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International Electronics Manufacturing Initiative

2008-9 PEG Review – “Automotive”

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Advancing manufacturing technology

Preliminary Business Data

(Provided by Prismark)

- Automotive electronics equipment production was estimated to be \$75Bn in 2006, growth of 4.2% compared to 2005.
- Growth was primarily driven last year by increasing global vehicle production. Overall, 66.4M light vehicles (including passenger cars, minivans, and light trucks) were produced last year; an increase of 4% compared to 2005.
- Over the next five years, automotive electronics equipment production is expected to increase at a CAAGR of about 4.2%, driven by increases in vehicle unit shipments as well as by greater electronics content per vehicle.
- Global vehicle production in 2006 was highlighted by a staggering 28% growth in China.
- The mature Japanese market also posted an impressive 7% year-on-year growth.
- For the rest of Asia growth was more modest, but was buoyed up by strong activity in India and Thailand.
- European production was historically consistent at 2.6% growth.
- The only decline came from the Americas, where light vehicle production fell by 1.5%.
- The weakness in American production is primarily a function of continued overcapacity. Automotive utilization capacity is roughly 80% and a much-needed downsizing has been hampered by restrictive labor union agreements. Furthermore, the picture is expected to worsen, since incentives for car buyers over the past five years have kept sales high at the expense of future demand.

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- **Automotive Trends:**
 - **Increased demand for Hybrid Vehicles with gas prices over \$3.00 per gallon (U.S) and oil prices at all-time high**
 - Larger Hybrid Vehicles are being introduced (SUV's)
 - Thermal management issues are a top priority
 - **Increased demand for Diesel Vehicles (Europe)**
 - Hybrid Diesels could be next
 - Stricter emissions controls, quieter engines, and higher performance require better electronics
 - High voltage applications for better high pressure control
 - Extreme electronics operating conditions in heavy duty market
 - **Increased demand for Diesel (and Bio-Diesel) Vehicles in USA**
 - European OEMs starting to import diesel engines to US, but require stricter emission electronics

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- **Automotive Trends:**
 - **Increased demand for Sensors in Automotive Products**
 - **Active safety systems**
 - **Collision Avoidance products**
 - **Driver monitoring**
 - **Forward, side and rear obstacle monitoring**
 - **Lane departure monitoring**
 - **Remote Tire pressure monitoring**
 - **Wheel speed, Yaw rate, roll over**
 - **Occupant detection (Safety Systems)**
 - **Crash event sensors**
 - **“Air” and vapor chemical sensors**
 - **Thermal, optical and ultrasonic sensors for comfort and security**

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Automotive Trends:

- **Increased demand for Entertainment Products**
 - **Satellite Radio**
 - **Television in the car (analog and digital)**
 - **DVD players for multi passenger viewing**
 - **Navigation Systems with hard drives**
 - **Larger Displays and more of them for individual gaming/viewing**
 - **Easier ways to connect consumer electronics to the vehicle**
 - **MP3**
 - **PDA**
 - **Hands free phones**
 - **Bluetooth**
 - **PCs**
- **Increased demand for more electronics per vehicle**
 - **More electronics boxes per vehicle or an up-integration of functions per box**
- **Constant demand for more functionality, reduced cost, smaller size, and less mass, less power**
- **Continued rollout of Pb free products**



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Automotive Trends:

- **Increased software control with OEM specific communication protocols**
 - More memory requirements
 - Multiple microprocessors
 - Vehicle monitoring expected while electronics are in “sleep mode”
 - Keyless applications, Keyfob communication with vehicle, State of safety monitoring
 - Sleep mode power consumption is critical
- **Emerging industry guidelines for software “modules”**
 - Software as a product
 - Reused software between OEMs and different controllers
 - “New” players in automotive OEM software market
 - MS Sync, as an example

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Automotive Trends:

- **Less than \$5000 car**
 - Low cost, emerging markets demanding a “low content” car with traditional functions
 - Instrument cluster, radio, engine control, security system, . . .
 - Reliability expectations still being defined
- **Automotive electronics**
 - Continues to grow, continues to diversify, reliability and cost are still main drivers



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