# Magnetic alignment improvement of Nd-Fe-B sintered magnet by a new axial pulse pressing method

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A new axial pressing method using pulse magnetizing field was studied to improve the remanence of Nd-Fe-B sintered magnets. In order to make near-net shape green compacts of butterfly, disk, or coin magnets, conventional axial-type pressing has been normally used. However, compared to the transverse-type pressing, it is not possible to obtain higher remanence by this method because the magnetic alignment of powder begins to deteriorate when the density of green compacts increases over a critical value. On the other hand, we found that an axial pressing under pulse magnetizing field was very effective to increase the degree of magnetic alignment of powder, yielding remanences even higher than those obtained by the transverse pressing. In pulsed axial pressing process , magnetic powders were filled up to tapping density rage of 2.4-3.4g/cc , and alignment and pressing of magnetic powders into a green compact were all done sequentially under pulse magnetizing field of 5 tesla. The green compacts were sintered at temperature rage of 1060-1100°C for 4hr and annealed at temperature rage of 500-600°C for 2hr.

As a results, this new axial die pressing method(PADP) was effective to improve magnetic alignment of magnetic powder depanding on tapping and green density of powders, shape and strength of pulse magnetic field. Finally, high remanence and energy product of 14.3 kG, 51 MGOe were easily obtained by the PADP from 30.6R-68.4TM-1B (in wt.%) sintered magnet.

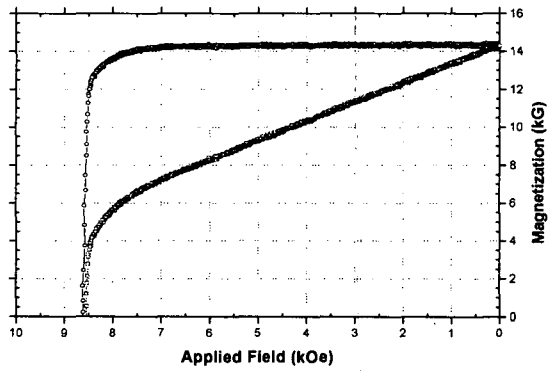


Fig.1 Demag. curve of 30.6R-68.4TM-1B (in wt.%) magnet produced by PADP.

## References

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