



Forging Trends

North America

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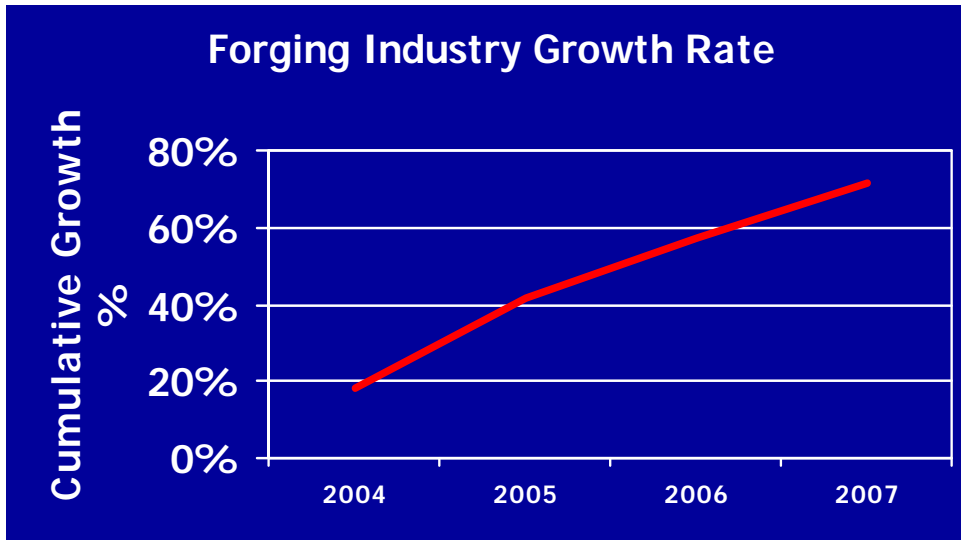
8 September 2008



Trends

- Introduction / Overview
- North American Economy
- North American Forging Industry
- Forging Markets
- Raw Materials
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Introduction / Overview



Growth rates are measured in sales dollars including mix, cost increases and surcharges

Source: FIA

- Following downturn in 2000-2003
- Steady growth through 2007
- Industry has followed market trends:
 - Commodities, oil
 - Transportation
 - Construction
 - Aerospace
- Though Auto and Light Truck sector has lagged
- Trend has remained strong through 2008

