

Research Paper

Title: Can Innovative Manipulation of Magnetic Lines of Force Lead to Efficient Electrical Power Generation?

The researcher is approaching this problem in two phases. The first phase was to identify and test a technology that potentially offers a unique approach to manipulating magnetic lines of force. The second phase is intended on using this innovative technology for the ultra-efficient generation of electric power. This project is an off shoot of last year's project that dealt with utilizing impulse motor technology for power production. That project taught the researcher many things about coils and their interaction with magnetic lines of force and prompted the researcher to investigate other power production technologies.

Conventional power production relies on the interaction of magnetic lines of force (flux) and moving coils of wire. As conductors (wires) pass through flux, there is an induced current in the conductors as described by Michael Faraday. This also holds true for the introduction of flux in a core that is wrapped with a conductor...a fact that this project will take advantage of. Simple transformers work by varying the flux density in a common core wrapped by a primary (input) winding and a secondary (output) winding. The first phase of this project involved attempting to control the magnetic lines of force using a new and innovative technology, Parallel Path Magnetic Technology (PPMT), developed and patented by Charles J. Flynn of Flynn Research Inc. (Greenwood, Missouri). The researcher came across information on this technology during investigations on coils and flux involved with last year's research project. The application of this technology to power production will follow the initial testing and education phase.

The patented technology involves manipulating magnetic lines of force so that they become additive. Generally, when magnetic circuits are designed, the lines of force couple one-for-one. That is, if you have a ceramic magnet that has a field strength of 3800 gauss and you stack 2 others on top of it that have field strengths of 3800 gauss, the total stack still only has 3800 gauss at each end. This is because the lines of force line up and "couple". Mr. Flynn describes a device in his patent that allows lines of force to become somewhat additive.

Research began by developing a test procedure, building an apparatus to demonstrate the technology, and building a test fixture to measure and capture data. The general test procedure was to fabricate a test apparatus, perform armature pull-off tests, evaluate the results, make adjustments to the apparatus, re-test to validate data, analyze the data and draw conclusions. The initial test apparatus consisted of two pole pieces made of A-36 carbon steel (1/4" x 1" x 4 1/8"), 2 armatures made of A-36 carbon steel (1/4" x 1" x 1 7/8"), 2 magnet stacks made up of 1" diameter Grade 8 ceramic magnets, and 2 coils made up of 80 turns of 22 gauge enamel coated magnet wire. The pole pieces and one armature had brass channels epoxied to them to aid in the attachment to the test fixture. After initial testing, it was found that new coils (160 turns, 250 turns, 1200 turns, and 1500 turns) had to be wound to fully take advantage of the effect. Plastic shims were installed to bring the pull off force to within the limits of the force sensor. Figure 1 shows the final basic configuration for testing.

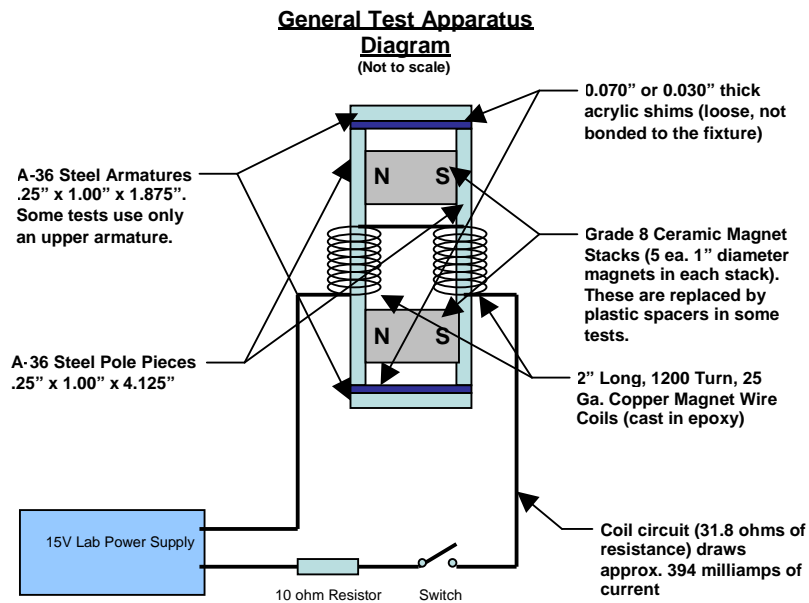


Figure 1

The test apparatus also included an adjustable circuit to drive the power coils, consisting of an adjustable DC power supply, a resistor and a switch. The test fixture was designed to hold the test apparatus, a force sensor from Pasco, a drive motor from a computer printer (to provide a consistent pull speed), various switches, and resistors. See photo, Figure 2 for the Test Fixture.

