew old acquaintances and make new ones, to be dialectic as you wish and eclectic as you can. Enjoy the fellowship of the global powertrain community as you partake of food for the body and food for thought, all enhanced with some light liquid refreshment! Don't miss it!



**DISTINGUISHED POWERTRAIN  
EXCELLENCE AWARD  
LUNCHEON SPEAKER**

**André Rault, PhD**

General Secretary  
EUCAR

## Powertrain Excellence Award Luncheon

Thursday, September 26, 12:30 pm to 1:30 pm

Grande Ballroom

### **DISTINGUISHED GUEST SPEAKER: ANDRÉ RAULT, PhD**

Dr. André RAULT, after getting a mechanical engineering degree at École des Arts et Métiers, obtained a PhD in control engineering from the University of California, Berkeley. For 20 years in a research consulting company, he implemented control techniques in various industrial applications, one of them being engine control. In 1989, he joined PSA Peugeot Citroën on a special assignment to the Information CEO. In 1992, he was appointed deputy Director of Research in charge of Electronics Systems and Traffic. He was then the PSA steering committee member of the PROMETHEUS program as well as the co-ordinator of the Paris traffic projects. As of 1996, he has represented PSA within the EUCAR and sat at the ERTICO board. In January 1999, he was elected General Secretary of EUCAR which he has now been leading for two years. He is also secretary of the ERTICO board.

# Programs & Chairs

Global Powertrain Congress 2002



**Dave Roessler, PhD**  
Staff Research Scientist  
General Motors

## Advanced Powertrain Materials & Manufacturing

David M. Roessler educated in England, receiving a PhD in Physics. After post-doctoral fellowships at the University of California and at Bell Telephone Laboratories, he joined the General Motors Research Laboratories Physics Department in 1970 as a staff scientist. He has published well over 100 scientific and technical papers, including book chapters, encyclopedia articles, and numerous review articles on laser processing.



**Chinu Bhavsar**  
Senior Staff Technical Specialist  
Ford

## Advanced Engine Design & Performance

Chinu Bhavsar is a Senior Staff Technical Specialist in Powertrain Research & Development at Ford Motor Company's Research Lab. He joined Ford as a Product Design Engineer in Truck Operations in 1969 and has subsequently held several supervisory positions. He received his Bachelor's Degree from Gujarat University and an MS in Mechanical Engineering from Stanford University.



**Joel Maguire**  
Engineering Group Manager  
General Motors

## Advanced Transmission/Drivetrain Systems

Joel Maguire began his automotive career in 1985 at General Motors Engineering Staff and currently is an Engineering Group Manager of GM Powertrain Advanced Engine Division. His responsibilities include: design, development and analytical topics for both automatic and manual transmissions, as well as, experimental transmission projects. Maguire received his BSME and MS from Michigan Technological University and Rennsselaer Polytechnic Institute respectively.



**Craig Renneker**  
Executive Engineer  
Ford

Craig Renneker is an Executive Engineer - New Programs for Ford Motor Company's Automatic Transmission Engineering Operations (ATEO). Prior to joining Ford, he spent 6 years at DaimlerChrysler, most recently as Senior Manager for Front-Wheel Drive 4-speed automatic transmission engineering. He received his BSME from General Motors Institute (now Kettering University) and MSME from Stanford University.



# Programs & Chairs

Global Powertrain Congress 2002



**Denis C. Wieczorek**  
Acting Director  
DaimlerChrysler

## Advanced Transmission/Drivetrain Systems *(continued)*

Denis C. Wieczorek is Senior Manager and acting Director of Advanced Transmission Engineering at DaimlerChrysler Corporation. Prior to this, he has held a number of engineering and managerial positions since joining Chrysler. He received a BS (Mechanical Engineering) from Wayne State University in 1977, an MS from the University of Michigan in 1979, and an MBA from the University of Detroit in 1989. He is a registered professional engineer, a member of SAE and has published several scientific papers.



