World Investment Casting Markets Review

CMRDI Cairo

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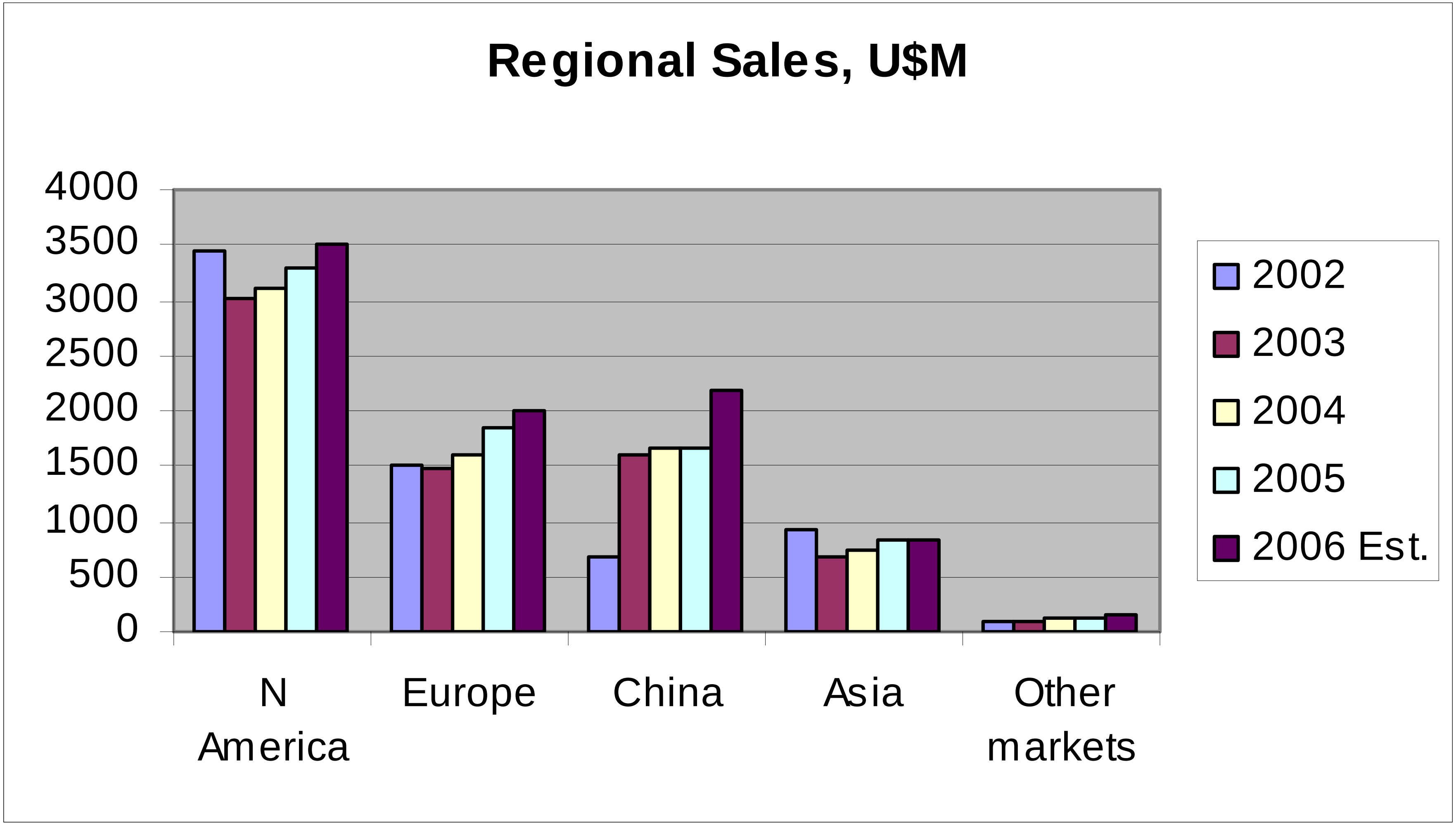
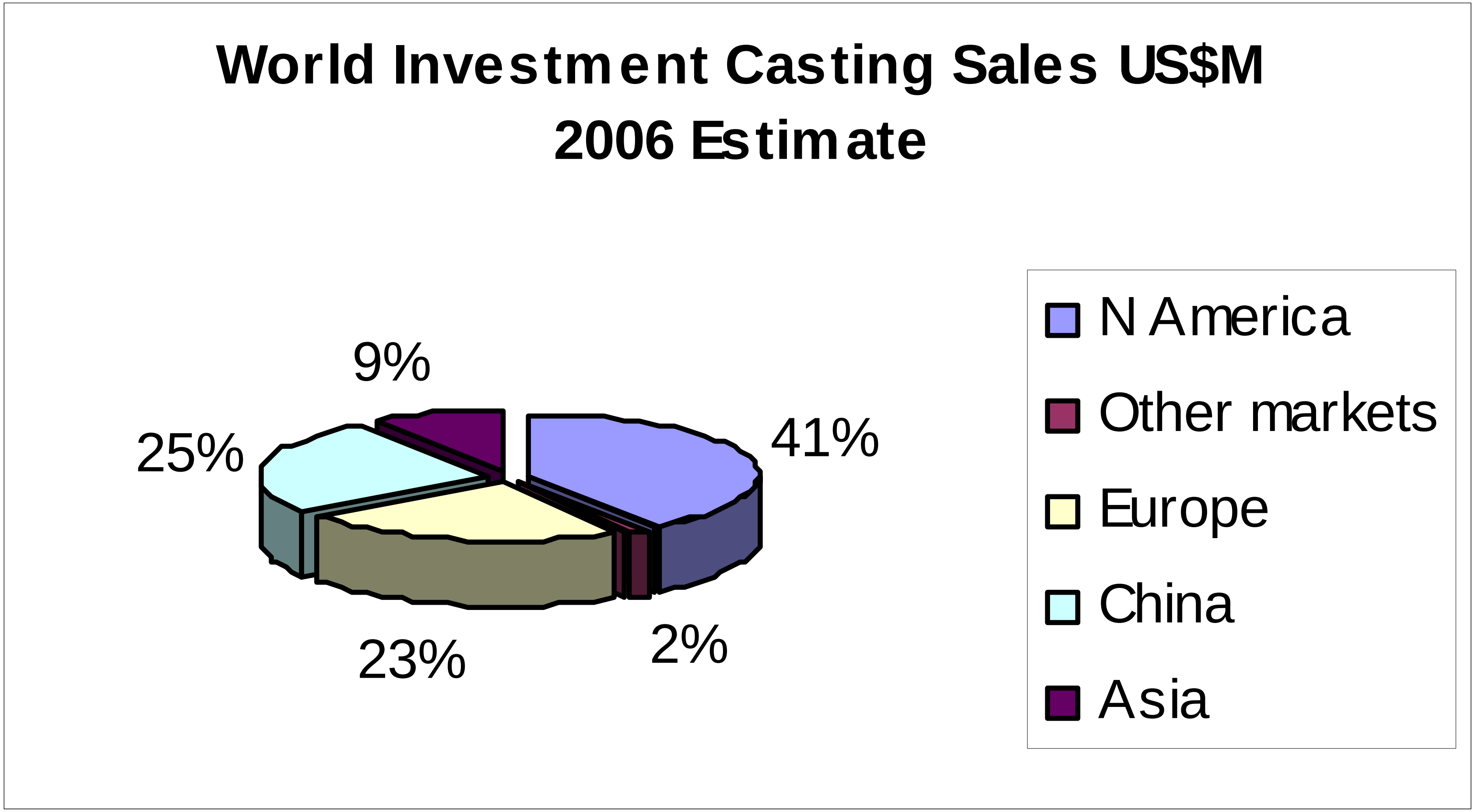
Global Investment Casting Sales – 2006

