Commercial Vehicles Market Outlook

March 2015
Presenters

Marilyn Tarbet
Director, New Business Development – North America
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Senior Commercial Vehicles Analyst
cfisher@powersys.com
Agenda

• Introduction to Power Systems Research
• Global Outlook
• Manufacturers Strategies By Region
• Takeaways
• Q&A
Company Profile

Powerful expertise, innovation for the future

• Global provider of market research, industry data & forecasting services
• Sole source of global data across all segments of power products & drivetrain industry
• History of innovation; 35+ years experience
• Unique database services & information tools
• Market modeling and forecasting
• Proprietary market studies

Data... Information... Intelligence
Global Presence

Powerful global and local perspective

Headquarters: St. Paul, MN, USA
Beijing, China
Brussels, Belgium
Detroit, MI, USA
Moscow, Russia
Pune, India
Riyadh, Saudi Arabia
São Paulo, Brazil
Tokyo, Japan

And a network of research specialists in other key markets.
All engine-powered products

Information for multiple industries and markets

- Agricultural
- Construction
- Industrial
- Lawn & Garden
- Light Commercial Vehicles
- Marine Auxiliary
- Marine Propulsion
- Medium & Heavy Vehicles
- Minivans & SUVs
- Passenger Cars
- Power Generation
- Railway
- Recreational Products
Unique Database Services

Specialized forecast and market information

EnginLink™
Global engine production forecast; model specifications

OE Link™
Original equipment production forecast; engine installations

CV Link™
Commercial vehicle production forecast; engine installations

PartsLink™
Engine and original equipment population data – aftermarket data

Components Data
Component modules - can be customized to match your business model and information needs.
Components & Consumables Tracked

- Fuel Injection Systems
- Turbo Chargers
- Transmissions
- Lubricants
- Tires
- Batteries
- Spark Plugs

- Inquire about components you may need that are not currently available!
Business Market Research Studies

Over 3500 Studies Completed:

Analysis on CV Transmissions for Off-Highway Applications

- Market Potential for Diesel Engines
- Diesel Engine Control Technology Outlook
- DPF Regeneration in Cold Climates

Impact on the introduction of the Smart Grid

- Tier 4 Compliance

Emission Regulations Situation: Marine Diesel Engines

- Marine Market Outlook
- Power Generation Pricing

Gas Engine Market

Market Strategy for Diesel Filtration

Segment Profiling

Competitive Analysis: Components

Customer Satisfaction: Industrial Diesel Engines

- Light Duty Market Study

Power Systems Research

Powerful Possibilities™
Global Outlook
6 tons+

Chris Fisher
Global Overview

Medium and Heavy Truck Production – GVWR > 6 Ton

<table>
<thead>
<tr>
<th>Region</th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>506,465</td>
<td>998,166</td>
<td>706,199</td>
</tr>
<tr>
<td>Greater China</td>
<td>998,166</td>
<td>941,581</td>
<td>1,045,304</td>
</tr>
<tr>
<td>Japan/Korea</td>
<td>362,761</td>
<td>365,261</td>
<td>386,665</td>
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<tr>
<td>North America</td>
<td>509,411</td>
<td>572,158</td>
<td>496,018</td>
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<td>South America</td>
<td>147,225</td>
<td>156,563</td>
<td>197,415</td>
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<tr>
<td>South Asia</td>
<td>373,888</td>
<td>418,632</td>
<td>576,752</td>
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</table>

Power Systems Research

Powerful Possibilities™
Global Overview

Medium and Heavy Truck Production Share – GVWR > 6 Ton

<table>
<thead>
<tr>
<th>Region</th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>17.5%</td>
<td>17.4%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Greater China</td>
<td>34.4%</td>
<td>31.7%</td>
<td>30.7%</td>
</tr>
<tr>
<td>Japan/Korea</td>
<td>12.5%</td>
<td>12.3%</td>
<td>11.3%</td>
</tr>
<tr>
<td>North America</td>
<td>17.6%</td>
<td>19.3%</td>
<td>4.6%</td>
</tr>
<tr>
<td>South America</td>
<td>5.1%</td>
<td>5.3%</td>
<td>5.8%</td>
</tr>
<tr>
<td>South Asia</td>
<td>12.9%</td>
<td>14.1%</td>
<td>16.9%</td>
</tr>
</tbody>
</table>

