

Magnetics: Industry Overview *by* **Walt Benecki**

China Mag 2002 confirms China's dominance in magnetic materials.....

On October 15-18, 2002, Intertech sponsored "China Mag 2002" in Beijing, China. Over 200 delegates representing 21 countries participated in the conference, which included three pre-conference workshops and concluded with a day of interesting research facility and factory tours.

The keynote address for the conference was delivered by Mr. Wang, Zheng-Xi, Chairman and President, Beijing ZhongKe San Huan Hi-Tech Co. Ltd. Mr. Wang reviewed the phenomenal growth of the Chinese Rare Earth magnet industry over the past twenty years. This industry has been demonstrating a growth rate of approximately 25% per year and in 2001, over 130 NdFeB magnet factories in China produced 7,800 tons of NdFeB magnets, replacing Japan as the leading producing country in the world. Numerous Chinese suppliers now routinely produce 40-45 MGOe products and ZhongKe San Huan is now in commercial production of N50 material.

Mr. Wang also reported that over 30 factories in China are now producing bonded NdFeB magnets and China's total output of these magnets has increased from 180 tons in 1998 to 620 tons in 2001. Mr. Wang concluded that China will not only be the largest magnet producing nation in the world, but will also be the largest consumer of magnets in the world. This status will not only be driven by China's large domestic consumer market, but by the massive transition of western production operations moving into China.

Archibald Cox Jr., President and CEO of Magnequench Inc. outlined his company's transition of NdFeB powder production to China and reported that Magnequench's new operation in Tianjin is in full operation and producing excellent and consistent quality NdFeB powder. Mr. Cox reported that he expected some segments of the magnet market to exhibit double-digit growth in 2002, particularly in Asia. Mr. Cox commented that western manufacturers cannot anticipate "business as usual" and that there will be continued pressure to re-evaluate business models, relocate, consolidate and otherwise achieve reduced cost structures. Mr. Cox also commented that, as certain NdFeB patents begin to expire in the next few years, patent issues may indeed become far more complex and challenging.

Mr. Terry Clagett, President and CEO of WebMagnetics Inc. attempted the daunting task of quantifying the worldwide supply, demand and pricing trends for hard and soft magnetic materials. Mr. Clagett concluded that the worldwide 2001 market for magnetic materials (excluding silicon steel) was \$7.35 billion. Mr. Clagett suggested that an organization with international scope, such as The International Magnetics Association (IMA) might eventually develop a reliable data base of worldwide industry statistics. Mr. Clagett acknowledged the dominance of China in magnetic materials and concluded that, although many producers are laboring under the pressure of rapidly declining prices, "The magnet industry is alive and well".

Mr. Zhang, Licheng, Vice President of International Business, BGRIMM, reviewed the status of China's hard ferrite industry. Mr. Zhang observed that, in 2001, China accounted for over 33% of the worldwide production of sintered hard ferrite magnets. Over the past 20 years, China's hard ferrite production has enjoyed an average growth rate of 9.2% per year. Growth has actually accelerated in the 1990's to about 13% per year. Mr. Zhang observed that China now dominates speaker ring production and he predicted a similar trend will occur for hard ferrite motor arcs in the next 3-5 years.

Mr. Zhu, Mingyue, Vice President & General Manager, Rhodia China summarized the status of China's rare earth oxide industry, representing 170 plants that produced approximately 180,000 tons of rare earth oxide in 2001. Mr. Zhu reported on a planned industry restructuring that has the following four objectives: (1) Improved control of upstream raw materials, (2) Achievement of better economic scale of production, (3) Increased price levels, and (4) A move toward the high end of the rare earth value chain. This restructuring is not fully endorsed by all production groups, therefore its transition is likely to take a number of years to fully implement. Mr. Zhu forecasted that the rare earth industry will likely grow over 10% per year as compared to China's anticipated GNP growth rate of 7%.

Mr. Wang, Jue, Director, Jinning Sanhuan Hi-Technology Magnetic Industrial Co. reported on the rapid development of China's soft ferrite industry. Mr. Wang predicted that China will achieve manufacturing superiority in soft ferrite production. Indeed, this segment of China's magnetic materials industry is currently experiencing explosive growth, with production doubling from 30,000 tons in 1995 to 60,000 tons in 2000. In

2000, China's production mix was 40,000 tons of MnZn, 15,000 tons of MgZn and 5,000 tons of NiZn materials. Mr. Wang discussed the industry's progress in developing lower power loss and higher permeability products. He felt that significant quality advancements are now assured since Baosteel adopted the Ruthner process during the mid-1990's for the production of high quality desilconized iron oxide.

An informative presentation was delivered by Mr. John Nelleson, President, All Magnetics, entitled "Why Not Start a Magnet Factory in China?" Mr. Nelleson outlined, in considerable detail, the procedures, challenges, costs and risks associated with establishing a wholly-owned foreign enterprise in Mainland China.

Mr. Xiao, YaoFu, from Beijing Kequang Magnetic Material Co. Ltd., provided an update of his company's development of anisotropic NdFeB powders for bonded magnets. Mr. Xiao reported on a "NdFeBCoZrGa" material that exhibits lower irreversible losses and reduced temperature coefficients when compared to basic NdFeB HDDR material. Beijing Kequang is currently in a pilot plant stage of development and expects to be in commercial production with a capacity of 100 tons per year by 2004.

Finally, an excellent overview of China's soft magnetic alloy industry was offered by Mr. Chen, Wenzhi, Advanced Technology & Materials Co. (ATM), Amorphous Product Division. ATM is the dominant producer of amorphous ribbon in China, with an annual capacity of 1,000 tons and the capability to produce ribbon up to 220 mm wide. China's total output of amorphous products increased from under 200 tons in 1995 to over 900 tons in 2000. Mr. Chen predicted that China's production and utilization of both amorphous and nanocrystalline materials will grow very rapidly over the next five years.

Walt Benecki is the former president of Group Arnold and a past president of the Magnetic Materials Producers Association. Walt has established a consulting practice specializing in operations management, industry analysis, acquisitions, dispositions and strategic alliances. Contact him at waltbenecki@aol.com