**John Miller, PhD**  
Staff Technical Specialist  
Ford

## Advanced Propulsion Systems

John M. Miller is a Staff Technical Specialist at Ford Motor Company, which he joined in 1983. Prior to that he was a member of the technical staff at Texas Instruments. He has Bachelor's, Master's, and PhD degrees in Electrical Engineering and is a Fellow of IEEE. He is also an Adjunct Professor at Michigan State University, holds 33 US patents, and the author of 89 publications on automotive electrical and electronic systems.



**Peter J. Savagian**  
Director  
General Motors

Peter J. Savagian is Director of Propulsion Engineering in General Motors' Powertrain organization, where he directs the development of propulsion systems for battery EVs, fuel cell vehicles, and hybrid electric vehicles. He joined General Motors after engineering positions at Hughes Aircraft Company and Sundstrand Aviation. He received his Bachelor's degree from the University of Wisconsin at Madison and MS from the University of Southern California and is currently pursuing executive MBA program at Duke University.



**Brian G. Wicke, PhD**  
Principle Research Scientist  
General Motors

Brian G. Wicke is a Principal Research Scientist at General Motors R&D and Planning. He received his BA from DePauw University and his Master's and PhD degrees in physical chemistry from Harvard University. Prior to joining GM in 1978, Dr. Wicke was a Lecturer in Chemistry at Harvard University, a Visiting Scholar at the Quantum Institute of the University of California at Santa Barbara, and a Research Scientist at TRW Systems Group. He has worked both on combustion reaction kinetics and emissions but also on advanced propulsion systems.

# Tuesday, September 24, Morning Session

Advanced Powertrain Materials & Manufacturing		Advanced Transmission Drivetrain Systems		Advanced Propulsion Systems	
<b>Room: Grande I</b> <b>SESSION</b> “Laser Beam Technologies” <b>SESSION CHAIRMAN</b> David Roessler, PhD, <i>Staff Research Scientist, General Motors</i> <b>PROGRAM CO-CHAIRS</b> Katsuji Hidaka, <i>General Manager, Toyota</i> David Roessler, PhD, <i>Staff Research Scientist, General Motors</i> Kimihiro Shibata, PhD, <i>Senior Researcher Nissan</i>		<b>Room: Grande II</b> <b>SESSION</b> “Simulation and Analyses of Drivetrain Systems” <b>SESSION CHAIRMAN</b> Joel Maguire, <i>Engineering Manager General Motors</i> <b>PROGRAM CO-CHAIRS</b> Joel Maguire, <i>Engineering Manager, General Motors</i> Craig Renneker, <i>Executive Engineer, Ford</i> Denis Wieczorek, <i>Senior Manager DaimlerChrysler</i>		<b>Room: Grande III</b> <b>SESSION</b> “Hydrogen Propulsion” <b>SESSION CHAIRMAN</b> Peter Savagian, <i>Director, General Motors</i> <b>PROGRAM CO-CHAIRS</b> John Miller, PhD, <i>Staff Technical Specialist Ford</i> Peter Savagian, <i>Director, General Motors</i> Brian Wicke, PhD, <i>Principal Research Scientist, General Motors</i>	
Time	Paper Title & Author	Time	Paper Title & Author	Time	Paper Title & Author