Europe: 17.5%, 17.4%, 20.7%
Greater China: 34.4%, 31.7%, 30.7%
Japan/Korea: 12.5%, 12.3%, 11.3%
North America: 17.6%, 19.3%, 4.6%
South America: 5.1%, 5.3%, 5.8%
South Asia: 12.9%, 14.1%, 16.9%
Global Overview

Largest Global Truck OEMs in 2014 – GVWR > 6 Ton

<table>
<thead>
<tr>
<th>OEM</th>
<th>CY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daimler</td>
<td>440,774</td>
</tr>
<tr>
<td>Other</td>
<td>313,884</td>
</tr>
<tr>
<td>Dongfeng</td>
<td>227,931</td>
</tr>
<tr>
<td>Volvo</td>
<td>226,572</td>
</tr>
<tr>
<td>Isuzu</td>
<td>198,132</td>
</tr>
<tr>
<td>Volkswagen (Hino)</td>
<td>192,477</td>
</tr>
<tr>
<td>Toyota (Hino)</td>
<td>171,339</td>
</tr>
<tr>
<td>FAW</td>
<td>168,334</td>
</tr>
<tr>
<td>CNHTC (Sinotruk)</td>
<td>148,887</td>
</tr>
<tr>
<td>PACCAR</td>
<td>147,408</td>
</tr>
<tr>
<td>Tata</td>
<td>140,574</td>
</tr>
<tr>
<td>Beiij Foton</td>
<td>118,737</td>
</tr>
<tr>
<td>Weichai (Shaanxi)</td>
<td>105,732</td>
</tr>
<tr>
<td>Ford</td>
<td>93,009</td>
</tr>
<tr>
<td>Navistar</td>
<td>88,884</td>
</tr>
<tr>
<td>CNH Industrial</td>
<td>63,686</td>
</tr>
<tr>
<td>Ashok Leyland</td>
<td>51,556</td>
</tr>
</tbody>
</table>
Global Overview

Largest Global Engine Manufactures in 2014 – GVWR > 6 Ton

- Cummins (Includes JV’s): 478,634
- Other: 312,209
- Weichai Power: 307,894
- Daimler: 279,128
- Volvo: 216,802
- Toyota (Hino): 181,150
- Isuzu: 179,746
- Yuchai: 145,268
- FAW: 141,493
- FPT Industrial: 132,240
- CNHTC: 111,601
- Dongfeng: 100,212
- Ford: 76,567
- PACCAR: 76,412
- Ashok Leyland: 66,120
- Tata: 50,243
- 42,197

CY 2014
Global Overview

- Truck engine displacement share – GVWR > 6 Ton
- 4 – 6 liter engines prevalent in Asia
- 15 – 16 liter engines primarily North America and Western Europe
Manufacturers Strategies & Trends
North America
North America

Market Trends

• Green House Gas (GHG) Emission Regulations for MY 2014 – MY 2017
  • Applies to all on-road vehicles with GVWR > 8.5 tons
  • Reduction in fuel consumption ranging between 6% to 23% by MY 2017 compared to MY 2010 (U.S. 10 regulations)
  • Combination tractors: depending on type and weight require a 7% - 20% reduction in fuel consumption
  • Vocational vehicles require a 10% reduction in fuel consumption by MY 2017
• GHG 2020 will be finalized by March 2015
  • In May 2015, an announcement is scheduled to detail the requirements of the GHG 2020 emission regulations
North America

Market Trends

- Navistar is now using SCR (Selective Catalytic Reduction) in their medium engines
- Cummins put their ISX 15 liter natural gas engine on hold due to anticipated low volumes
- Volvo also cancelled their 13 liter natural gas engine project scheduled for introduction in 2015
- Navistar is now offering the Cummins ISB6.7 liter engine in the DuraStar and WorkStar medium trucks along with IC buses
- Ford will replace the Cummins ISB6.7 liter engine with the Ford 6.7 liter engine on the F-650/F-750
- Ford is ending the Blue Diamond JV with Navistar
North America

OEM Engine Installations

- Daimler and Ford are installing fewer Cummins engines
  - Freightliner Evolution
  - Ford Mfg. 6.7 liter Diesel
- Demand for the Navistar 13 liter engine improved in 2014.
  - Offering the Cummins ISX and ISB engines
- Daimler will introduce their DD5 & DD8 medium engines to North America in 2016
- PACCAR gaining share with the MX13 liter engine
  - MX11 scheduled for 2015

