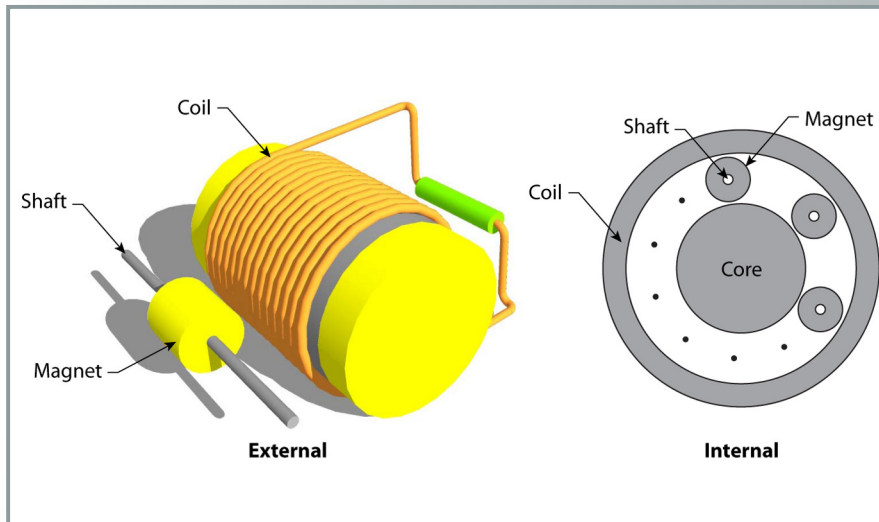


Internal/External Split Field Generator

UT-B IDs 200802199, 200802200



Technology Summary

ORNL researchers developed inventions to improve the efficiency of electric generators. This is achieved by decoupling the magnetic polarity of the driving mechanism while increasing the operational frequency of the machine. These technologies offer unique, low cost methods to produce a generator with a higher power density.

In both inventions, generators use the flux interactions between moving and stationary magnetic fields inside a coil to produce twice the flux change per rotation of the prime mover. In conventional electric generators, the rotation of the prime mover produces one flux change per pole, if the poles are alternating in polarity.

These inventions use the geometry of magnetic fields to produce two flux changes per pole, doubling the frequency. As a result, efficiency of the generators increase, offering higher power densities than available in conventional designs.

Advantages

- Increased efficiency
- Double flux change per rotation
- Magnetic polarity independence
- Increased power density
- Low cost fabrication
- Portable

Potential Applications

- Rotary/linear generator sets
- Low cost, high efficiency generators

Patents

Thomas G. Thundat, Charles W. Van Neste, and Arpad A. Vass, *Internal Split Field Generator*, U.S. Patent Application 12/478,429, filed June 4, 2009.

Thomas G. Thundat, Charles W. Van Neste, and Arpad A. Vass, *External Split Field Generator*, U.S. Patent Application 12/478,562, filed June 4, 2009.

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