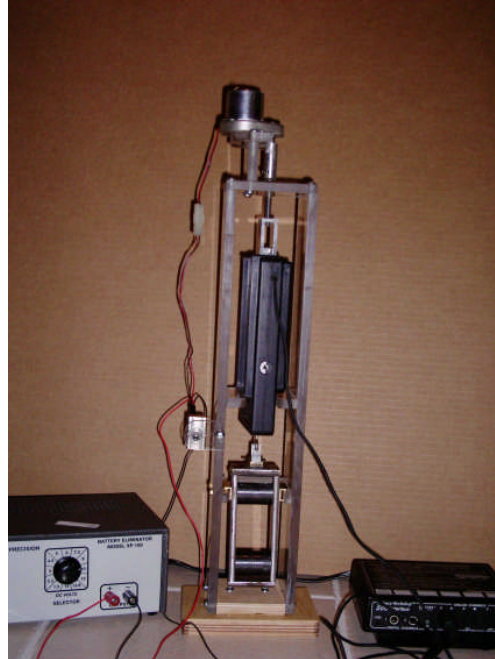


Figure 2

To obtain the PPMT effect, the power from the DC power supply was adjusted using a 100 ohm potentiometer until the inactive armature dropped off. The voltage was also

adjusted until the current just allowed the armature to drop off. That means all of the lines of flux had transferred to the active armature. It was at this point that the resistance and voltage was recorded and a permanent resistor installed in the circuit. The current that was required for proper operation was 394 milliamps (at approx.15 volts). This was calculated by dividing the voltage by the total resistance of the circuit. Many armature pull-off tests were conducted on the PPMT test apparatus in the many different configurations. Configurations are found in Figure 3.

After all of these tests were completed, the results showed that the researcher's PPMT test apparatus was a success. The armature pull-off tests that were performed with no magnets, the 1,200 turn coils on and powered, and the 0.070 shim produced an average of 3.72 newtons of force. The configuration with the magnets, no coils, and the 0.070 shim produced an average of 8.75 newtons of force. Therefore one would think that by adding the two configurations together that the force would equal 3.72 newtons plus 8.75 newtons. But with the two configurations together the pull-off force increased considerably to an average of 22.82 newtons. This does not violate the laws of conservation because there are a total of 3 flux producing sources in the fixture – two magnet stacks and a solenoid. All must be considered when looking at the effect. The apparatus uniquely concentrates the sources in a single armature. These results support the claims laid down by the inventor Joseph Flynn. After analyzing the data, it can be concluded that the PPMT approach does in fact allow the manipulation of magnetic lines of force using a relatively small input current. The input current and its resulting force can be leveraged using permanent magnets in the PPMT configuration. See test data in Figure 4.

**Test Fixture
Configurations**

Test	Magnets	Coil Turns	Voltage (v)	Current (ma)	Bottom Armature	Shims (inches)
A	Yes	1200	0	0	Yes	0.030
B	Yes	1200	0	0	No	0.030
C	Yes	1200	15	394	No	0.030
D	No	1200	15	394	Yes	0.030
E	No	1200	15	394	No	0.030
F	No	1200	15	394	No	0.070
G	No	1200	15	394	Yes	0.070
H	Yes	1200	15	394	No	0.070
I	Yes	1200	15	394	Yes	0.070
J	Yes	1200	0	0	Yes	0.070
K	Yes	1200	0	0	No	0.070
L	1	1200	0	0	No	0.070
M	1	1200	0	0	No	0.030
N	1	1200	0	0	Yes	0.030
O	1	1200	0	0	Yes	0.070

Figure 3

Force Required to Remove Armature From Pole

Pieces

(in Newtons)