<table>
<thead>
<tr>
<th></th>
<th>Daimler</th>
<th>Ford</th>
<th>Navistar</th>
<th>PACCAR</th>
<th>Volvo</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2014</td>
<td>84,631</td>
<td>68,457</td>
<td>48,690</td>
<td>26,345</td>
<td>54,870</td>
</tr>
<tr>
<td>FCST 2015</td>
<td>96,720</td>
<td>82,004</td>
<td>54,001</td>
<td>33,699</td>
<td>62,437</td>
</tr>
<tr>
<td>FCST 2020</td>
<td>116,560</td>
<td>81,225</td>
<td>52,437</td>
<td>41,882</td>
<td>47,939</td>
</tr>
</tbody>
</table>
North America

Navistar Engine Prospects

- MF engines range include 6.36L, 7.6L, 9.3L and 12.4L
- No longer producing the MF11 & MF15
- Power was increased on the 9.3 liter (MF10)
- Cummins ISX15 available
- Navistar has no plans to exit the engine business
  - Consolidated engine plants
    - Mid range engines to Melrose Park, IL
    - Reduced employees at Huntsville, AL

![Engine Installations Chart]

<table>
<thead>
<tr>
<th></th>
<th>CY 2014</th>
<th>FCST 2015</th>
<th>FCST 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cummins</td>
<td>28,729</td>
<td>32,767</td>
<td>23,552</td>
</tr>
<tr>
<td>Navistar</td>
<td>48,690</td>
<td>54,001</td>
<td>52,437</td>
</tr>
</tbody>
</table>
North America

Medium Engine Developments

• Ford recently introduced their own 6.7 liter diesel which replaces the Cummins ISB 6.7 for MY 2016 F-650/F-750

• Daimler will introduced the 5 and 8 liter DD medium engine
  ▪ Sourced from Germany in 2016.
  ▪ Self manufactured by Detroit in 2018.

• Primarily due to the above, Cummins is expected to lose share on the ISB6.7 liter engine moving forward
North America

Cummins Class 8 Engine Installations

- Cummins offers a 12 liter natural gas engine
- Put the 15 liter gas on hold
- Ultimately, Daimler will supersede the Cummins ISX15 with the DD15
- PACCAR aggressively promoting their heavy engine platforms
  - MX-13 as an alternative to the ISX15.
  - MX-11 will compete with the ISX12.
- Navistar will continue to source their 15 liter engine from Cummins.
North America

Class 8 Engine Installations

Cummins
Daimler
Navistar
Other
PACCAR
Volvo
North America

Natural Gas Engine Installations (Trucks > 6 Ton)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15,559</td>
<td>22,790</td>
<td>22,448</td>
<td>24,546</td>
<td>25,792</td>
<td>27,603</td>
<td>27,542</td>
</tr>
</tbody>
</table>

Power Systems Research

Powerful Possibilities™
North America

Automated Manual Transmissions - AMT

• Currently, one-third of class 8 trucks are equipped with AMT. Volvo/Mack, Detroit have captive AMT powertrains.
• Cummins has a partnership with Eaton.
• Navistar MF 13 and PACCAR MX 13 engines are also primarily mated with Eaton transmissions.
• The OEMs estimate a 5% improvement in fuel economy with AMTs compared with traditional manual transmissions.
North America

Engine Displacement Trends

• Market is shifting from higher displacement engines
• Continues to shift from 15 & 16 liter to 13 liter engines driven in part to the GHG emission regulations
• Higher hp. 13 Liter engines continue to gain popularity
• With the expansion of the Panama Canal, expect more regional distribution of goods
• However, 15 liter engines will always play a significant role in class 8 applications

Class 8 Engine Displacement Trends

<table>
<thead>
<tr>
<th></th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 Liter</td>
<td>45.6%</td>
<td>46.2%</td>
<td>45.9%</td>
</tr>
<tr>
<td>15 &amp; 16 Liter</td>
<td>54.4%</td>
<td>53.8%</td>
<td>54.1%</td>
</tr>
</tbody>
</table>

Power Systems Research
Powerful Possibilities™
Manufacturers Strategies & Trends
Europe
includes Russia
Europe

European Truck Production – GVWR > 6 Ton

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>506,465</td>
<td>517,001</td>
<td>584,947</td>
<td>649,427</td>
<td>683,788</td>
<td>695,078</td>
<td>706,199</td>
</tr>
</tbody>
</table>

