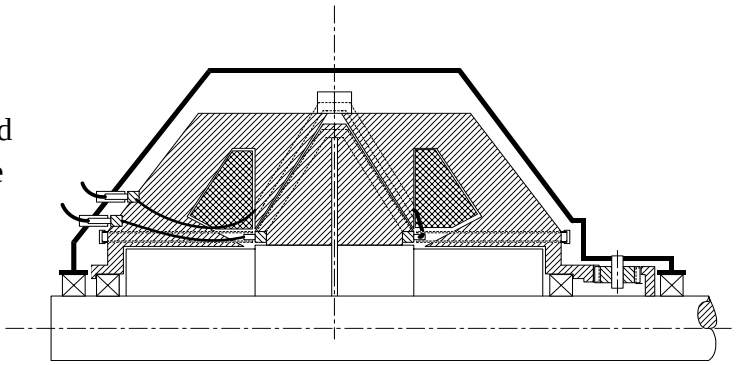
ESTD Engineering Science & Technology Division

High-Power-Density Homopolar Motors

Objective

Develop a motor that will have high power density at low voltages, such as those proposed for some hybrid electric vehicle systems.



A depiction of one of several homopolar dc motor designs developed by ORNL researchers.

Technology Description

Homopolar motors are dc motors that do not require commutation.

Homopolar Machine Advantages

- Dual rotors for low mechanical speed and high power density
- No commutation is required in a homopolar machine
- New brush developments can be used in machine designs

Technology Importance

This new type of homopolar technology could double the power density of conventional homopolar motors, making it an attractive low-cost option for use with low-voltage electric vehicle systems.

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