8:30 am	<b>Laser Applications for Automotive Powertrain Components</b> Eckhard Beyer, PhD <i>Fraunhofer Institute Laser and Beam Technology IWS</i>	8:30 am	<b>Computational Fluid Dynamics on Torque Converter—Validation and Application</b> Jean Schweitzer, Jeya Gandham <i>General Motors</i>	8:30 am	<b>Using On-Board Hydrogen Reformation of E85 Fuel to Improve Cold-Start Performance of an Engine</b> Gregory Davis, PhD <i>Kettering University</i>
9:00 am	<b>High Power Diode Laser System Uses in the Manufacturing of Powertrain Components</b> Mark Zediker, PhD, John Haake <i>Nuvonyx</i>	9:00 am	<b>Automatic Transmission System Dynamics Simulation for the Reduction of Gear Whine</b> Paras Mehta David Schipper Yuping Cheng Edward Haran <i>Ford</i>	9:00 am	<b>On-Board Reformer Development for Low Emissions in Spark-ignition Engines</b> John Kirwan, PhD Ather Quader, PhD M. James Grieve Ken Rahmoeller, PhD Kapila Wadumesthrige Galen Fisher, <i>Delphi</i>
9:30 am	<b>Innovative Tools &amp; Processes for Laser Welding of Powertrain Components</b> Stefan Heinemann, PhD <i>Fraunhofer Center for Laser Technology</i>	9:30 am	<b>Simulation of Rolling Bearing Performance within Models of Complete Structures</b> Lars-Erik Stacke, PhD Raimond Breuker Giulermo Morales Espejel, PhD Jan Slycke, PhD Alexander de Vries Stathis Ioannides, PhD <i>SKF</i>	9:30 am	<b>Removing Barriers to Siting Hydrogen Energy Systems through the Development of Technical Standards and Model Codes</b> Karen Miller Jim Ohi <i>The National Hydrogen Association</i>
10:00 am	<b>Break</b>	10:00 am	<b>Break</b>	10:00 am	<b>Break</b>
10:15 am	<b>Laser Welding: Importance of Beam Shape</b> Chris Dackson Jim Cann <i>Rofin-Sinar</i>	10:15 am	<b>Modeling and Simulation of Viscous Coupling Torque Amplification</b> Sankar Mohan NVG	10:15 am	<b>Ford Hydrogen Internal Combustion Engine Design and Vehicle Development Program</b> Robert Natkin, PhD William Stockhausen Xiaguo Tang Daniel Kabat Lowell Reams Siamak Hashemi Steven Szwabowski Vance Zanardelli <i>Ford</i>
10:45 am	<b>Laser Surface Processing for Powertrain Components</b> John Hopkins, PhD <i>University of Tennessee</i>	10:45 am	<b>A Discussion of Implementations and Applications of Friction Launch in Planetary Automatic Transmissions</b> Donald Dusenberry <i>General Motors</i>	11:15 am	<b>Hydrogen Power - Driving our Future</b> Karen Miller <i>The National Hydrogen Association</i>
11:15 am	<b>Bimetallic Tooling &amp; Powertrain Components Using Laser-Based DMD Processing</b> Timothy Skszek <i>POM</i>	11:15 am	<b>Understanding the Influence of System Level Variable on Transmission Gear Performance</b> Avinash Singh, PhD <i>General Motors</i>	11:15 am	<b>Q&amp;A - Panel Discussion</b>
11:45 am	<b>Advanced Powertrain Laser Applications: Future Trends</b> Phillip Anthony <i>Rofin-Sinar</i>	12:30 pm	<b>Lunch</b>	12:30 pm	<b>Lunch</b>
12:15 pm	<b>Q &amp; A Panel Discussions</b>				
12:30 pm	<b>Lunch</b>				

