

How Much Change Can the Magnetics Industry Endure?

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by

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Outline

- **Current Status in North America**
- **The Migration to China**
- **Western Industry Trends**
- **The Long-Term Outlook**
- **Survival Strategy**
- **Implications for the Future**

Current Status: The West

- **The Good News...**

- **Market conditions have improved since 2000-2001**
- **Margins improving or have stabilized**
- **Short term business outlook is favorable**

- **The Bad News...**

- **Commodity prices have shot up**
- **Medical costs are escalating**
- **Customers are still moving to China**
- **Chinese competitors remain a serious issue**

Current Status: China

- **The Good News...**

- **Chinese economy continues to grow**
- **Export opportunities abound**
- **Customers are moving to their doorstep**
- **Excessive low-cost labor availability**

- **The Bad News...**

- **Intense price competition and raw material increases**
- **Environmental issues**
- **Sporadic electric power outages**
- **Banks have tightened credit policies**

The Era of Transition and Expansion is Well Underway

- **The transition to China will continue**
 - Manufacturing for export
 - Sourcing
 - Selling to the local market
- **Expansion in China is strong**
 - Many Western investors do not need bank loans
 - Domestic sales and the export engine are growing
 - Successful Chinese producers are expanding

Western Industry Trends

- **During the past ten years, complete segments of United States magnet production have closed down:**
 - **Hard ferrite speaker rings**
 - **Hard ferrite slabs**
 - **NdFeB magnets**

Western Industry Trends

- **EXAMPLE:** All U.S. licensed NdFeB producers have shut down – five licensed Chinese producers now dominate the scene:
 - Advanced Technology & Materials Co.
 - Beijing Jingci Magnetism Technology Co.
 - Beijing Tsinghua Innovation Technology Co.
 - San Huan New Material High-Tech. Inc.
 - Yunsheng Company, Ltd.

Western Industry Trends

- **EXAMPLE:** U.S. production of hard ferrite motor arcs is now limited to two producers:
 - **TDK**
 - **Hitachi**
 - **Kane**
 - **Arnold**
 - **Crumax**
 - **Sumitok**

Western Industry Trends

- **EXAMPLE:** The two largest cast U.S. Alnico producers have ceased U.S. manufacturing:
 - **Crucible (Vacuumschmelze)**
 - **Hitachi**
 - **Arnold Magnetics**
 - **Thomas & Skinner**
 - **Permanent Magnet Company**

Other Examples of Companies Relocating U.S. Production

- **Arnold Magnetics**
- **Eriez Magnetics**
- **Fair-Rite**
- **Ferroxcube**
- **Hitachi**
- **Kane Magnetics**
- **Magnetics Inc.**
- **Magnequench**
- **Micrometals**
- **MMG**
- **Steward Inc.**
- **Vacuumschmelze**

One Additional Concern Exists

- **China currently accounts for close to 100% of the world's rare earth oxide production – impacting many products:**
 - **Rare Earth Magnets**
 - **Batteries**
 - **Glass**
 - **Catalysts**

Politicians Have Expressed Their Concern and Outrage

- **Plant closings**
- **Loss of hundreds of jobs**
- **Dependency of the U.S. military**
- **Increasing Chinese imports**

Politicians Must Understand:

- **U.S. magnetic material producers did not close because they wanted to.**
 - **They HAD to (to stay in business)**
- **The U.S. military is not YET totally dependent on China for NdFeB**
 - **Japan remains a significant producer**

Why the Changes?

- **Consumers are demanding lower prices at the store**
- **Manufacturers are demanding lower component prices to meet consumer demand**
- **Component manufacturers (permanent & soft magnetics) are at the bottom of the food chain**
- **The Chinese have emerged as the low cost source to meet these requirements**

The Implications of Transition

- **Most western magnetic component producers have already moved production to China**
- **Others are sourcing magnetic components from China**
- **Caution: Dealing with Chinese suppliers can be an adventure**

Western Industry Trends

- **For the survivors, concern should exist:**
 - **Environmental regulations and medical cost escalation will continue to increase the cost structure of business**
 - **Labor costs will continue to escalate**
 - **Competitive market pricing will maintain pressure on margins**
 - **Local capital investment will be limited and investment in China will continue**

General Trends in China

- **The central government will continue to “manage” the economy**
- **Political pressure will result in only modest currency exchange rate adjustments**
- **Some economic cycles will impact China’s short-term momentum**
- **Capitalism will prevail in the long run**

Magnetics Trends in China

- **Continued technology advancements**
- **Continued world-wide market penetration**
- **Chinese prices will likely increase**
- **Domestic market growth will be significant**
- **Industry consolidation will begin soon**

China is Far From Perfect

- **Financial stability issues**
- **Political stability questions**
- **Environmental issues are rampant**
- **Infrastructure limitations remain**
- **International business acumen**

The Customer Will Continue to be the Driving Force

- **Customers will continue to relocate manufacturing, engineering and purchasing to Asia....especially China!**
- **Customers will be demanding Chinese sourcing at competitive prices**
- **Customers will continue to demand new technologies and materials development**

Future Dangers Exist

- **New technologies being developed and commercialized in North America will have to rely upon:**
 - **Foreign sources for magnetic materials, or**
 - **Establishing good business relationships with local distributors and fabricators**

Future Dangers Exist

- **Future availability of applications engineering talent will decline**
 - **Retirements are happening monthly**
 - **Transfers to other industries are common**
 - **The ranks of magnetic technical talent in the U.S. is in danger of being seriously depleted in the next 5-10 years.**

Loss of Technical Talent Can Be Somewhat Offset

- **Improved design and analysis software**
- **Rare earth magnets are somewhat more forgiving from a design perspective**
- **Foreign talent pool should grow**
- **Much design work will also transition to China**

Future Opportunities Exist

- **Distributors and fabricators should enjoy a growth market for their products and services**
 - Some jobs will be created
 - Selective investment will occur
- **Opportunities to strategically align with Chinese manufacturers continue to exist**
 - Most Chinese companies need assistance to effectively sell their products in the West

How Much Change Can the Magnetics Industry Endure?

- **ANSWER:** Obviously quite a bit, but there are implications:
 - Reduced domestic supply is now a fact of life
 - We are now extremely dependent on China
 - Depletion of our local talent pool is occurring
 - Those desiring to deal directly with China face communications and logistical challenges

Presentation Summary

- **The future of the magnetics industry is clearly centered in China**
- **Most western magnet companies must establish a China capability in order to survive - either sourcing, manufacturing or selling**
- **Local distributors and fabricators should enjoy favorable business conditions**
- **Western technical talent is in serious decline**

Thank You !

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