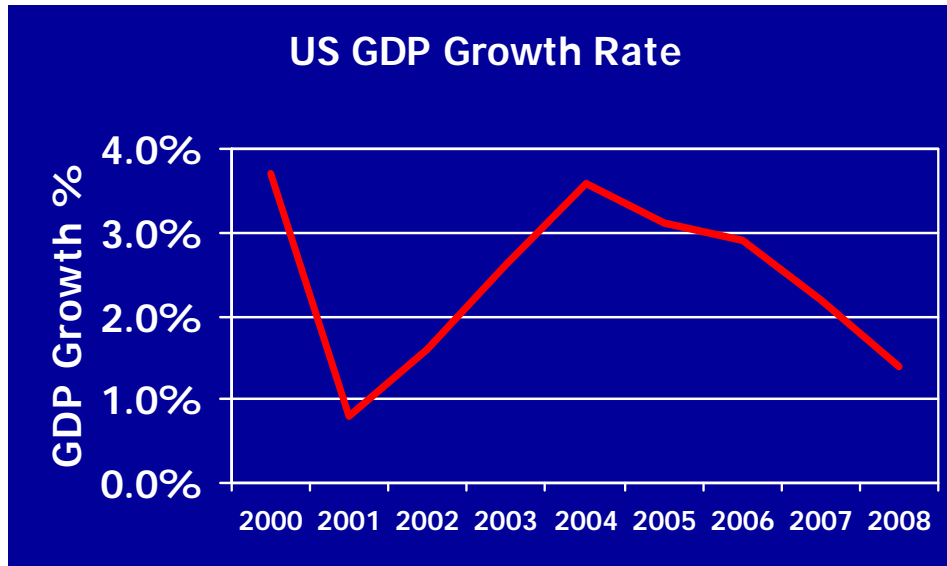


Economic Trends





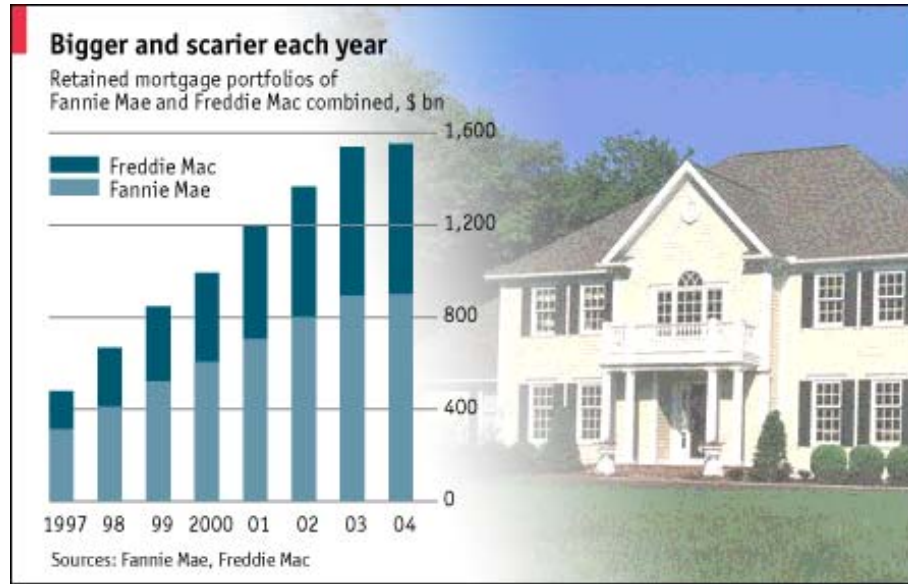
US Gross Domestic Product



Source: FIA

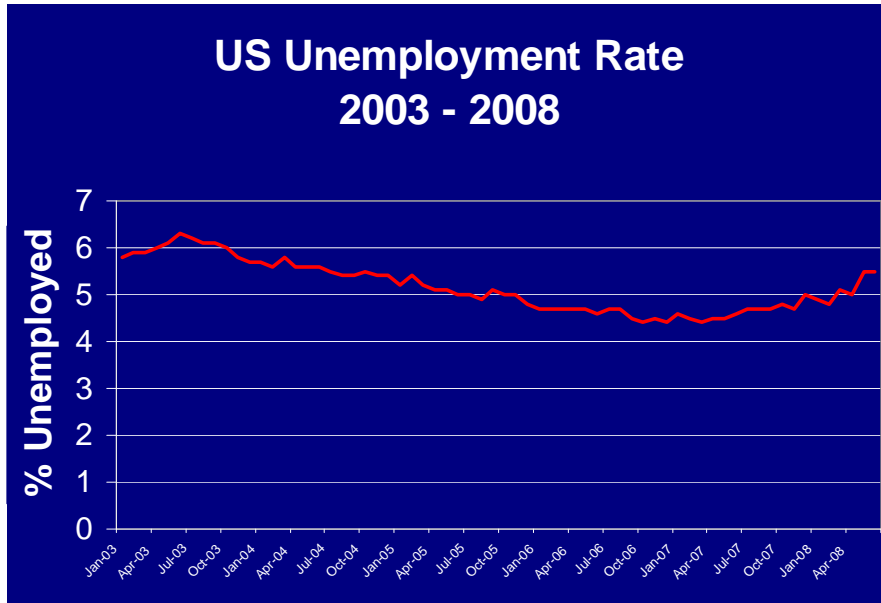
- Following dip in 2001
- Four strong years of GDP growth 2003-2007
- Slowed significantly since Oct. 2007; -0.2% in Q4
- 2008 Growth at about 1%
- “Recession”?

The “Sub Prime” Mess



- Housing market “bubble” through 2004
- Low interest rates – ARM’s
- Questionable lending practices
- Signs of weakness in 2005
- Full scale collapse in 2007
- Global impact on financial markets
- Regional bank failures
- Presidential election rhetoric
- Credit and Liquidity Crisis