- 2006 total World sales US$8,600M (US$8.6B)
  - + 11% v 2005
- N America remains the largest single producer
  - market share falling
- Europe demonstrating good sales growth
  - led by strong aerospace performance
- Chinese market shares now overtaken European
- Total Asian sales now 34% world total

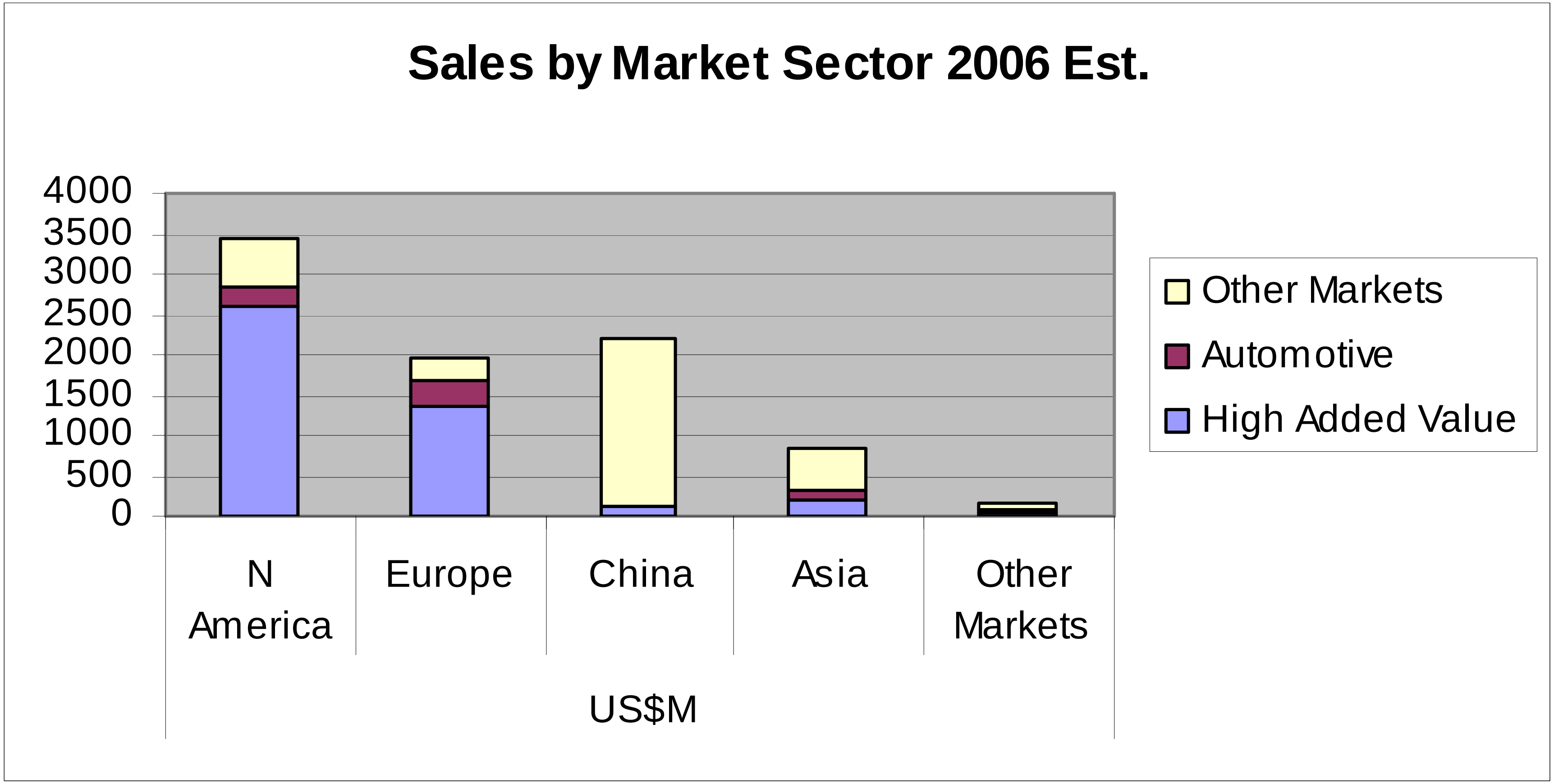
Sales by Region 2002 - 2006



World Sales by Region, 2006



Markets by Sector



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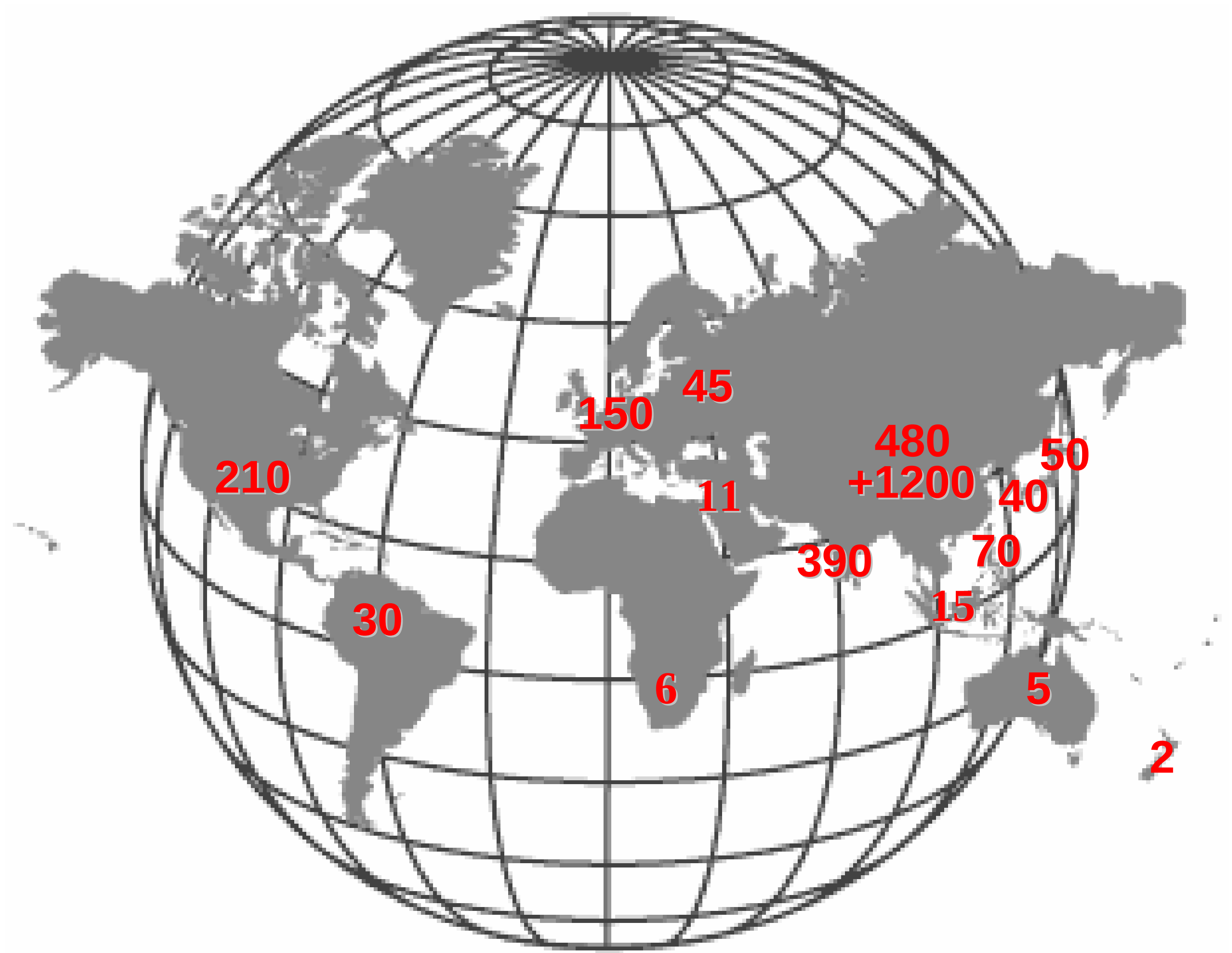
Distribution of Investment Casting Foundries