Power Systems Research
Europe

Medium & Heavy Truck Production and Forecast Market Share

<table>
<thead>
<tr>
<th>Company</th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNH Industrial</td>
<td>10.1%</td>
<td>9.7%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Daimler</td>
<td>23.6%</td>
<td>21.7%</td>
<td>23.3%</td>
</tr>
<tr>
<td>KAMAZ</td>
<td>7.5%</td>
<td>5.8%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Other</td>
<td>7.6%</td>
<td>6.7%</td>
<td>7.7%</td>
</tr>
<tr>
<td>PACCAR</td>
<td>10.0%</td>
<td>9.5%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Volkswagen</td>
<td>27.2%</td>
<td>26.5%</td>
<td>26.8%</td>
</tr>
<tr>
<td>Volvo</td>
<td>16.5%</td>
<td>16%</td>
<td>16.3%</td>
</tr>
</tbody>
</table>
Europe

Medium and Heavy Truck Engine Installations

<table>
<thead>
<tr>
<th>Company</th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cummins</td>
<td>2.5%</td>
<td>2.7%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Daimler</td>
<td>10%</td>
<td>10.4%</td>
<td>23.5%</td>
</tr>
<tr>
<td>FPT Industrial</td>
<td>10.5%</td>
<td>21.2%</td>
<td>23.1%</td>
</tr>
<tr>
<td>KAMAZ</td>
<td>6.8%</td>
<td>7.4%</td>
<td>24.8%</td>
</tr>
<tr>
<td>Others</td>
<td>4.3%</td>
<td>3.5%</td>
<td>7.7%</td>
</tr>
<tr>
<td>PACCAR</td>
<td>8.1%</td>
<td>7.9%</td>
<td>24%</td>
</tr>
<tr>
<td>Volkswagen (MAN/Scania)</td>
<td>16.3%</td>
<td>16.6%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Volvo</td>
<td>4.6%</td>
<td>5.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Yaroslavl</td>
<td>5.3%</td>
<td>4.3%</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

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Powerful Possibilities™
Europe

Market Trends

• With the acquisition of both MAN and Scania, Volkswagen is the largest heavy truck manufacturer in Europe
• Kamaz is currently installing Euro IV Daimler 13 liter engines under their JV agreement. Kamaz plans to self manufacture the 13 liter engine using Leibherr technology for Euro V
• OEMs such as Iveco are consolidating operations to eliminate redundancies within their manufacturing operations
• OEMs will continue to shift production from Western Europe closer to their export markets and low cost production countries
Manufacturers Strategies & Trends
South Asia

Includes Australia, India, Indonesia, Malaysia, Philippines and Thailand.
South Asia

South Asian Truck Production – GVWR > 6 Ton

South Asia

Power Systems Research
Powerful Possibilities™
South Asia

OEM Truck Production – GVWR > 6 Ton

CY 2014

- Tata: 130,514
- Daimler: 57,748
- Toyota (Hino): 57,079
- Ashok Leyland: 51,556
- Volvo: 43,879
- Isuzu: 15,250
- Other: 10,906
- Volkswagen: 2,655
- PACCAR: 2,468
- CNH Industrial: 1,833
South Asia

Engine Manufacturer Production – GVWR > 6 Ton

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>CY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tata Cummins</td>
<td>95,000</td>
</tr>
<tr>
<td>Toyota (Hino)</td>
<td>57,079</td>
</tr>
<tr>
<td>Other</td>
<td>51,180</td>
</tr>
<tr>
<td>Ashok Leyland</td>
<td>50,243</td>
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<tr>
<td>Volvo</td>
<td>42,630</td>
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<td>Tata</td>
<td>42,181</td>
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<td>Isuzu</td>
<td>18,611</td>
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<tr>
<td>Daimler</td>
<td>12,328</td>
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<tr>
<td>Volkswagen (MAN/Scania)</td>
<td>2,655</td>
</tr>
<tr>
<td>FPT Industrial</td>
<td>1,981</td>
</tr>
</tbody>
</table>
South Asia