US Unemployment

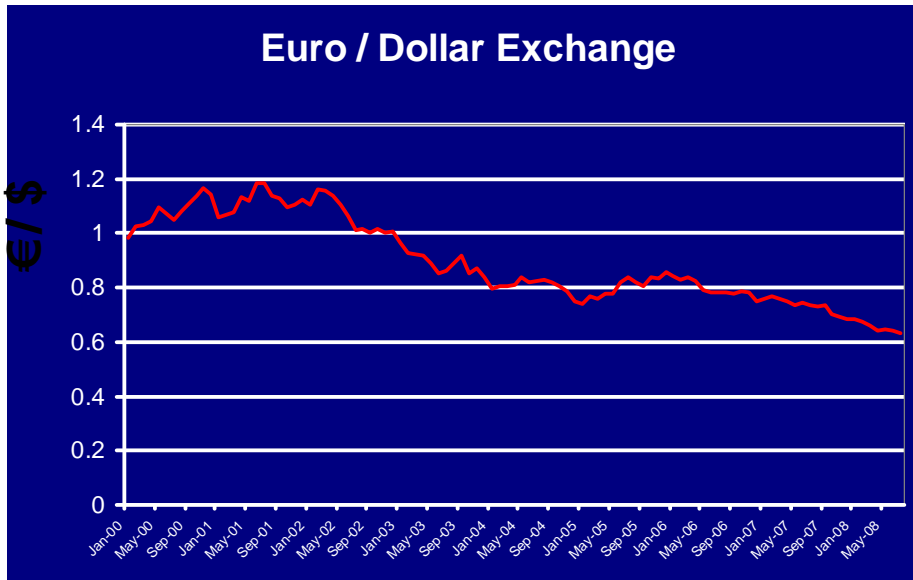


Source: US Dept of Labor

- After peak in 2003
- Steady fall in unemployment through 1Q07
- Rapid increase in 2008
- 6 straight months of net job losses (through June)
- 4 mm US manufacturing jobs lost since 2000 due to:
 - Productivity
 - Restructuring
 - Offshore
- Manufacturing proportion of US GDP dropping:
 - 15.4% - 1997, 12.9% - 2002
 - 11.7% - 2007
- “Think Globally”



The Weak Dollar



Source: Yahoo Finance

- 40% decline in value since 2002
- Increases in commodity prices
- Exaggerates the dramatic increase in oil
- Promotes further inflation prompting Fed to exercise monetary policy
- High cost of energy, raw materials
- Higher cost of imports
- But, more competitive in export market



Trade / Budget Imbalance

- Record US trade imbalance peaked in 2006 @ \$811 bn
- Increased dependency on foreign oil continues to inflate imports
- US government budget deficit financed by foreign borrowing
- Net effect is diversion of dollars offshore, away from domestic investment, and aggravation of inflationary pressures.



Canada / Mexico



- Major US trading partners – NAFTA
- Both impacted parallel to US economy
- Canadian dollar stronger relative to \$US, hurting trade
- Mexico economy – oil a key factor
- Manufacturing investment in Mexico





Summary – Impact on the Forging Industry

- Economic growth in North America stalled by
 - Banking / credit crisis
 - Increasing unemployment – manufacturing sector losses
 - culture change
 - High cost of oil, commodities, inflation
 - Consumer uncertainty

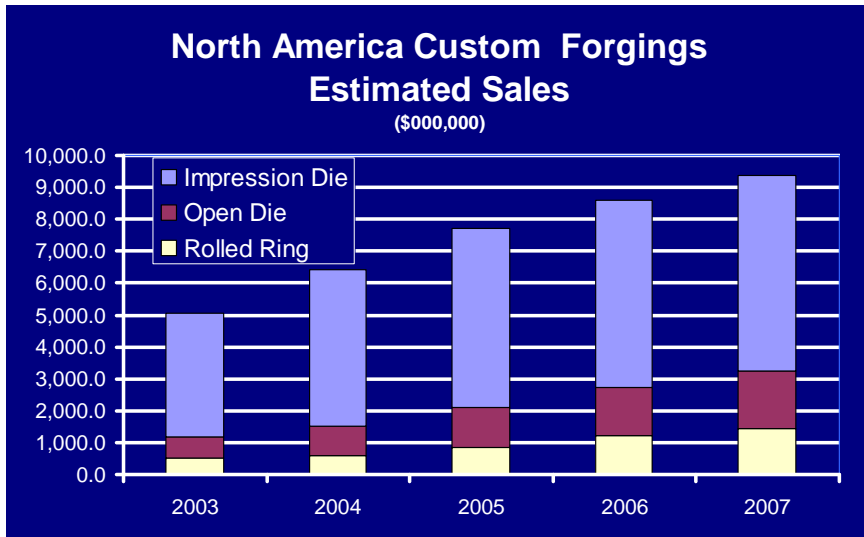
Thus the prospect for the economic situation is uncertain at best. The bright spot is the improved competitiveness of US manufacturing, including the forging industry, helped by the weak dollar, resulting in export strength.



