

New 3M Magnet Bonding Adhesive Set to Improve Designs of Permanent Magnet Motors

New adhesive gives designers and engineers a new tool to achieve higher motor efficiencies

3M today announced a new magnet bonding adhesive system designed to provide electric motor design and manufacturing engineers with an advanced tool for bonding permanent magnets to rotors and stators in high-efficiency permanent magnet (PM) electric motors.

The [3M™ Magnet Bonding Adhesive AU-205](#) is a high-performance structural bonding adhesive system designed to virtually replace messy liquid adhesives to simplify magnet positioning and achieve high bond strength with bond line thickness control. The adhesive can also help reduce rework and waste.

The need for a new adhesive system comes as new global energy efficiency standards are being legislated to help reduce energy losses in electric motors. PM motor designs are viewed as a technology platform that can help meet these challenging new requirements.

The 3M™ Magnet Bonding Adhesive AU-205 system is built on 3M's expertise in adhesives and materials. Its construction combines a modified structural epoxy adhesive with a thickness control system, all configured in a low-tack double-sided tape product. The result is an innovative product that offers strong bond strength and chemical resistance, all in an easy-to-convert tape form that is RoHS & REACH compliant and contains zero Volatile Organic Components (VOCs), potentially reducing worker safety requirements.

In manufacturing, 3M™ Magnet Bonding Adhesive AU-205 simplifies permanent magnet positioning. The 3M adhesive does not require mixing or liquid metering, or complex production equipment. In addition, it can reduce magnet misalignment by virtually replacing liquid one- and two-part adhesives, which can move in an uncontrolled manner if inconsistent pressure is applied during the application and adhesive curing process. By providing 3M™ Magnet Bonding Adhesive AU-205 in a tape form, magnets can be precisely positioned, or repositioned, if needed, because the adhesive can be "metered" through slitting and cutting or die cutting to reduce tendency toward adhesive "squeeze out."

3M™ Magnet Bonding Adhesive AU-205 also improves control of the permanent magnet bond line thickness, which is critical to motor performance. This distance, which is located between the inside diameter of the stator and the outside diameter of the rotor, is known as the air gap. Precisely controlling and minimizing the rotor/stator air gap can help allow a PM motor to attain a greater level of energy efficiency. More information at www.3M.com/MBAadhesive.

Since the invention of vinyl electrical tape in 1946, the 3M Electrical Markets Division has designed and manufactured reliable products for some of the world's leading industries, including energy, commercial and industrial electrical construction, oil and gas, mining, water, transportation and manufacturing. Today, the division deploys technology to create new solutions to help meet energy and infrastructure challenges.

About 3M

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The new 3M Magnet Bonding Adhesive AU-205 is designed to bond permanent magnets to rotors and stators in high-efficiency permanent magnet (PM) electric motors. (Photo: Business Wire)

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