# Tuesday, September 24, Afternoon Session

Advanced Powertrain Materials & Manufacturing		Advanced Transmission Drivetrain Systems		Advanced Propulsion Systems	
<b>Room: Grande I</b> <b>SESSION</b> “Advanced Manufacturing Processes” <b>SESSION CHAIRMAN</b> David Roessler, PhD, Staff Research Scientist, General Motors <b>PROGRAM CO-CHAIRS</b> Katsuji Hidaka, General Manager, Toyota David Roessler, PhD, Staff Research Scientist, General Motors Kimihiro Shibata, PhD, Senior Researcher Nissan		<b>Room: Grande II</b> <b>SESSION</b> “Novel Transmission Systems” <b>SESSION CHAIRMAN</b> Craig Renneker, Executive Engineer, Ford Motors <b>PROGRAM CO-CHAIRS</b> Joel Maguire, Engineering Manager, General Motors Craig Renneker, Executive Engineer, Ford Denis Wiczorek, Senior Manager DaimlerChrysler		<b>Room: Grande III</b> <b>SESSION</b> “42V Systems” <b>SESSION CHAIRMAN</b> John Miller, PhD, Staff Technical Specialist Ford <b>PROGRAM CO-CHAIRS</b> John Miller, PhD, Staff Technical Specialist Ford Peter Savagian, Director, General Motors Brian Wicke, PhD, Principal Research Scientist, General Motors	
Time	Paper Title & Author	Time	Paper Title & Author	Time	Paper Title & Author
1:35 pm	<b>Manufacturing Trends for Hot-, Warm- and Cold-Forged Powertrain-Components: Further Material Development</b> Chris Schmid Ekkehard Koerner, PhD Mathias Maier-Borst, PhD Volker Szentmihalyi, PhD <i>Tekfor USA and New FormTec</i>	1:35 pm	<b>Development of an Integrated Hybrid Automatic Transmission (IHAT)</b> Masato Fujikawa Masato Fukino Kenji Nakashima Masaharu Mochizuki <i>JATCO</i>	1:35 pm	<b>42V PowerNet Based New Powertrain Features for Future Vehicles</b> Engbert Spijker, PhD Lutz Gaedt, PhD Daniel Kok, PhD <i>Ford</i>
2:05 pm	<b>Influence of Abrasive Flow Machining on Reducing Fuel Consumption, Lowering Emissions and Increasing Power</b> Daniel Maas, John Matechen Rick Miller <i>Extrude Hone</i>	2:05 pm	<b>Improvement of Fuel Economy in Passenger Cars Using New Transmission Concepts</b> Gerhard Wagner, PhD <i>ZF</i>	2:05 pm	<b>Fuel Economy Improvements in a Hybrid Vehicle with the 42V Energen-10 System</b> Harry Husted, PhD Eric Schneider, PhD <i>Delphi</i>
2:35 pm	<b>Basics of Induction</b> Daniel Williams <i>Welduction</i>	2:35 pm	<b>A Novel Differential Drive Train for Multiple Power Sources</b> Yong-Mo Moon, PhD Sridhar Kota, PhD University of Michigan	2:35 pm	<b>Expanded Range 42V PowerNet</b> Steve Tarnowsky Brendan Conlon Michael Matouka <i>General Motors</i>
3:05 pm	<b>Break</b>	3:05 pm	<b>Break</b>	3:05 pm	<b>Break</b>
3:20 pm	<b>Induction Hardening and Tempering of Critical Power Train Components: A SHarP-C Approach to Reversing the Trend of Price for Quality</b> Glen Desmier, Valery Rudnev Ray Cook, Don Loveless Loran Lankford, Hab Medhanie <i>Inductoheat</i>	3:20 pm	<b>Kinematic and Dynamic Analysis of the Half-Toroidal Traction Drive Variator</b> Madhu Raghavan, PhD Sekhar Raghavan, PhD <i>General Motors</i>	3:20 pm	<b>Application of Distributed Power Modules on 42V Systems</b> Richard Smith Mark Cohen <i>Maxwell Technologies</i>
3:50 pm	<b>Comparative Study of Carburization vs. Induction Hardening of Gears</b> Madhu Chatterjee <i>Inductoheat</i>	3:50 am	<b>First Investigations on Fuel Consumption of the Autark Hybrid on Test Rig</b> Bernd-Robert Hohn, PhD Hermann Pflaum, PhD Phillip Guttenberg, PhD <i>FZG</i>	3:50 pm	<b>Q&amp;A - Panel Discussion</b>
4:20 pm	<b>Advances of Aluminum Self-Tapping Screws in Mechanical Fastening of Automotive Thermoplastic Components</b> Val Kagan, PhD <i>Honeywell</i> Stephen Weitzel <i>EJOT Verbindungstechnik</i>	4:20 pm	<b>Q&amp;A - Panel Discussion</b>	4:20 pm	<b>Session Adjourned</b>
4:50 pm	<b>Q &amp; A Panel Discussion</b>	5:00 pm	<b>Session Adjourned</b>		
5:10 pm	<b>Session Adjourned</b>				