North American Forging Industry Trends



Forging Industry Profile



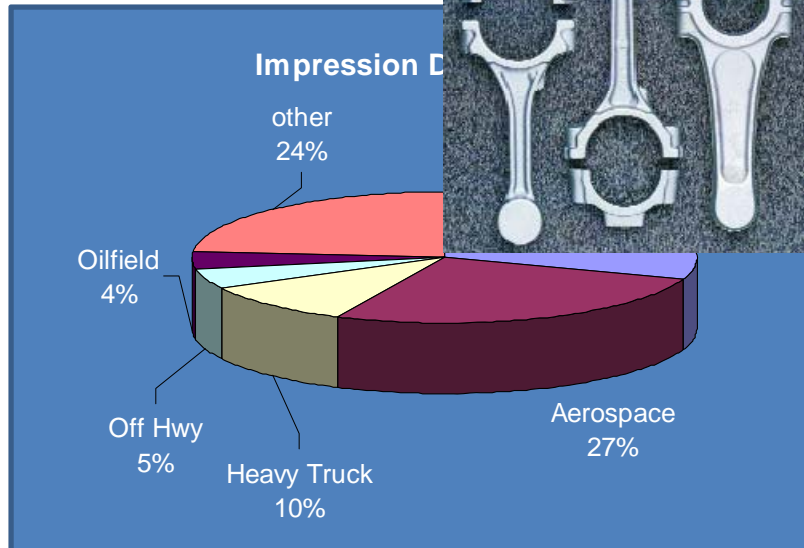
Source: FIA

- 2007 NA forging output estimated \$12-14 billion
- Total industry includes “custom”, captive (in-house) and standard / catalog products
- “Custom” forging companies –
 - 295 Operating plants; \$10.1 billion sales ('08 est.), 30,000 employees
- FIA – representative organization
 - 119 member companies, 87 supplier members, 19 academic members.
 - 58% of plants (170), 70% of shipments

Impression Die



- Estimated 2007 sales \$6.15 bn
- Largest producers include: Alcoa, American Axle and Manufacturing, FormTech, Hephaestus Holdings, Ladish, Thyssen Krupp, Wyman Gordon

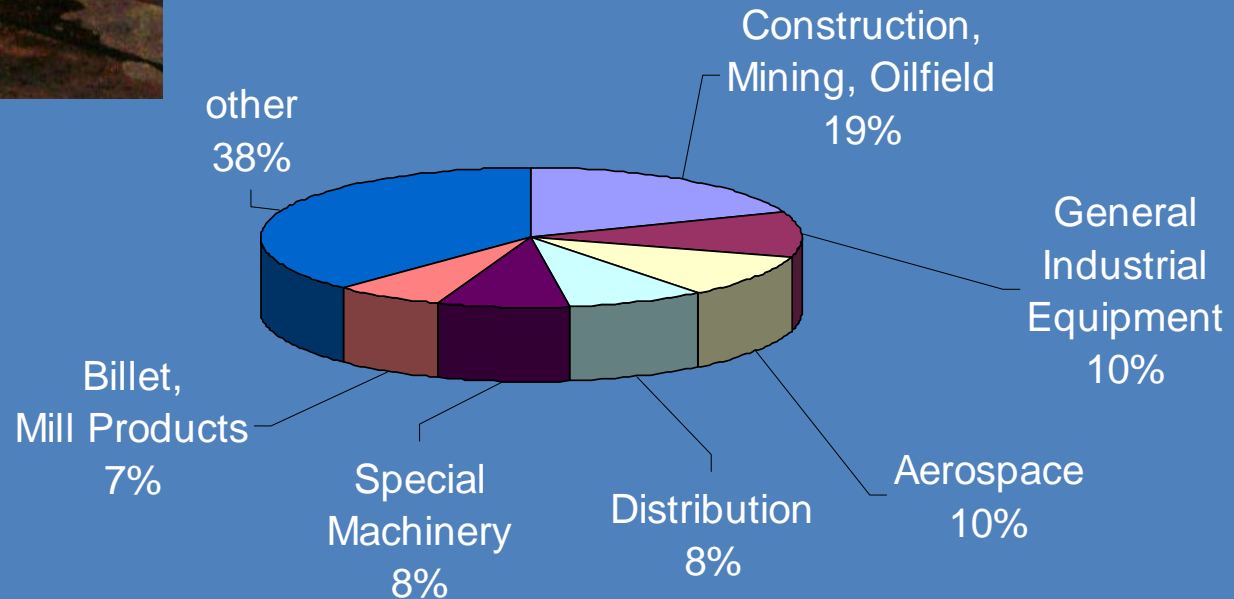


Open Die



- Estimated 2007 sales \$1.8 bn
- Largest producers include: Ellwood Group, Patriot Forge, Scot Forge, Standard Steel, Weber Metals

