Motion Controls: A Global Market Update

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Senior Analyst – Motor Controls
IHS
Presentation Overview

- About (formerly IMS Research)
- Research Methodology
- Motion Controls
  - Global Market Statistics
  - Global Market Trends
  - Regional Market Trends
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Research Methodology

**Base Year Data (2012): Primary Research**

- Collect Sales Revenue & Unit Shipment Data from Suppliers
- Incorporate Quarterly Tracker Data
- Interview Strategic Marketing Personnel & Product Managers

**Forecasting (2013 – 2017): Primary & Secondary Research**

- GDP & IP Forecasts from IHS Global Insights
- Machinery Production Forecasts from IHS Technology
- Insight from Market Discussions on Under/Over Performing Market Segments

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Research Scope - Products

• Servo Motors
  o Integrated feedback device
  o Position control at all possible speeds
  o Excludes DC Brushless

• Servo Drives

• Position Control Hardware

• Software & Services

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## Research Methodology - Markets

### GMC Market
Motors and drives used with a general motion controller

### CNC Market
Motors and drives used with a CNC (a controller that programs in G-code and programs movements that will create a discrete part)

<table>
<thead>
<tr>
<th>General Task</th>
<th>Computerized Numerical Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control of Acceleration, Speed and Position of single motors or multiple coordinated electrical motors independent of the final application</td>
<td>Special purpose controller for controlling the processing of material on machine tools</td>
</tr>
<tr>
<td>Typical machinery applications</td>
<td>Metal Cutting machine tools (milling, turning, grinding, tapping and drilling) Metal Forming machine tools (tube bending) Woodworking, Glass &amp; Stone processing machine tools (milling, turning, grinding and drilling)</td>
</tr>
<tr>
<td>Typical supplier</td>
<td>Relatively small number of specialized suppliers like Siemens, Fanuc, Mitsubishi Electric, Heidenhain, Bosch Rexroth, GSK, KND, etc.</td>
</tr>
<tr>
<td>Wide range of suppliers worldwide</td>
<td></td>
</tr>
</tbody>
</table>

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The World Market for Motion Controls

2012 Motion Control Market
Product Type Breakdown

$12 Billion Revenues

Servo Motors
$4,668.0
38.8%

Servo Drives
$4,524.7
37.7%

Software & Services
$798.5
6.6%

Position Control Hardware
$2,024.8
16.9%

cltncl
GMC market
$6,789.9
56.5%

CNC market
$5,226.2
43.5%

*percentages are in terms of revenues

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Top 6 industries accounted for over 70% of market revenues in 2012

- Machine Tools - Metal Cutting: 34.0%
- Machine Tools - Metal Forming: 10.6%
- Materials Handling Equipment: 8.6%
- Packaging & Labeling Machinery: 4.2%
- Robotics: 4.4%
- Rubber & Plastics Machinery: 4.2%
- Semiconductor Machinery: 5.3%

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Volatile industries account for over 50% of market revenues

- Machine Tools - Metal Cutting: 34.0%
- Machine Tools - Metal Forming: 10.6%
- Materials Handling Equipment: 4.2%
- Packaging & Labeling Machinery: 8.6%
- Robotics: 4.4%
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Volatile Market Growth

2009 Market Declines

2010 Strong Recovery

> Pre-Recession Value

2012 Market Declines

2013 Low Growth

2014 and 2015 Forecast Market Recovery

*Semiconductor Machinery growth >80% in 2010

Annual Growth Rates

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Correlation between Machinery & Motion

Annual Market Growth - Source: IHS

- 2008 to 2012
- 2013 to 2017

Linear (2008 to 2012)

$y = 1.3574x - 0.001$

$R^2 = 0.9382$

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By Region
(excluding software & services)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>$1.8bn</td>
<td>5.3%</td>
</tr>
<tr>
<td>EMEA</td>
<td>$4.2bn</td>
<td>4.8%</td>
</tr>
<tr>
<td>China</td>
<td>$2.1bn</td>
<td>9.2%</td>
</tr>
<tr>
<td>Rest of Asia</td>
<td>$1bn</td>
<td>8.0%</td>
</tr>
<tr>
<td>Japan</td>
<td>$2.2bn</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

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Regional Trends
(forecasts in constant dollars at the 2012 rates of exchange)

EMEA
- European Sovereign Debt Crisis, decreased import demand from China, exchange rate results in market decline of ~ 4% for motion in 2012.
- Another year of declines in GDP and machinery production in Eurozone in 2013, producing a relatively flat year for the motion-control market.
- Eurozone emerges from recession in 2014 and motion-control market rebounds.

Americas
- Bright spot in 2012, with nearly 6% growth.
- Growth in 2013 falls below 2%, constrained by machine tools and semiconductor sectors and, which are expected to recover and boost growth in 2014.

China
- Market decline of 21% due to overcapacity issues in 2012.
- Textile industry recovered and fueled growth in GMC market, while CNC market continued to decline in 2013.
- Forecasting double digit growth years for motion in 2014 and 2015.
Top Suppliers

1) SIEMENS
2) MITSUBISHI ELECTRIC
3) FANUC
4) Bosch Group
5) YASKAWA
6) Rockwell Automation

Top 6 suppliers accounted for nearly 60% of market revenues in 2012

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Servo Drives by Safety Feature - 2012

Unit Shipments (thousand)

- Safe Torque Off: 62.0%
- Safe Stop 1: 17.0%
- Safe Stop 2: 6.5%
- Safe Limited Speed: 8.5%
- Safe Brake Control: 10.5%
- Safe Speed Monitor: 5.0%

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