# Wednesday, September 25, Morning Session

Advanced Engine Design & Performance	Advanced Transmission Drivetrain Systems	Advanced Powertrain Materials & Manufacturing
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<p><b>Room: Grande I</b></p> <p><b>SESSION</b> "Variable Valve Actuation"</p> <p><b>SESSION CHAIRMAN</b> <b>Chinu Bhavsar</b>, Senior Staff Technical Specialist Ford</p> <p><b>PROGRAM CO-CHAIRS</b> <b>Afif Ahmed, PhD</b>, Director, Renault <b>Chinu Bhavsar</b>, Senior Staff Technical Specialist Ford <b>Akihiro Iiyama, PhD</b>, Senior Researcher Nissan <b>Heinz Lemberger</b>, Chief Engineer, BMW</p>	<p><b>Room: Grande II</b></p> <p><b>SESSION</b> "Transmission/Drivetrain Management"</p> <p><b>SESSION CHAIRMAN</b> <b>Karl Schneider</b>, Senior Specialist, DaimlerChrysler</p> <p><b>PROGRAM CO-CHAIRS</b> <b>Joel Maguire</b>, Engineering Manager, General Motors <b>Craig Renneker</b>, Executive Engineer, Ford <b>Denis Wieczorek</b>, Senior Manager DaimlerChrysler</p>	<p><b>Room: Grande III</b></p> <p><b>SESSION</b> "Lightweight Materials"</p> <p><b>SESSION CHAIRMAN</b> <b>Bob Powell, PhD</b>, Staff Research Scientist General Motors</p> <p><b>PROGRAM CO-CHAIRS</b> <b>Katsuji Hidaka</b>, General Manager, Toyota <b>David Roessler, PhD</b>, Staff Research Scientist, General Motors <b>Kimihiko Shibata, PhD</b>, Senior Researcher Nissan</p>
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Time	Paper Title & Author	Time	Paper Title & Author	Time	Paper Title & Author
8:30 am	<b>Development of a Fully Flexible Hydraulic Valve Actuation Engine Part I: Hydraulic Valve Actuation System Development</b> Dan Nehmer <i>Sturman Industries</i> Stanislav Bohac Chris Cowland Lucas Flueckiger <i>AVL</i>	8:30 am	<b>Predicted End of ATF Life Using Thermal Degradation Model</b> Reuben Sarkar, PhD <i>General Motors</i>	8:30 am	<b>High Speed Machining of Compacted Graphite Iron</b> George Georgiou <i>Lamb Technicon</i>
9:00 am	<b>Development of a Hydraulic Valve Actuation Engine Part II: Impact on MPFI Engines</b> Stanislav Bohac Christopher Cowland Lucas Flueckiger <i>AVL</i> Dan Nehmer <i>Sturman Industries</i>	9:00 am	<b>Resistance of Phenolic Composites to Various Powertrain Fluids</b> Rick Jones <i>Rogers Corp.</i>	9:00 am	<b>Titanium Applications</b> Kurt Faller <i>Titanium Metals</i>
9:30 am	<b>An Approach to Controlling Auto-Ignition: Two-Stroke Gas Exchanging Method</b> Yoichi Ishibashi, PhD Kenji Nishida <i>Honda</i>	9:30 am	<b>Oil Pan Sloshing in Automatic Transmissions</b> Dengfu Zhang Chin-Yuan Perng <i>Ford</i>	9:30 am	<b>Lead-Free Alloy for Screw Machine Applications</b> Linda Hoffer <i>Alcoa</i>
10:00 am	Break	10:00 am	Break	10:00 am	Break
10:15 am	<b>The Impact on Engine Performance of Controlled Auto Ignition versus Spark Ignition with Two Methods of Load Control</b> Jamie Turner, Dave Blundell Mike Bassett, Richard Pearson <i>Lotus</i> Rui Chen, PhD <i>Loughborough University</i>	10:15 am	<b>Influence of Assembly Techniques, Misalignment Errors, and Manufacturing Variation on Noise and Vibration Characteristics of Automatic Transmission</b> Shounak Athavale Greg Gardner Matt Trent <i>Ford</i>	10:15 am	<b>Production of Magnesium Powertrain Components via Thixomolding</b> Stephen LeBeau, PhD Raymond Decker Matthew Walukas <i>Thixomat</i>
10:45 am	<b>Rapid Engineering for the Development of Fuel Injection Methods</b> Norbert Schacht Oliver Predelli <i>IAV</i>	10:45 am	<b>A Torque Limiting Progressive Coupling Incorporating Thermal Overload Protection</b> Timothy Burns Fred Porter <i>NVG</i>	10:45 am	<b>Creep-Resistant Magnesium Alloys: A Solution to Saving Weight in Automotive Powertrain</b> Eli Aghion Boris Bronfin Nick Fantetti M. Lautzker <i>Dead Sea Magnesium</i>
11:15 am	Q & A - Panel Discussion	11:15 am	<b>Manual Transmission Gear Ratio Selection</b> Syed Razzacki <i>DaimlerChrysler</i>	11:15 am	<b>Toward a Magnesium-Intensive Engine: The USAMP Magnesium Powertrain Cast Components Project</b> Bob Powell, PhD <i>General Motors</i>
12:30 pm	Lunch	11:45 am	<b>Powder Metal Gears with Steel-like Performance</b> Peter Jones Keith Buckley-Golder Roger Lawcock <i>Stackpole</i>	11:45 am	Q & A Panel Discussions
12:30 pm	Lunch	12:15 pm	Q & A Panel Discussion	12:30 pm	Lunch
12:30 pm	Lunch	12:30 pm	Lunch		