Open Die Sales by Market

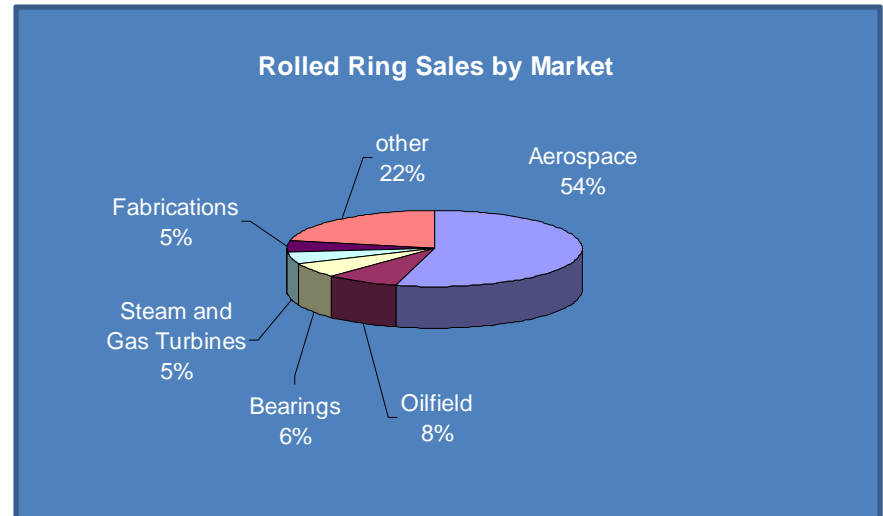




Rolled Rings



- Estimated 2007 sales of \$1.5 bn
- Largest producers include: Carlton Forge, Firth Rixson, FRISA, Ringmasters, Scot Forge





Market Trends

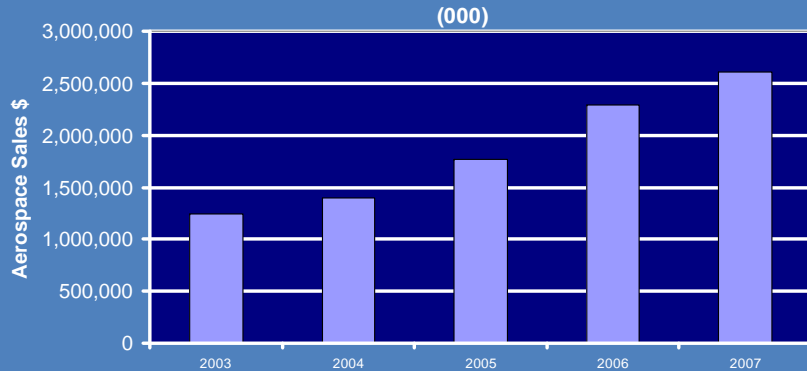


Major Market - Aerospace



- 2007 Sales ~ \$2.6 bn
- Rapid market growth since 2004; Largest market sector since 2006
- Strong booked demand through 2010, 28000 forecast commercial aircraft build over next 20 years
- DoD budget, business jets, VLJ
- Served by 38% of FIA members

Aerospace Forging Sales

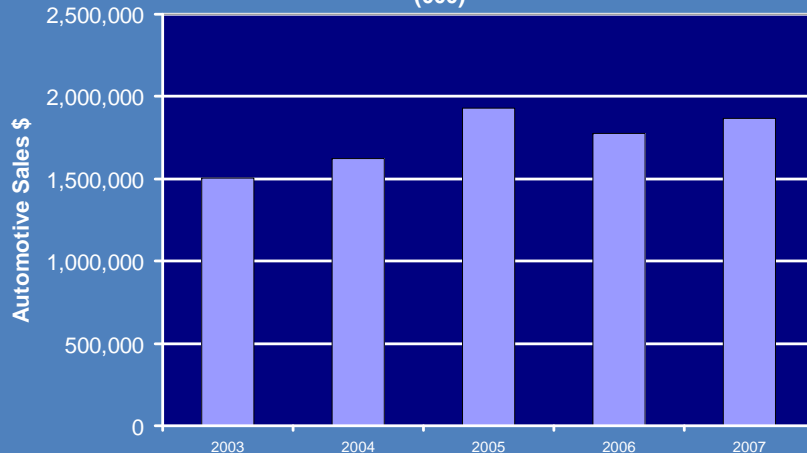


Major Market - Automotive



- 2007 sales ~ \$1.8 bn
- Traditionally largest market for impression die forgings
- 17mm units in 2005 but down 20% since; Forecasted at 14mm units in 2008
- Opportunities in restructuring and in export
- Served by 37% of FIA members

Automotive Forging Sales
(000)

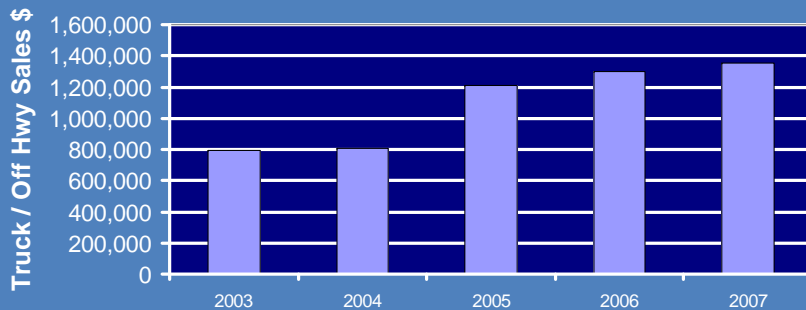


Major Market – Heavy Truck, Off Hwy



- 2007 sales ~ \$ 1.3 bn
- Truck market peaked in 2005/06 due to diesel emissions regulations for 2007
- Off highway strong through 2008/09 particularly in exports
- Served by 55% of FIA members