Trends

• Significant countries include, Australia, India, Indonesia, Malaysia, Philippines and Thailand.
• Low cost countries where production is starting to serve various export markets as opposed to local assembly only.
• New truck platforms recently introduced include:
  ▪ Hyundai Xcient
  ▪ UD Quester.
  ▪ Ashok Leyland U truck
  ▪ Tata Prima
• The majority of the brands produced are from Japan and South Korea.
Manufacturers Strategies & Trends
China
Greater China

Greater China Truck Production – GVWR > 6 Ton

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2014</td>
<td>998,166</td>
</tr>
<tr>
<td>CY 2015</td>
<td>941,581</td>
</tr>
<tr>
<td>CY 2016</td>
<td>972,384</td>
</tr>
<tr>
<td>CY 2017</td>
<td>999,550</td>
</tr>
<tr>
<td>CY 2018</td>
<td>1,049,959</td>
</tr>
<tr>
<td>CY 2019</td>
<td>1,018,920</td>
</tr>
<tr>
<td>CY 2020</td>
<td>1,045,304</td>
</tr>
</tbody>
</table>
Greater China

Medium and Heavy Truck Production Forecast Market Share

<table>
<thead>
<tr>
<th>Company</th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beiqi Foton</td>
<td>11.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNHTC (Sinotruk)</td>
<td>11.5%</td>
<td>14.9%</td>
<td></td>
</tr>
<tr>
<td>Dongfeng</td>
<td></td>
<td>22.8%</td>
<td>22.7%</td>
</tr>
<tr>
<td>FAW</td>
<td></td>
<td>16.9%</td>
<td>16.9%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>22.9%</td>
<td>23.4%</td>
</tr>
<tr>
<td>Weichai (Shaanxi)</td>
<td></td>
<td>10.6%</td>
<td></td>
</tr>
</tbody>
</table>

Note: CY 2014 and CY 2015 values are given for reference.
Greater China
Medium and Heavy Truck Engine Installations

<table>
<thead>
<tr>
<th>Company</th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNHTC</td>
<td>10.0%</td>
<td>9.8%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Cummins</td>
<td>12.8%</td>
<td>13.0%</td>
<td>13.2%</td>
</tr>
<tr>
<td>Dongfeng</td>
<td>7.6%</td>
<td>7.0%</td>
<td>7.2%</td>
</tr>
<tr>
<td>FAW</td>
<td>13.2%</td>
<td>13.3%</td>
<td>13.4%</td>
</tr>
<tr>
<td>Other</td>
<td>11.3%</td>
<td>12.3%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Weichai Power</td>
<td>30.8%</td>
<td>29.6%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Yuchai</td>
<td>14.2%</td>
<td>15.1%</td>
<td>14.8%</td>
</tr>
</tbody>
</table>
Greater China

Trends

• Installations of natural gas engines within the MHCV segment has grown significantly.
  ▪ Approximately 50k buses and 40k trucks were produced with natural gas engines in 2014.
  ▪ 97% of the natural gas engines are CNG.
• Euro IV emission regulations for diesel powered trucks have been implemented, however only around 10% of new vehicles meet the standards.
  ▪ Higher cost of emission technology.
  ▪ Availability of low sulfur fuel.
  ▪ Smaller OEM’s will not survive over the longer term.
Manufacturers Strategies & Trends
South America
South America

South American Truck Production – GVWR > 6 Ton

South America
South America

Medium & Heavy Truck Production and Forecast Market Share

- **CNH Industrial**
  - CY 2014: 8.6%
  - CY 2015: 8.4%
  - CY 2020: 8.6%

- **Daimler**
  - CY 2014: 24.5%
  - CY 2015: 23.8%
  - CY 2020: 25.0%

- **Ford**
  - CY 2014: 12.8%
  - CY 2015: 14.3%
  - CY 2020: 14.5%

- **Other**
  - CY 2014: 3.4%
  - CY 2015: 3.7%
  - CY 2020: 3.9%

- **Volkswagen**
  - CY 2014: 35.0%
  - CY 2015: 35.9%
  - CY 2020: 36.9%

- **Volvo**
  - CY 2014: 13.9%
  - CY 2015: 13.4%
  - CY 2020: 13.4%
South America

Medium and Heavy Truck Engine Installations

- Cummins
- Daimler
- FPT Industrial
- MWM
- Other
- Volkswagen (MAN/Scania)
- Volvo