# Thursday, September 26, Morning Session

Advanced Engine Design & Performance	Advanced Powertrain Materials & Manufacturing	Advanced Propulsion Systems
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**Room: Grande I**

**SESSION**  
"Advanced Product/Engine"

**SESSION CHAIRMAN**  
**Graham Hoare**, Director, Ford

**PROGRAM CO-CHAIRS**  
**Afif Ahmed, PhD**, Director, Renault  
**Chinu Bhavsar**, Senior Staff Technical Specialist, Ford  
**Akihiro Iiyama**, Senior Researcher, Nissan  
**Heinz Lemberger**, Chief Engineer, BMW

**Room: Grande II**

**SESSION**  
"Manufacturing Processes & Analyses"

**SESSION CHAIRMAN**  
**Roger Cope**, Vice President, Lamb Technicon

**PROGRAM CO-CHAIRS**  
**Katsuji Hidaka**, General Manager, Toyota  
**David Roessler, PhD**, Staff Research Scientist, General Motors  
**Kimihito Shibata, PhD**, Senior Researcher Nissan

**Room: Grande III**

**SESSION**  
"Hybrid Electric I"

**SESSION CHAIRMAN**  
**Brian Wicke, PhD**, Principal Research Scientist, General Motors

**PROGRAM CO-CHAIRS**  
**John Miller, PhD**, Staff Technical Specialist Ford  
**Peter Savagian**, Director, General Motors  
**Brian Wicke, PhD**, Principal Research Scientist, General Motors