Data Run	Test A	Test B	Test C	Test D	Test E	Test F	Test G	Test H	Test I	Test J	Test K	Test L	Test M	Test N	Test O
1	23.04	35.07	62.50	10.80	8.36	2.72	3.57	24.93	21.82	8.76	11.54	3.85	7.54	5.25	2.84
2	20.51	33.17	62.50	10.35	7.29	2.81	3.69	23.80	22.83	9.03	11.41	3.30	6.96	5.19	3.02
3	23.16	33.60	62.50	10.13	6.78	2.62	3.66	24.84	22.34	8.97	11.72	3.78	6.01	5.04	3.08
4	17.61	36.50	62.50	11.05	7.39	2.93	3.63	24.81	23.19	8.58	11.69	3.91	6.44	4.58	2.90
5	16.69	32.20	62.50	8.58	8.36	2.99	3.91	25.15	22.37	9.03	11.54	3.78	6.23	5.46	3.17
6	21.21	35.28	62.50	11.05	7.69	2.69	3.51	26.18	23.68	9.43	11.72	3.66	7.08	4.73	3.08
7	17.55	30.64	62.50	9.89	7.32	2.78	3.88	25.76	22.77	8.85	12.27	4.09	7.90	5.52	3.05
8	19.44	35.10	62.50	9.64	6.84	2.84	3.78	23.62	21.79	8.97	11.87	3.97	6.59	5.04	3.39
9	19.87	37.63	62.50	9.03	6.99	2.72	4.00	24.29	24.29	8.27	11.47	4.12	5.77	4.30	2.99
10	22.46	32.53	62.50	10.07	7.87	2.93	3.72	23.83	23.16	8.97	11.78	4.85	5.92	4.12	2.84
11	21.55	36.29	62.50	8.79	7.81	2.90	3.78	24.17	22.71	8.42	11.72	3.60	6.35	3.63	2.93
12	19.90	37.02	62.50	10.50	7.48	2.99	3.81	24.99	22.31	8.42	10.86	2.99	5.98	3.91	3.05
13	18.13	33.17	62.50	9.52	6.87	2.81	3.60	23.56	22.61	8.67	12.18	3.20	6.50	3.81	3.05
14	19.23	33.39	62.50	9.28	7.78	2.93	3.66	24.96	23.77	8.58	11.20	4.03	6.74	3.17	2.99
15	18.43	32.14	62.50	10.13	6.87	2.99	3.57	23.71	22.71	8.36	11.51	3.60	5.80	2.87	2.99
Avg.	19.92	34.25	62.50	9.92	7.45	2.84	3.72	24.57	22.82	8.75	11.63	3.78	6.52	4.44	3.02
Avg in Grams	2,031.14	3,492.39	6,373.23	1,011.63	759.35	289.94	379.13	2,505.78	2,327.33	892.66	1,186.13	385.66	664.92	452.89	308.43

Figure 4

The second phase of the project involves construction of a power conversion device to utilize the ability to redistribute the magnetic field lines to generate electricity. If the lines of force can be moved from one armature to another using a small input current then it may be possible to wrap the armatures in coils to pick up this change of flux as electrical energy. The researcher has constructed the basis for this generator and the circuit to power the unit is being designed. See Figure 5.

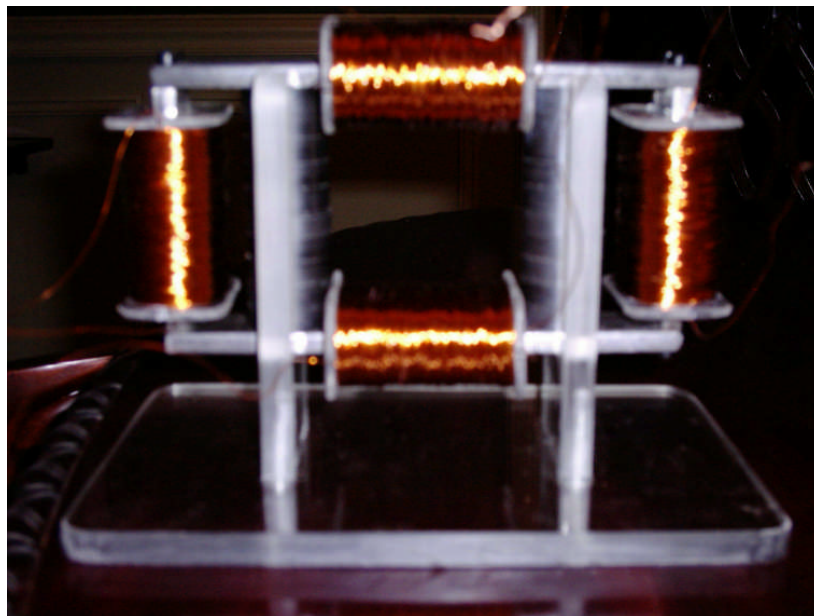


Figure 5

In conclusion, PPMT offers innovative control of magnetic field lines that will lead to many new applications using permanent magnets along with standard electromagnets. The results show that using PPMT, the ability to manipulate flux may yield promising results in the quest for over-unity power generation. More research will be done in this area of study. The researcher will continue to partner with the inventor of the technology on future investigations.

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