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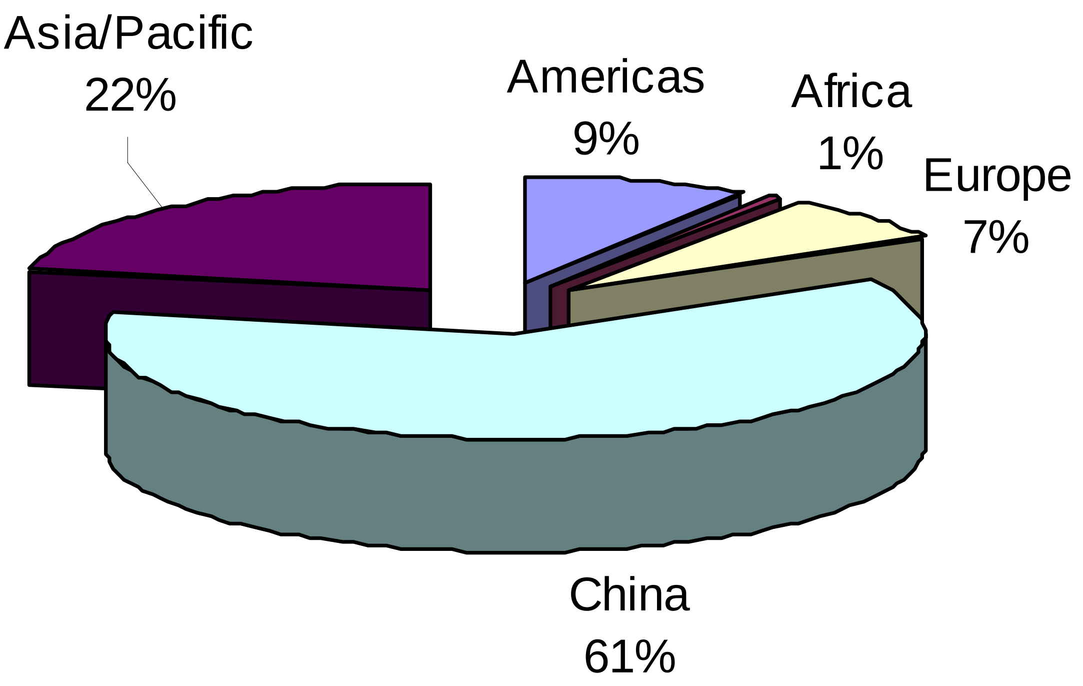
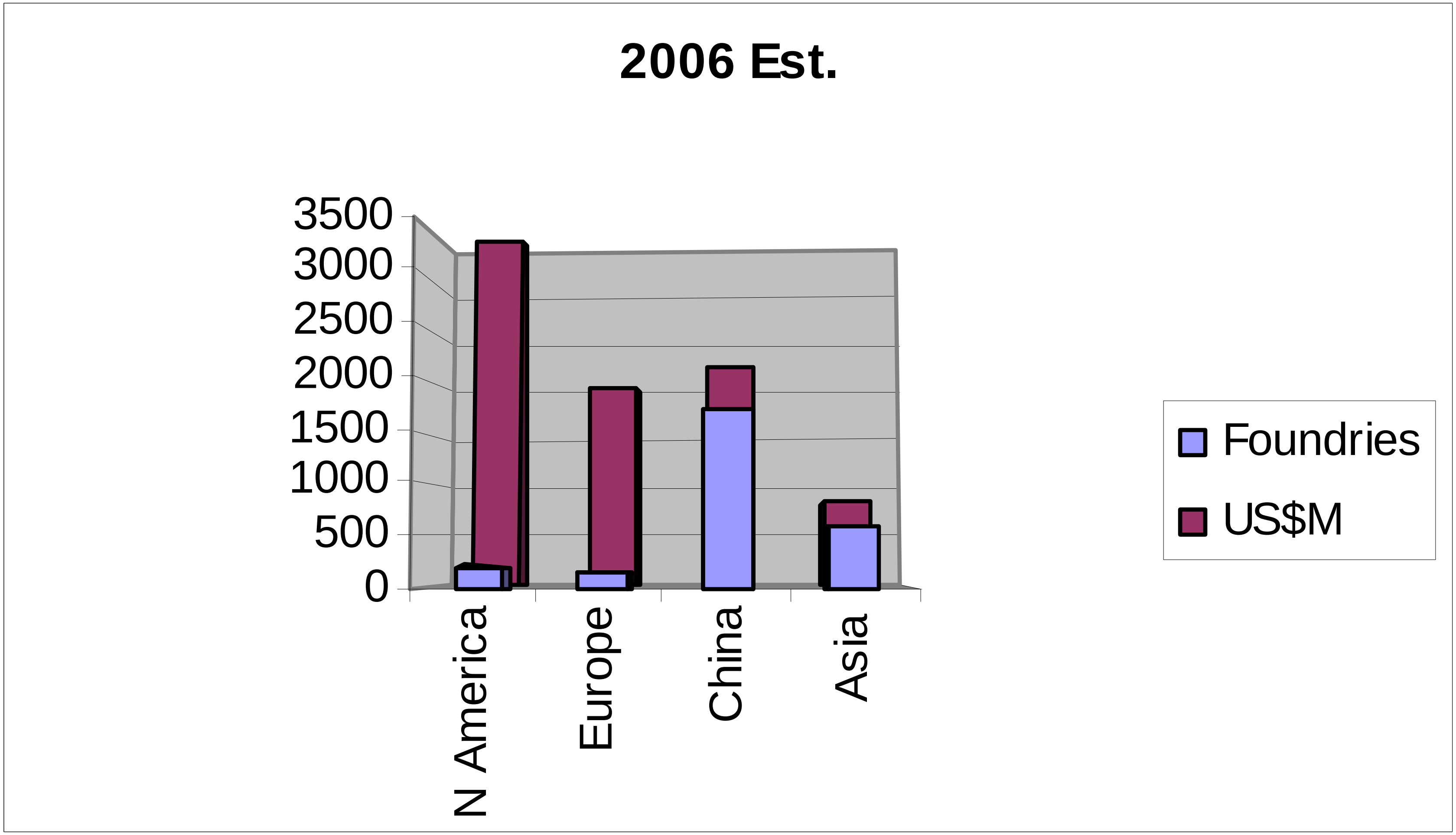