Heavy Truck / Off Hwy Forging Sales
(000)



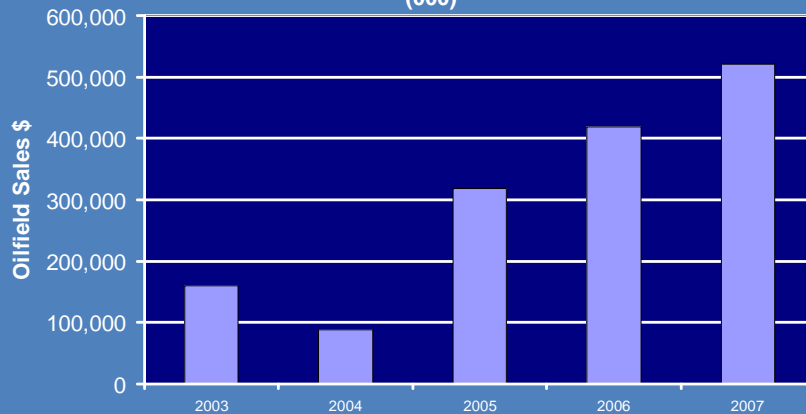
Major Market - Oilfield



- 2007 sales ~ \$0.6 bn
- Market resurgence in last 3-4 years
- High oil prices encouraging exploration
- US political debate over offshore and Alaska drilling
- Served by 35% of FIA members

Oilfield Forging Sales

(000)

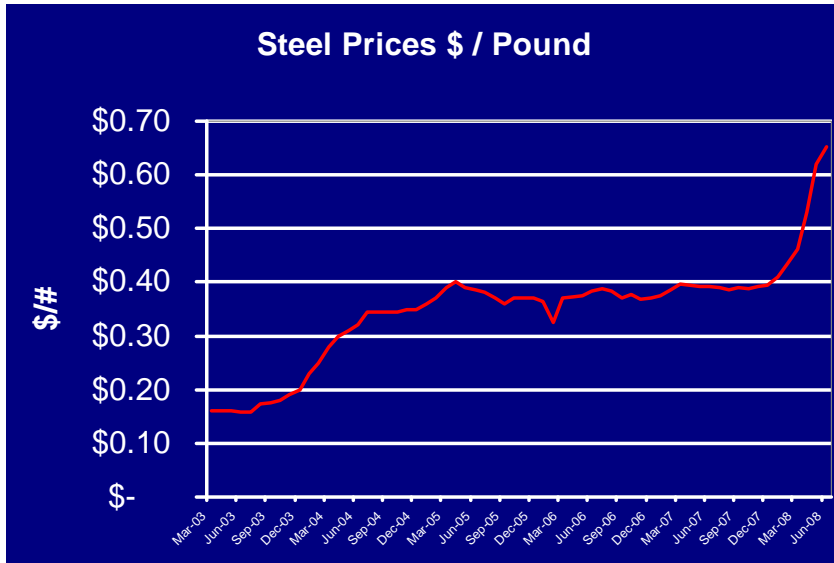




Raw Material Trends



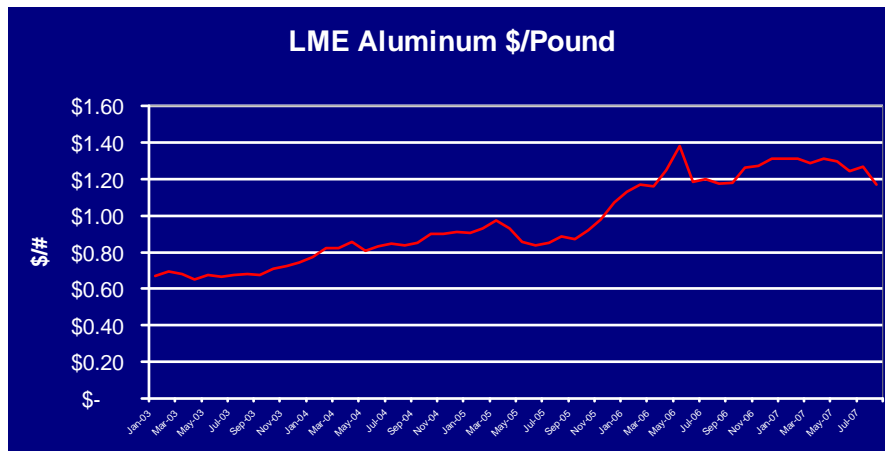
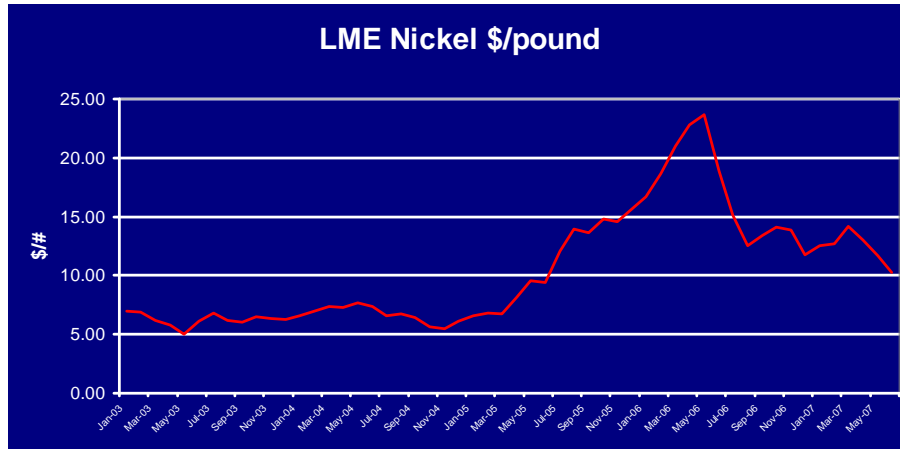
Steel



