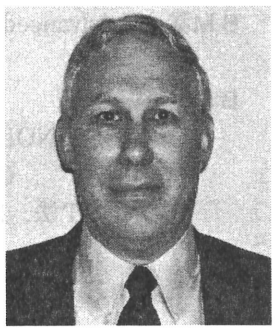
Greetings from Advanced Magnetic Materials



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The last half of the twentieth century has witnessed a revolution in the use and development of permanent magnets, from a few random applications to the point where permanent magnets are now a key component of many leading high technology applications. The last two decades have, in particular, seen the phenomenal growth of the NdFeB family of permanent magnets, both sintered and bonded varieties. The market for sintered magnets is estimated at between 15,000 and 20,000 mt worldwide. Bonded NdFeB has also shared in this growth, with output increasing from an estimated 300 mt in 1990 to almost 3,000 mt in 1999. These numbers prompted me to reflect back to a Rare Earth Magnet Conference that I attended sometime in 1987 or 1988. At that time a prominent research institute announced the results of their market study on the future of NdFeB magnets, and stated that the total market in 2000 would be roughly 1,200 mt, a number that is now seen to be a factor of over fifteen off the mark.

In defense of this forecaster, however, it would have been difficult for anyone to foresee the rapid development of the principle driver of the NdFeB permanent magnet market, namely, the development of the personal computer. While other applications are growing, computer peripheral applications still account for over 50% of the total bonded NdFeB consumption worldwide. Penetration is virtually 100% in HDD and CD-ROM/DVD spindle motor applications and the stepper motor actuator in FDDs. Furthermore, the growth of this market shows no sign of abating in the future, particularly with the lure of the Internet and declining prices drawing so many first time and repeat buyers into the PC market.

Other major markets for bonded Nd magnets include office automation applications, including printers and fax machines, and consumer electronic applications such as VCR's, cameras and camcorders. The declining price of bonded magnets that has occurred in recent years will stimulate additional growth, particularly in markets where there has been low historical market penetration, such as small appliance and automotive. In 1999, it is estimated that roughly 450 mt of bonded Nd was used in automotive applications. However, this number is expected to increase to over 3,000 mt by 2005 if certain new automotive applications come to fruition, a market larger than the total market in 1999. Many of these new applications are expected to be brushless dc motors and actuators used for so-called "drive-by-wire" or "function-by-wire" applications.

Production of bonded Nd continues to be dominated by Japanese companies who still control over 65% of the worldwide market. Production, however, continues to move out of Japan to China and Southeast Asian countries, a trend that will continue as producers strive to get an edge in this increasingly competitive market. Production in other Asian countries such as Taiwan and Korea also appear to be slowly eroding the market share of the Japanese companies, a trend driven in part by the development of strong domestic motor manufacturers in these countries. China, which currently has a low share of the bonded Nd market, is likely to become a major producer as patents on these materials begin to

expire and as domestic sources of magnetic powder develop. Largely because of product mix, Europe and the USA have not been major producers of bonded Nd magnets. This could change, however, as the price of bonded Nd reaches a point where it becomes economically viable to use in the products more commonly produced in these geographic areas. If we exclude companies with less than two mt of production/year, there are over 40 bonded Nd magnet producers worldwide. Of these, the top ten account for roughly two thirds of total production. Although declining magnet prices have reduced the profit margin of many bonded Nd producer in recent years, very few producers have dropped out of the market and the number of new companies entering the market continues to grow, suggesting a relatively healthy environment for the industry.

Advanced Magnetic Materials was formed in late 1996 to participate in the bonded NdFeB permanent magnet market. Since that time we have established a state of the art production facility in Korat, Thailand where we produce rapidly solidified NdFeB magnetic powder. While I am sure that there will be ups and downs in the bonded Nd market in the coming years, there are few industries in the world which are as dynamic and for which there would appear to be brighter overall prospects. We applaud the work that the JABM has and continues to do in helping promote the development of this industry. All of us at AMM wish the members of the JABM the best for the New Year. We look forward to a continued and strengthening relationship with all of you over the coming years.