

Development of motor design technologies using high performance magnets

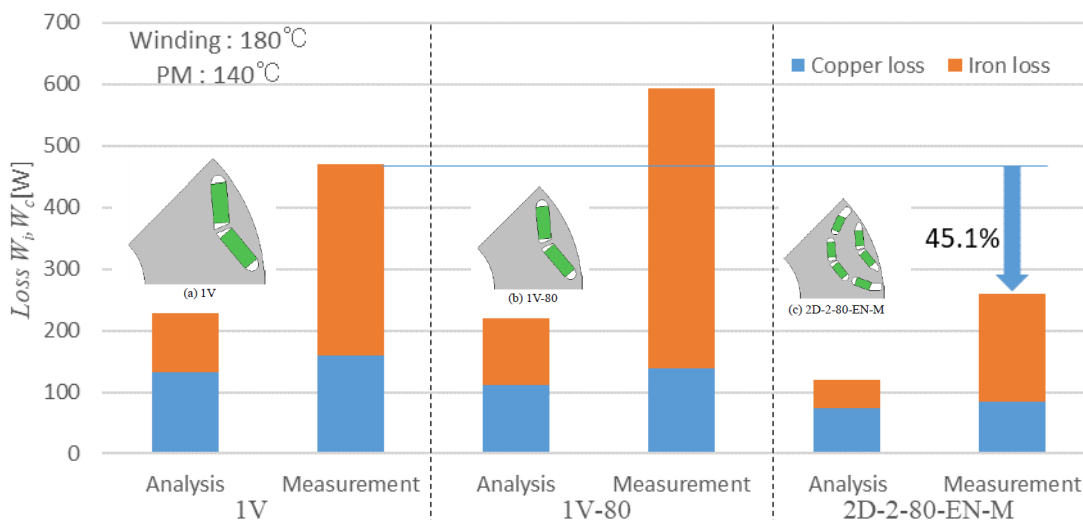
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The Technology Research Association of Magnetic Materials for High-Efficiency Motors (MagHEM) was founded in 2012 to develop the innovative high-performance magnets without/less rare-earth materials which exceed current magnets with rare-earth materials in performance, the high-efficiency soft magnetic materials (Iron core) for internal loss reduction, and compact high-efficiency motors.

Targets of R&D are new magnets exceeding Neodymium magnets with 2 times in (BH)_{max} (180°C), and high efficiency motors with 40% reduction in loss, 40% improvement in power density using new magnets.

We have achieved the above target in simulation⁽¹⁾⁽²⁾⁽³⁾. In this paper, we compare the characteristics of a small-diameter V-shaped magnet arrangement prototype(1V-80) and a small-diameter double-layered arranged prototype(2D-2-80-EN-M) with a conventional single-layered V-shaped arranged prototype(1V) by actual machine measuring.

Then we compared measured data to analysis data. At a result measured loss for the 2D-2-80-EN-M prototype was reduced by more than 40% compared to that for the 1V prototype as well as the analysis data⁽⁴⁾.



Acknowledgments

This article is based on results obtained from the Future Pioneering Program "Development of magnetic material technology for high-efficiency motors" (JPNP14015) commissioned by the New Energy and Industrial Technology Development Organization (NEDO).

Reference

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