Time	Paper Title & Author	Time	Paper Title & Author	Time	Paper Title & Author
8:30 am	<b>A Perspective on Future Cars and Fuels</b> Marc Wiseman, PhD Nick Owen <i>Ricardo</i>	8:30 am	<b>High Pressure Die Cast Engine Components</b> Yeou-Li Chu, PhD <i>Ryobi Die Casting</i>	8:30 pm	<b>Control of Compact Hybrid Drive Consisted of PM Motor and Planetary Transmission CVT</b> Antoni Szumanowski, PhD Piotr Piorkowski Arkadiusz Hajduga <i>Warsaw University of Technology</i>
9:00 am	<b>Ford's Global Masterpiece Engine: Part 1</b> Eric Sheffer Uwe Tielkes Rudlof Menne Stefan Hügen Joachim Hansen <i>Ford</i>	9:00 am	<b>Nemak's Low Pressure Precision Sand Process in the Production of Aluminum Cylinder Blocks</b> Juan Mojica David Carrillo <i>Nemak</i>	9:00 am	<b>Paice Hyperdrive, Its Role in the Future of Powertrains</b> Theodore Louckes <i>Paice</i>
9:30 am	<b>Ford's Global Masterpiece Engine: Part 2</b> Eric Sheffer Uwe Tielkes Rudlof Menne Stefan Hügen Joachim Hansen <i>Ford</i>	9:30 am	<b>The Significance of System Configuration on Manufacturing Performance</b> Thomas Weber, PhD <i>Webertech</i>	9:30 am	<b>Case Study of the Applicability of Applying of Real Time Data Acquisition and Monitoring of Hybridization Powertrains</b> Glen Courtright <i>SAIC</i>
10:00 am	<b>Break</b>	10:00 am	<b>Break</b>	10:00 am	<b>Break</b>
10:15 am	<b>The 2003 Model Year 5.7 Liter HEMI®</b> Robert Lee <i>DaimlerChrysler</i>	10:15 am	<b>Analysis of Manufacturing System Configuration and Performance</b> Theodor Freiheit, PhD S. Jack Hu, PhD Moshe Shpitalni, PhD Valerie Maier-Speredelozzi, PhD Weiping Zhong, PhD <i>University of Michigan</i>	10:15 am	<b>Packaging and Overlay Wiring Challenges in a Hybrid Electric Technology Demonstrator Vehicle</b> Arun Jaura, PhD <i>Ford</i>
10:45 am	<b>The Adaptive Thermal Engine - The Best Suitable for Turbo-Charging</b> Vasile Hara, PhD Adrian Clenci, PhD <i>University of Pitest</i>	10:45 am	<b>Calibration of a Reconfigurable Inspection Machine for Engine Heads</b> Stephen Segall, PhD Sébastien Fricker Anuj Gupta, PhD <i>University of Michigan</i>	10:45 am	<b>The Case for the Connected Car</b> Tom Gage Alec Brooks <i>AC Propulsion</i>
11:15 am	<b>Q &amp; A Panel Discussions</b>	11:15 am	<b>Surface Defect Inspection for Engine Parts By Appearance-Based Texture Analysis</b> Gil Abramovich Debasish Dutta, PhD <i>University of Michigan</i> Juyang Weng, PhD <i>Michigan State University</i>	11:15 am	<b>Optimization of Hybrid Electric Vehicle Drive Systems</b> Chris Mi John Shen <i>University of Michigan</i> Chun Tian Yu Qin <i>Controlled Power</i> Hongping Li <i>Indiana University</i>
12:30 pm	<b>Lunch</b>	11:45 am	<b>Q &amp; A Panel Discussion</b>	11:45 am	<b>Q &amp; A - Panel Discussion</b>
		12:30 pm	<b>Lunch</b>	12:30 pm	<b>Lunch</b>

# Thursday, September 26, Afternoon Session

Advanced Engine Design & Performance	Advanced Powertrain Materials & Manufacturing	Advanced Propulsion Systems
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**Room: Grande I**

**SESSION**  
"Economic Modeling"

**SESSION CHAIRMAN**  
**Chinu Bhavsar, PhD, Senior Staff Technical Specialist, Ford**

**PROGRAM CO-CHAIRS**  
**Afif Ahmed, PhD, Director, Renault**  
**Chinu Bhavsar, Senior Staff Technical Specialist, Ford**  
**Akihiro Iiyama, PhD, Senior Researcher, Nissan**  
**Heinz Lemberger, Chief Engineer, BMW**

**Room: Grande II**

**SESSION**  
"Manufacturing Systems Analyses & Control"

**SESSION CHAIRMAN**  
**Hamid Vahabzadeh, PhD, Director General Motors**

**PROGRAM CO-CHAIRS**  
**Katsuji Hidaka, General Manager, Toyota**  
**David Roessler, PhD, Staff Research Scientist, General Motors**  
**Kimihiro Shibata, PhD, Senior Researcher Nissan**

**Room: Grande III**

**SESSION**  
"Hybrid Electric II"

**SESSION CHAIRMAN**  
**Herbert Kabza, PhD, Professor University of Ulm**

**PROGRAM CO-CHAIRS**  
**John Miller, PhD, Staff Technical Specialist Ford**  
**Peter Savagian, Director, General Motors**  
**Brian Wicke, PhD, Principal Research Scientist, General Motors**

Time	Paper Title & Author	Time	Paper Title & Author	Time	Paper Title & Author
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**1:35 pm QFD-Based Technology Roadmapping: An Ordered Method for Planning Development Resource**  
Russell Wakeman  
*Ricardo*

**2:05 pm Life-Cycle Economic Modeling**  
Izak Duenyas, PhD  
*University of Michigan*

**2:35 pm Economic Benefits of Reconfigurable Manufacturing Systems (RMS)**  
Reuven Katz, PhD  
Izak Duenyas, PhD  
Wichai Narongwanich, PhD  
Yoram Koren, PhD  
*University of Michigan*