Sales:Foundries



Sales Value Index

	2004	2005	2006 Est
N America	14.60	15.71	16.67
Europe	7.75	11.63	13.61
China	0.89	0.99	1.30
Asia	1.23	1.37	1.38

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North America 2006

- 2006 Total Sales $3,500M
  - +6% v 2005
  - now back to 2002 levels
- Improved order books in all market sectors
- Aerospace very strong
  - Boeing Dreamliner sales leading the way
- Automotive growing market for new casting applications
  - driven by new emission standards and fuel efficiency
  - substantial increase in turbocharger sales for cars and trucks
- Factors influencing the market
  - industry consolidation
  - imports
  - availability and cost of raw materials e.g. Zircon
- Market expected to continue growth in 2007

Europe 2006

- 2006 Total Sales $2000M
  - +8% v 2005
- Growth based on high added value sales
  - European aerospace currently very strong
  - Airbus A380 delays increasing costs and threatening jobs
  - RR benefiting from Asian airline development
- Automotive mixed fortunes but overall steady
  - Turbo wheel sales remain very high, castings manufacturers at full capacity
- General commercial castings increasingly outsourced
  - some foundry closures
  - some foundries ‘managing’ imports
- Investment casting production in Central/Eastern European countries increasing
  - Czech Republic & Slovakia benefiting from automotive sales

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China

- 2006 sales estimated at US$2050M
  - +15% on 2005
- GDP growth at record high of 11.3% pa
- Compared with 2004, the output of 2005 decreased by 10% due to loss of low value sales
- 2006 showed a strong upward trend again after adjustment in supply and demand
- Domestic supply chain is developing (die-makers, equipment suppliers and materials suppliers) along with the research organizations
- Domestic automotive market now world's 2nd largest
  - investment castings for automotive a major and growing sector but not quantified separately

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Japan, Taiwan, Korea

- Japan - 2006 sales expected to be increased to US$440M
  - Automotive and industrial gas turbine the largest sectors at $130M each
  - Aerospace 11% of sales but falling
- Taiwan 2006 sales estimated +6% at US$270M
  - 50% commercial, 45% sports, 5% aerospace
- Korea 2006 anticipated sales increased to US$150M
  - 70% domestic sales

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India

- 390 investment casting units (12000 MT)
  - 12-18 large size foundries
  - grown by 30% in last 3 years
  - 210 investment casting units exporting product
- Product profile
  - Valves & Pumps 50%
  - Automobiles 30%
  - Armaments 10%
  - Industrial & Decorative Hardware 5%
  - Electronics, Medical, Machine tools, Turbine, Railway, Textile, Material Handling Equipment 5%

Other Markets

- Middle East
  - some significant foundries
  - no regional data known/available
- Australia/NZ – small market, 5 foundries
- South America – has the potential for a large industry
- S Africa
  - reasonable industry and known in world markets
- Russia – economy growing
  - has an established industry based on aerospace and commercial production
  - government initiative to combine all aerospace units to develop worldwide sales

Summary

- World sales of investment castings demonstrating good growth
- High added value castings benefiting industry earnings
- Commercial castings continue their drift to lower cost regions

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