Inside China: Understanding China’s Current and Future Automotive Industry

“Focus on the Future”
UM Automotive Research Conferences

WELCOME!

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Automotive Futures
University of Michigan
Transportation Research Institute

Funding

Affiliate Program
- Supporting Members
- Research Partners

Research
- Globalization
- Powertrains
- IT

Conferences
- 5 Annual Conferences
# Automotive Futures

## Affiliate Program

<table>
<thead>
<tr>
<th>Affiliate Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argonne National Labs</td>
</tr>
<tr>
<td>BorgWarner Inc.</td>
</tr>
<tr>
<td>Bosch Corporation</td>
</tr>
<tr>
<td>Denso Corporation</td>
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<tr>
<td>FCA LLC</td>
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<tr>
<td>Ford Motor Company</td>
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<tr>
<td>ITS America</td>
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<tr>
<td>Oracle Corporation</td>
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<tr>
<td>UAW-Ford</td>
</tr>
<tr>
<td>Valeo North America, LLC</td>
</tr>
</tbody>
</table>
Automotive Futures
Research Partners

IT Organizations
HP
IBM
Oracle Corporation
Siemens-PLM

OEMs
FCA LLC
Ford Motor Company
General Motors
Nissan Tech Center
Toyota Tech Center

Government/NGOs
Argonne National Labs
CALSTART
CARB
Energy Foundation
Federal Motor Carrier
The Hewlett Foundation
ICCT
NRDC
Michigan DOT
NREL
NSF

Government/NGOs
Union of Concerned Scientists
US Army-TARDEC
US DOT
US EPA
US DOE

UMTRI
Automotive Futures
Current Research Programs

• Globalization
  • GERPISA Automotive Research Network
  • Shifting Strategies: The Big Three in ASEAN
  • Establishing Production in North America: Challenges for Overseas Assemblers and Suppliers and Implications for the Domestic Automotive Industry
  • Workforce Planning for a Global Automotive Economy
  • Inside China and Inside India reports
  • Inside China conferences for 8 years
  • Inside India, Brazil, Russia, Japan conferences
Automotive Futures
Current Research Programs

• Powertrains
  • 2016-2017 Powertrain Strategies for the 21st Century Survey
    • 1st Mailing at the end of October in collaboration with SAE
  • 2014-2015 Powertrain Strategies for the 21st Century Survey (Sponsor: Affiliates)
    • Survey results distributed to Affiliates
  
• Total Cost of Ownership: Comparing Diesel and Gas Vehicles (Bosch)
  • Based on resale value of 30K vehicles sold through Mannheim auctions in 2012 / 2013
  • Report available
Automotive Futures
Current Research Programs

- ITS
  - Stuck in Traffic: Analyzing Real Time Traffic Capabilities of Personal Navigation Devices and Traffic Phone Applications
    • Final report available
  - Integrated Mobile Observations: Micro-level weather reporting using cell phones in MDOT vehicles (Sponsor: MDOT and FHWA)
    • Report available
Automotive Futures
Current Research Programs

• ITS
  • Roadway Evaluation Project: Measuring road roughness via accelerometers in cell phones mounted in MDOT vehicles
    • Final report available
  • Deploying Safety Technologies in Commercial Vehicles
    • Familiarity and penetration currently and in the future of: Forward Collision Warning / Lane Departure Warning / Blind Spot Detection / ESC / Vehicle Communications
    • Final report available (Sponsor: ITS America)
Upcoming UMTRI-AF Conferences

- February 15, 2017: *New Mobility Conference*. Our 3rd annual New Mobility conference in collaboration with UM-SMART will investigate new modes of transport that support sustainability as well as transport.

- April 12, 2017: In Celebration of UM’s 200th Anniversary: UMTRI-AF and the UM Japan Center will put on the conference that examines the past, present, and future relationship of the Japanese auto industry to the US and the UM.

- July 19, 2017: Powertrain Strategies for the 21st Century: Our 9th annual conference that focuses on major issues related to the future powertrains. This conference is also the place to see the results of our annual Powertrain Strategies for the 21st Century expert survey that estimates powertrain technology penetration for 2020 and 2025.
9:00am  **Bruce Belzowski**, Managing Director, Automotive Futures, UM Transportation Research Institute

- **Mike Jackson**, Director of Vehicle Forecasting, IHS
- **John Jullens**, Principal, PWC Strategy Consulting Group
- **Baovin Xie**, VP, Product Development, Beijing Automotive Technology Center, Beijing Motor Corporation Ltd.

Break (20 minutes)
Conference Presenters/Schedule

• **Sergio Muniz**, UMTRI AF Visiting Researcher (from Federal Technological University of Paraná, Brazil)

• **Ming Xu**, UM Associate Professor in School of Natural Resources and Environment and Department of Civil and Environmental Engineering

• **Steven Golden**, Chief Technology Officer and VP Business Development at Clean Diesel Technologies (CDTi)

• Conference Q&A

1:30pm   Lunch

2:30pm   Adjourn
Conference Questions

- How have the different Chinese manufacturers, independent and joint venture, fared over the last couple of years?
- What are some of the different independent manufacturer product strategies?
- What are the forecasts for the industry and the individual manufacturers over the next 5-10 years?
- What are some of the structural and economic changes taking place in the Chinese auto industry?
Conference Questions

• What are some of the major government initiatives that will affect China’s auto industry in the near term?

• How do Chinese manufacturers view the next generation of vehicles in development?

• How do Chinese joint venture manufacturers manage their independent brand along side their joint venture brand?