**3:05 pm Break**

**SESSION**  
"Emission & Exhaust Systems"

**SESSION CHAIRMAN**  
**Chinu Bhavsar, Senior Staff Technical Specialist Ford**

**3:20 pm VOEMLow: Emission and Energy Measurement System as Development Tool for Clean Engines, After-Treatment Systems and Powertrains**  
Patrick Debal, PhD  
Guido Lenaers  
Erik Verhaeven  
*VITO*

**3:50 pm Power Chips™ for Exhaust Heat Recovery**  
Brian von Herzen, PhD  
Isaiah Cox  
*Power Chips*

**4:20 pm Bosal Lightweight Exhaust Systems**  
Paul Steenackers, PhD  
*Bosal*

**4:50 pm Q & A - Panel Discussion**

**5:20 pm Session Adjourned**

**1:35 pm Scalable Machining System Design and Case Study Analysis**  
Patrick Spicer, Yoram Koren, PhD  
Derek Yip-Hoi, PhD  
*University of Michigan*  
Paul Brandyopadhyay, John Novak  
*General Motors*

**2:05 pm A Feature-Based Powertrain Process Planning Protocol**  
Derek Yip-Hoi, PhD  
Jianming Li, PhD  
Madhumati Ramesh, Steve Swisher  
Samba Subramanian  
*University of Michigan*  
Vaughan Hetem, Robert Waite  
*DaimlerChrysler*  
Ann O'Connell, Paul Wascher  
*Ford*, Mike Baines, *General Motors*

**2:35 pm Vision, Principles and Impact of Reconfigurable Manufacturing Systems**  
Yoram Koren, PhD, Galip Ulsoy, PhD  
*University of Michigan*

**3:05 pm Break**

**3:20 pm Stream of Variation (SoV) Methodology for Multistage Machining Processes**  
Jianjun Shi, PhD  
*University of Michigan*  
Shiyu Zhou, PhD  
*University of Wisconsin*

**3:50 pm Reconfigurable Inspection Machine for Machining Production Lines**  
Yoram Koren, PhD  
Reuven Katz, PhD, Mike Zuteck  
*University of Michigan*

**4:20 pm The Implications of Ethernet as a Control Network**  
Paul Otanez, PhD  
Jonathon Parrott  
James Moyne, PhD  
Dawn Tilbury, PhD  
*University of Michigan*

**4:50 pm Q & A Panel Discussion**

**5:05 pm Session Adjourned**

**1:35 pm Supercapacitors and Batteries for Hybrid Electric Vehicle Applications: A Primer**  
Andrew Chu, PhD  
Paul Braatz, PhD  
Souren Soukiazian  
*HRL*

**2:05 pm Sodium Borohydride Fueled Fuel Cell Powertrains**  
Doanh Tran  
Andreas Schell, PhD  
*DaimlerChrysler*

**2:35 pm Mild Hybrid Operation with a Downsized Diesel Engine—A Practical Approach to Outstanding Fuel Economy**  
Richard Gordon  
Peter Fussey  
Steve Streater  
Marc Wiseman  
*Ricardo*

**3:05 pm Break**

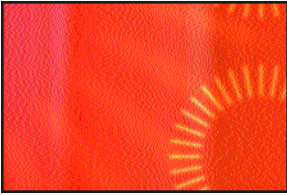
**3:20 pm Development of OBDII Specifications for a Parallel Hybrid Vehicle**  
Mark Frank  
*FEV*

**3:50 pm Development of an Integrated Electric Traction System**  
Jon Lutz  
Erik Hatch  
*UQM Technologies*

**4:20 pm The Drive Motors used with Alison E System Electric Drive for Heavy Duty Hybrid Applications**  
Ahmed El-Antably, PhD  
*General Motors*

**4:50 pm Q & A - Panel Discussion**

**5:20 pm Session Adjourned**



# Conference & Course Registration Form

Global Powertrain Congress 2002

**Must be submitted by August 29, 2002 to avoid late fees of \$200**

Please attach business card, print or type

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