

4th International Congress on Magnetism and Magnetic Materials

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Market Analysis:

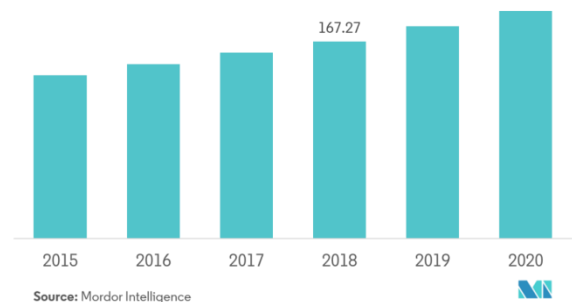
- While it appears inevitable that Magnetic Materials will have a broad and fundamental impact on many sectors of the U.S. economy, various technical, marketing and other hurdles need to be overcome before Magnetic fulfils this promise. These challenges and differences of opinion regarding commercial applications are reflected in the widely diverging estimates of the U.S. and global nanotechnology markets.
- Estimates of the global Magnetic Materials market in 2010 range from about \$15.7 billion (the figure used in this report) to \$1 trillion. By 2015, the market may be worth more than \$2.4 trillion, according to different analysts. These differences reflect not only different analytical methods and assumptions, but also different definitions of the nanotechnology market
- Perhaps as a reflection of the difficulty of quantifying the market for Magnet Materials, some analysts downplay the commercial dimensions of the nanotechnology market, and focus instead on the supply side, i.e., the development of new Materials technologies and applications. These analysts have made valuable contributions, raising investors' awareness of and interest in nanotechnologies.
- However, by itself, the work of these analysts does not provide sufficient information in order to guide corporate or individual investment decisions. Investors require additional data, such as the size of specific technology markets, prices, and competition, as well as potential regulation.

Scope of report:

- The global market for Magnetic Materials applications will be addressed. Magnetic applications are defined comprehensively as the creation and utilization of materials, devices, and systems through the manipulation of matter at scales of less than 100 of technologies
- A pragmatic decision was made to exclude certain types of materials and devices from the report that technically fit the definition of Magnetic. These exceptions include carbon black nanoparticles used to reinforce tires and other rubber products; photographic silver and dye nanoparticles; and activated carbon used for

water filtration. These materials were excluded because they have been used for decades, long before the concept of nanotechnology was born, and their huge volumes (especially carbon black and activated carbon) would tend to swamp the newer nanomaterials in the analysis.

Germany Snack Bar Market: Revenue in USD million, Energy Bar, 2015-2020

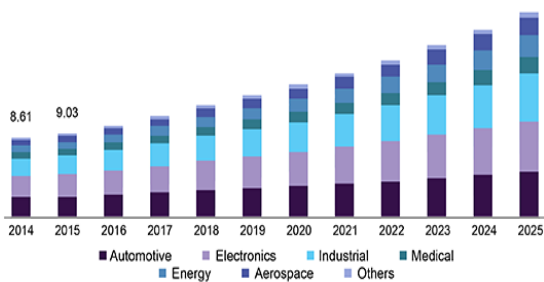


- Nano scale semiconductors are also excluded from the study, although the tools used to create them are included. Unlike carbon black and activated carbon, Nano scale semiconductors are a relatively new development. However, they have been analysed comprehensively elsewhere, and like carbon black and activated carbon, would tend to overwhelm other nanotechnologies by their sheer volume in the out-years towards 2015.
- The global permanent magnets market size was valued at USD 19.23 billion in 2018 and is estimated to witness a CAGR of 8.3% from 2019 to 2025. The demand for the product is driven by the increasing production of electric vehicles, rising wind energy installations, & rapidly growing robotics industry.
- Robotics represents the most lucrative area for permanent magnet manufacturers. According to the Motion Control & Motion Association (MCPMA), the world population is estimated to reach nine billion with three service robots for every human on earth by 2050. Further, the average robot is predicted to contain over 100 motors. As a result, the product demand in robotic motors is expected to increase significantly over the coming years. Increasing application of magnets in automobiles to reduce

dependency on fuel as well as to enhance engine power is expected to positively impact the consumption of permanent magnets over the coming years. In addition, increasing automotive production is expected to further propel the market growth over the forecast period.

- Energy sector is another key application of the product. Permanent magnet-based direct drive generators represent an excellent alternative to geared induction generators as they are light in weight, hence, providing low tower cost, low noise, and low maintenance. This is anticipated to augment the market growth over the forecast period.
- Hard Disk Drives (HDD) is one of the largest markets for rare earth permanent magnets. However, SSD (Solid State Drives) is becoming a viable alternative to HDD, as they do not rely on permanent magnets. There is a growing demand for SSD owing to their lower operating cost and enhanced performance. These benefits encourage the manufacturers to stimulate the production of SSDs. As a result, SSD is expected to gradually capture the market share of HDD over the coming years, which in turn is anticipated to hamper the growth in HDD over the coming years.

China permanent magnets market size, by application, 2014 - 2025 (USD Billion)

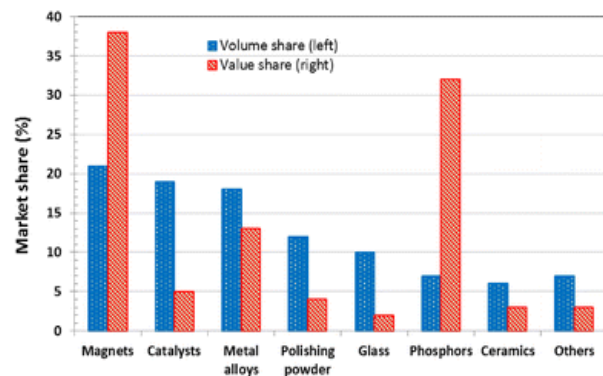


Source: www.grandviewresearch.com

Why in Frankfurt:

- Frankfurt officially known as Frankfurt am Main, is the largest city in the German state of Hessen and the fifth-largest city in Germany, with a population of 701,350 (2013) within its administrative boundaries. The city is at the centre of the larger Frankfurt Rhine-Main Metropolitan Region which has a population of 5,500,000 and is Germany's second-largest metropolitan region. Since the enlargement of the European Union in 2013, the geographic centre of the EU is about 40 km (25 mi) east of Frankfurt.
- Frankfurt is the largest financial centre in

continental Europe and ranks among the world's leading financial centres. It is home to the European Central Bank, Deutsche Bundesbank, Frankfurt Stock Exchange and several large commercial banks. The European Central Bank is the central bank of the eurozone, consisting of 18 EU member states that have adopted the euro (€) as their common currency and sole legal tender.



Major Magnetic Materials Associations around the Globe:

- New England Magnetic Materials Association (NEMA)
- Asian Nano science and Nanotechnology Association
- International Association of Magnetic Materials
- American Society for Testing and Materials (ASTM International).
- Materials Science Research Centres (MSRCs)
- Australian Research Council for Magnetic Network (ARCMN)
- Global Magnetic Materials Network (GMMN)
- Materials Research Society
- International Union of Materials Research societies

Top Universities in Europe:

- University of Oxford
- University of Cambridge
- Imperial College London
- Queens marry university

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