Source: LME

- Forging Industry pickup in 2004 coincided with high steel demand worldwide
- Initial shortages resulted in allocations
- Dollar price of steel has tripled since 2003 due to raw materials, energy, transportation costs
- Demand and prices stabilized in 2007
- Dramatic upswing in prices in 2008
- Scrap prices and exports up
- Demand and pricing expected to remain high.

Other Forging Grade Materials



Source: LME

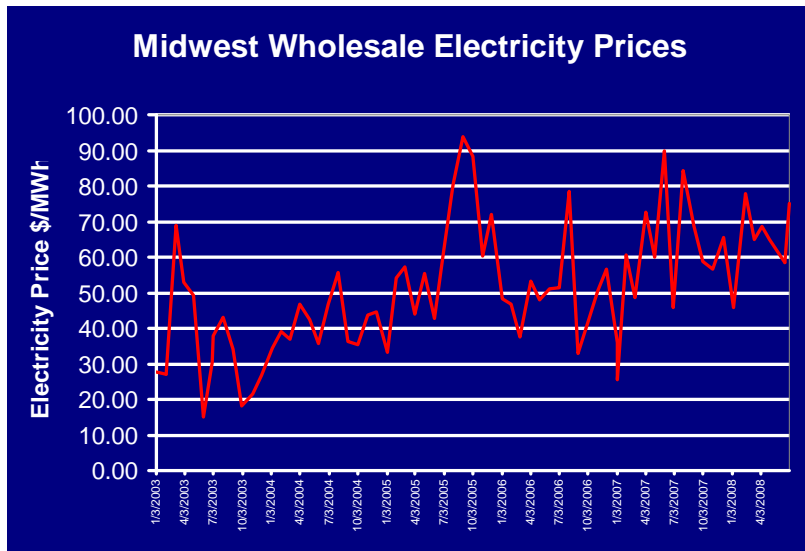
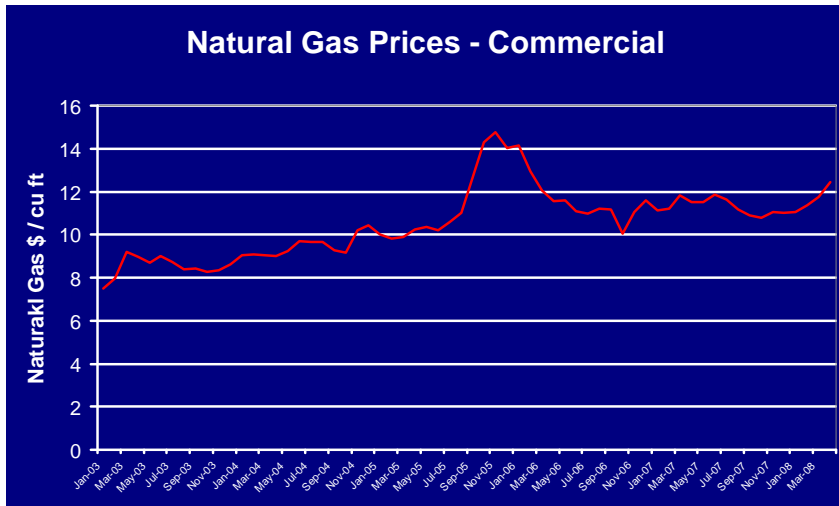
- Similar situation for other forging grade materials which have seen price increases 2x or more since 2003
- Record levels for nickel, titanium, aluminum reached in late 06 / 07 with some moderation since
- Dollar basis for international pricing is disadvantageous for US forgers except in commercial aero markets.
- Increased Automotive use of light weight materials is projected



