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MQ1™ Magnets: The Mechanical Strength Needed For High-Speed Motor Performance

The high-speed motor market encompasses both traditional and emerging home appliances, such as vacuum cleaners, hair dryers, and robot cleaners, with motors operating at speeds exceeding 100,000 rpm.

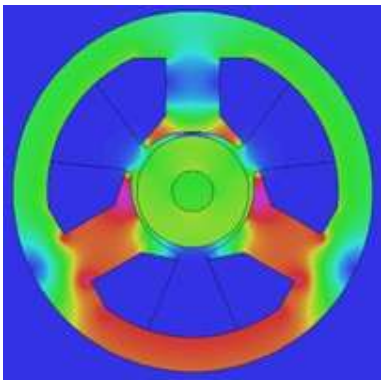
Some of the challenges in the design and manufacture of these high-speed motors include rotor power losses, mechanical strength of magnets, and imbalanced radial forces in the rotor. Magnequench understands these challenges, and has partnered with motor companies to push the boundaries of performance and efficiency for over a decade, in home appliances, power tools, and others. Our systematic design approach seamlessly integrates our MQ1™ magnets and motor expertise into our customer's development cycle, at any stage.

Our high strength MQ1™ magnets can withstand high speed rotation of over 150,000 rpm at elevated temperatures, without cracks or breakage, making them an ideal choice for these motors

Contact Us To Find Out More

Case Study: MQ1™ Magnets for High Speed Vacuum Cleaners

Motor designers have traditionally relied on sintered magnets; however, these materials present key challenge, most notably, increased motor vibration and higher noise levels. The excessive flux density of sintered magnets often leads to magnetic saturation of the stator's silicon steel, resulting in unwanted effects such as cogging and acoustic noise.



In contrast, bonded magnets with an inherent lower flux density do not saturate the stator's silicon steel. Additionally, the low electrical conductivity of bonded neo magnets minimizes eddy current losses, further reducing vibration and noise in the motor.

While it is true that conventional compression-molded magnets exhibit lower magnetic properties compared to sintered magnets, collaborating with Magnequench helps to optimize the performance of bonded neo magnets through both materials expertise and application-specific design support.

This case study details how Magnequench engineered a novel solution utilizing MQ1™ magnets to directly address these performance barriers.

Read Full Case Study Here

Post Event Feature

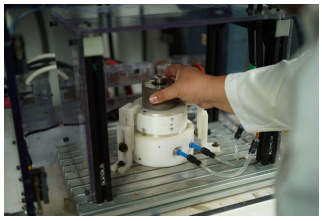
Techno-Frontier 2025

Thank you to all who visited our booth at Techno-Frontier 2025! As a first-time exhibitor in Japan, your interest and enthusiasm made our debut incredibly rewarding. We were happy to share our innovations with you and look forward to building on the connections made.

FOR MORE INFORMATION

ABOUT US

PRODUCTS



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