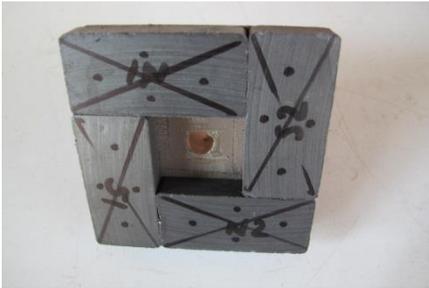


01- Assemble and Testing of Magnetic Module

Procedure

1. Each project team will receive four ceramic magnets that will be used for all phases of the semester wind turbine project.
2. Using a compass to determine north and south and label the magnets N1, N2, S1, S2. "N" for North and "S" for South.
3. Draw diagonal lines on the magnets and locate a dot in the center of the formed triangles.
4. In your Engineering journal set up the data table using the format provided by the instructor.



5. Power the Gaussmeter "on" and zero the reading.
6. Separate the magnets so there is no interaction and measure the four surface points on each magnet.



7. Place the tip of your finger over the meter probe (black probe marking up) and position the probe at each triangle center point. Disregard the negative value for the S1 and S2 magnets. Record the meter reading in your journal.
8. Assemble the magnets in a "square" by positioning magnets of the opposite polarity next to one another.
9. Repeat the measurement of each magnet and record the data in your journal.
10. Place a steel backing plate on the magnet assembly.
11. Repeat the Gaussmeter measurements and copy the data to your journal on the appropriate column.

12. Remove the magnets from the steel backing plate and set them aside.
13. Wax the shaft to inhibit epoxy sticking to the shaft and use the shaft to align the block to the backing plate center. Using clamps epoxy the shaft locking-block to the back of the backing plate.



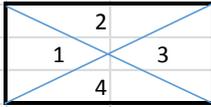
14. Remove the shaft after a few minutes while not disturbing the clamps.
15. While the epoxy is hardening, copy the magnet data in to an Excel spreadsheet and calculate the average magnet strength for both cases.
16. Using double-side tape glue the magnets in position on the backing plate. Be certain that the outside edge of the magnet assembly have the magnets are aligned.
17. This magnetic assembly will be used along with the coils assembled in the next module as the project ac generator.



The magnets do not provide a uniform magnetic flux and vary from magnet to magnet. Use a Gauss meter to measure the strength at fifteen points on the surface of the supplied magnets. Average the measurements for all supplied magnets.

The data sheet for these measurements:

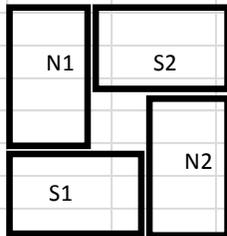
MAGNET DATA -WITH AND WITHOUT STEEL BACKING



MEASUREMENT POSITIONS

BACK = 3 X 3 IN STEEL PLATE

MAGNET	POSITION	ONLY MAGNET	MAGNET + BACK	SQUARE NOBACK	SQUARE + BACK	% GAIN SQUARE- BACK
N1	1					
	2					
	3					
	4					
S1	1					
	2					
	3					
	4					
N2	1					
	2					
	3					
	4					
S2	1					
	2					
	3					
	4					
AVERAGE -----						
GAIN OVER SINGLE						
% GAIN OVER SINGLE						



SQUARE GEOMETRY