Energy and Environmental Trends



Gas and Electricity Costs



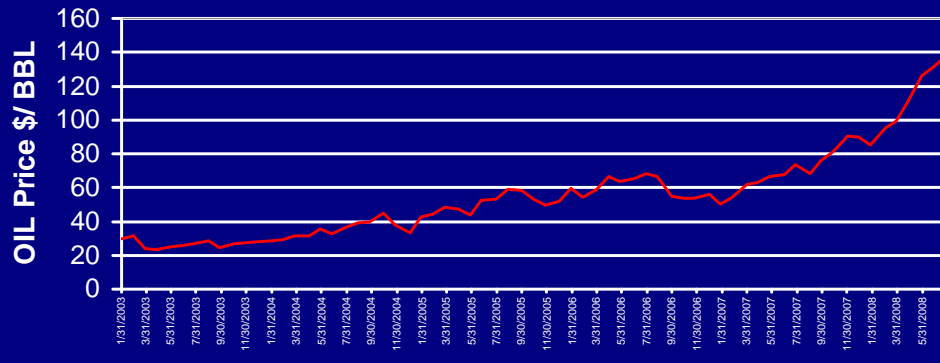
- 50% increase in gas cost since 2003
- Electricity has doubled since 2003
- Inflated dollar commodity costs (gas, oil) tend to make US less competitive
- Renewed incentive for energy efficiency and alternatives

Source: US Dept of Energy



Price of Oil

World Oil Prices 2003-2008



Source: US Dept of Energy

- ~ 600% increase this decade
- From mid \$20's to ~ \$140/bbl
- Significant impact on Major Markets
 - Particularly Automotive –Light Truck production cuts – fuel efficiency design priority
 - Potentially Aerospace – fuel cost changing the airline business model, capital expansion plans
- But very favorable impact on Oilfield Major Market –increased drilling activity
- Increase in transportation cost, beneficial influence on sourcing decisions



Emissions – Cap and Trade

- Kyoto Protocol – Reduction of greenhouse gasses
- EU regulations – particularly targeting airlines beginning 2011
- The US is the largest source of emissions; electrical generation and transportation the largest sources
- 110th Congress – pending Climate Change Legislation – 2 dozen bills; led by Liebermann-Warner S.2191 “Climate Security Act”
- Common theme
 - Cap greenhouse gas (CO₂e) emissions
 - Reduce total emissions over time
 - Credits traded at market value
- Forging Industry Impact –
 - Direct – possibility of limiting operations or growth; increased energy costs
 - Indirect – Constraints placed on Major Markets: Aerospace, Automotive, other

Alternative / Renewable(?) Energy



- Nuclear power construction is an export opportunity, may be a resurgent market in the US
- Wind Turbines represent a potential forging market
- Potential to favorably influence other energy costs / prices / availability
- Potential to influence major markets particularly automotive and aerospace
- Significant political impact



Strategic Trends





Cooperation

- Strong association – FIA
 - Statistics / Benchmarking
 - Technical resources
 - Customer outreach / Buyer services
 - Human resources / Training / Careers / Safety
- Government / Industry collaboration – FDMC
 - FORGE-IT - Nat. Tooling Database, Pro-Forge
 - PFAST - Job Shop Lean
- Industry / Education collaboration – FIERF
 - Technology R&D
 - Magnet universities
 - Scholarships, grants, fellowships
- Public Policy Collaboration
 - Government affairs program
 - Lobby day



Technology Roadmap

- May 2008 update to the 1997 Forging Industry Technology Roadmap
- Technical, economic and public sector issues of common interest
 - Customer relations / communication
 - International collaboration
 - Education, training, workforce development
 - Best practices / common guidelines
 - Public policy advocacy / lobbying efforts
 - Material development / waste reduction
 - Energy efficiency / alternative energy
 - Forging process technical development



Go Global

- Culture Change - 2000-2003 lessons learned – abandoned parochial view
- Followed customers lead offshore
- Improved global competitiveness – export strength
- Opportunity recognition in growth economies – China, India
- IFC host



Seize Opportunities

- Enjoy strong markets – A&D
- Adapt to market changes - Automotive
- Innovate in new markets – Alternative energy
- Pursue exports – Growth economies
- Develop, adopt and apply new technology
- Improve competitiveness through innovation and cost controls
- Manage economic cycles



Conclusion

- A mixed message
- The Forging Industry in North America has undergone significant change in the last decade.
- There remain serious economic, market and operational challenges that must be met and managed
- The industry has made a commitment to a proactive approach to technical innovation, operational excellence and cooperation.
- The industry has become more global in approach and more competitive and aggressive in the world market
- So despite challenges, the potential is for more and greater opportunities for the North American Forging Industry