<table>
<thead>
<tr>
<th>Year</th>
<th>Cummins</th>
<th>Daimler</th>
<th>FPT Industrial</th>
<th>MWM</th>
<th>Other</th>
<th>Volkswagen (MAN/Scania)</th>
<th>Volvo</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2014</td>
<td>25.2%</td>
<td>24.3%</td>
<td>8.4%</td>
<td>16.1%</td>
<td>3.2%</td>
<td>13.5%</td>
<td>9.9%</td>
</tr>
<tr>
<td>CY 2015</td>
<td>25.1%</td>
<td>24%</td>
<td>8.6%</td>
<td>16.6%</td>
<td>3.3%</td>
<td>13%</td>
<td>9.6%</td>
</tr>
<tr>
<td>CY 2020</td>
<td>24.5%</td>
<td>23.5%</td>
<td>8.7%</td>
<td>16.9%</td>
<td></td>
<td>13%</td>
<td>9.5%</td>
</tr>
</tbody>
</table>
South America

Trends

- A number of Chinese OEMs plan to establish manufacturing in Brazil starting this year.
- The OEMs include Foton, CNHTC (Sinotruck) and Shaanxi (Shacman). JAC is also assembling heavy trucks in Venezuela.
- MAN Latin America now produces the VW branded trucks which include the MAN D08 engine produced by MWM Motors.
- VW also installing the Foton Cummins ISF engines sourced from China.
Manufacturers Strategies & Trends
Japan/South Korea
Japan & Korea

Japan/Korea Truck Production – GVWR > 6 Ton

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2014</td>
<td>362,761</td>
</tr>
<tr>
<td>CY 2015</td>
<td>365,261</td>
</tr>
<tr>
<td>CY 2016</td>
<td>350,542</td>
</tr>
<tr>
<td>CY 2017</td>
<td>362,699</td>
</tr>
<tr>
<td>CY 2018</td>
<td>371,993</td>
</tr>
<tr>
<td>CY 2019</td>
<td>379,867</td>
</tr>
<tr>
<td>CY 2020</td>
<td>386,665</td>
</tr>
</tbody>
</table>
Japan & Korea

Medium & Heavy Truck Production and Forecast Market Share

<table>
<thead>
<tr>
<th>Company</th>
<th>CY 2014</th>
<th>CY 2015</th>
<th>CY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daimler</td>
<td>19.0%</td>
<td>19.2%</td>
<td>19.5%</td>
</tr>
<tr>
<td>Isuzu</td>
<td>42.2%</td>
<td>42.5%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>3.6%</td>
<td>3.1%</td>
<td></td>
</tr>
<tr>
<td>Tata</td>
<td>2.8%</td>
<td>2.6%</td>
<td></td>
</tr>
<tr>
<td>Toyota (Hino)</td>
<td>26.8%</td>
<td>26.6%</td>
<td></td>
</tr>
<tr>
<td>Volvo</td>
<td>5.6%</td>
<td>5.6%</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

Power Systems Research

Powerful Possibilities™
Japan & Korea

Medium and Heavy Truck Engine Installations

Daimler
FPT Industrial
Isuzu
Other
Toyota (Hino)
Volvo

CY 2014: 7.4%, 11.7%, 42.2%, 6.3%, 27.8%, 4.6%
CY 2015: 7.4%, 11.9%, 42.5%, 5.5%, 27.7%, 5.6%
CY 2020: 7.6%, 12.1%, 42.1%, 5.5%, 26.7%, 5.6%
Japan & Korea

Trends

• Establish assembly closer to traditional export markets.
  ▪ Avoid local tariffs
  ▪ Low cost manufacturing
  ▪ Increasing export competition from China
• Developing low cost trucks
  ▪ UD Quester
  ▪ Hyundai Xcient
• Global vehicle and engine platforms
  ▪ Daimler
  ▪ Volvo
Key Takeaways

• Globalization
  ▪ Common components
  ▪ More local assembly
  ▪ Fewer stand alone OEMs
  ▪ Low cost trucks
  ▪ Low cost production countries

• Continued focus on emission regulations

• Alternate fuels
  ▪ Natural Gas
  ▪ Hybrid
  ▪ Electric

• North America
  ▪ Vertical integration
  ▪ Lower engine displacements

• China and India
  ▪ Transition to heavier trucks
  ▪ Higher displacement engines
  ▪ Higher quality low cost trucks and engines
  ▪ Joint ventures and mergers
Q&A
Thank You!

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Chris and Marilyn will be at the Mid-America Truck Show next week!