• What companies are leading in selling electric vehicles?
Conference Questions

• What are some of the platform decisions companies are making with their electric vehicles?

• What are the environmental implications for electric vehicles in China?

• What infrastructure changes are taking place related to charging stations for electric vehicles?

• How are Chinese emissions policies driving changes in the industry?
Post Conference Mailing

Attendees:
• Link to presentations

Affiliates:
• Link to presentations
• Link to summary document of the conference
China Total Sales of New Vehicles

Source: OICA Sale Statistics
2015 Top Ten Vehicle Production

<table>
<thead>
<tr>
<th>Company</th>
<th>Number of Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai Wuling</td>
<td>2,005,248</td>
</tr>
<tr>
<td>Shanghai GM</td>
<td>1,803,584</td>
</tr>
<tr>
<td>VW</td>
<td>1,728,919</td>
</tr>
<tr>
<td>Shanghai GM (Own Brand)</td>
<td>1,636,834</td>
</tr>
<tr>
<td>FAW Volkswagen</td>
<td>1,287,145</td>
</tr>
<tr>
<td>Chang'an (Own Brand)</td>
<td>1,052,000</td>
</tr>
<tr>
<td>Beijing Hyundai</td>
<td>1,018,812</td>
</tr>
<tr>
<td>Dongfeng Nissan</td>
<td>880,542</td>
</tr>
<tr>
<td>Chang'an Ford</td>
<td>869,592</td>
</tr>
<tr>
<td>Great Wall</td>
<td>787,700</td>
</tr>
</tbody>
</table>

Source: 2016 Ward’s Automotive Yearbook
2014 to 2015 Comparison of Top Ten Vehicle Production

Source: 2016 Ward’s Automotive Yearbook
Chinese Auto Companies

- **Joint venture companies:** state-owned enterprises that manufacture vehicles with foreign companies but also design and manufacture their own brands. Many companies have multiple joint ventures with different foreign automakers.

- **Independent companies:** may have some provincial and state support but are primarily independent companies with their own brands.
2015 Top Joint Venture Production

<table>
<thead>
<tr>
<th>Company</th>
<th>Production (units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM</td>
<td>3,734,167</td>
</tr>
<tr>
<td>VW &amp; Audi Hyundai &amp; Kia</td>
<td>3,440,418</td>
</tr>
<tr>
<td>Nissan</td>
<td>1,685,246</td>
</tr>
<tr>
<td>Toyota</td>
<td>1,050,540</td>
</tr>
<tr>
<td>Honda</td>
<td>1,007,343</td>
</tr>
<tr>
<td>Ford</td>
<td>961,400</td>
</tr>
<tr>
<td>Mercedes</td>
<td>880,542</td>
</tr>
<tr>
<td>Mazda</td>
<td>261,865</td>
</tr>
<tr>
<td>Suzuki</td>
<td>153,298</td>
</tr>
<tr>
<td>BMW</td>
<td>120,307</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>105,835</td>
</tr>
<tr>
<td>Fiat Chrysler</td>
<td>56,366</td>
</tr>
<tr>
<td>Chrysler</td>
<td>40,056</td>
</tr>
</tbody>
</table>

Source: 2016 Ward’s Automotive Yearbook
2014 to 2015 Comparison of Top Joint Venture Production

Source: 2016 Ward's Automotive Yearbook
2015 Chinese Own Brands Production
(Not including Joint Ventures)

Source: 2016 Ward's Automotive Yearbook
2014 to 2015 Comparison of Chinese Own Brands Production (Not including Joint Ventures)

Source: 2016 Ward’s Automotive Yearbook
2015 Top Chinese Independent Manufacturer Production (Non-Joint Venture Companies)

Great Wall: 869,592
Geely: 557,005
Jianghuai: 534,656
Chery: 511,711
BYD: 446,885
JMC: 313,349

Source: 2016 Ward’s Automotive Yearbook
2014 Top Chinese Independent Manufacturer Production (Non-Joint Venture Companies)

- **Foton**: 311,985
- **Jinbei**: 247,617
- **Lifan**: 240,399
- **Zotye**: 212,926
- **Nanjing**: 166,851
- **Haima Zhengzhou**: 112,408
- **Changhe**: 96,758

Source: 2016 Ward’s Automotive Yearbook
2014 to 2015 Comparison of Top Chinese Independent Manufacturer Production (Non-Joint Venture Companies)

Source: 2016 Ward's Automotive Yearbook
2014 to 2015 Comparison of Top Chinese Independent Manufacturer Production
(Non-Joint Venture Companies)

Source: 2016 Ward’s Automotive Yearbook
2015 Number of Models by Company
(Chinese Own Brands Not Including Joint Ventures)

Source: ChinaAutoWeb
2015 Number of Models by Company (Independent Companies)

Source: ChinaAutoWeb
2015 Production By Company
(Chinese Own Brands Not Including Joint Ventures)

Source: 2016 Ward’s Automotive Yearbook
2015 Production By Company (Independent Companies)

<table>
<thead>
<tr>
<th>Company</th>
<th>Passenger Cars</th>
<th>Light Trucks</th>
<th>Medium/Heavy Trucks</th>
<th>Buses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Wall</td>
<td>800,000</td>
<td>400,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Geely</td>
<td>400,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jianghuai</td>
<td>200,000</td>
<td>600,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chery</td>
<td>100,000</td>
<td>200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BYD</td>
<td>50,000</td>
<td>100,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>JMC</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Foton</td>
<td>0</td>
<td>0</td>
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The Link to Presentations Will Be Emailed This Weekend