

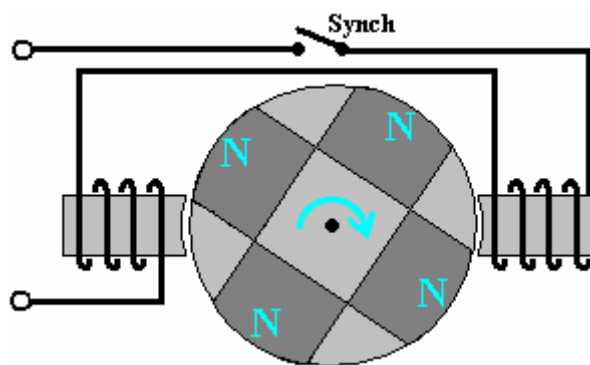
## **THE MOTOR/GENERATOR OF ROBERT ADAMS**

WHEN HE WAS 70 YEARS OLD, ROBERT ADAMS OF NEW ZEALAND DESIGNED A VERY EFFECTIVE MOTOR/GENERATOR. HE WAS TOLD TO DESTROY HIS DEVICE OR HE WOULD BE KILLED. ROBERT DECIDED THAT AT HIS AGE, HE HAD VERY LITTLE TO LOSE AND SO HE PUBLISHED HIS DESIGN.

HIS MOTOR OVERCOMES THE LENZ'S LAW DRAG EFFECT AND THROUGH CLEVER ENGINEERING, ACHIEVES A POWER OUTPUT WHICH IS EIGHT TIMES GREATER THAN THE INPUT POWER. ALTHOUGH IT DOES NOT LOOK AS IF IT IS, HIS DESIGN IS ACTUALLY A PERMANENT MAGNET MOTOR.



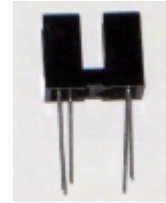
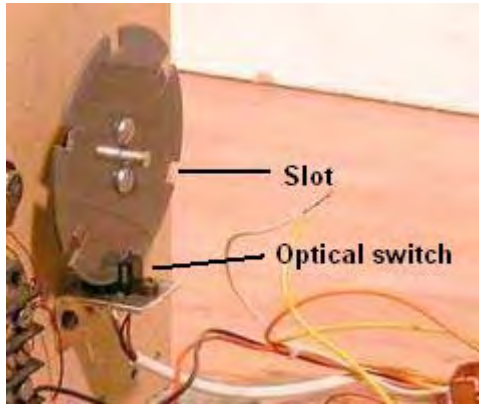
THE DIAGRAM OF HIS MOTOR WHICH IS SUPPOSED TO SHOW HOW IT WORKS IS THIS :



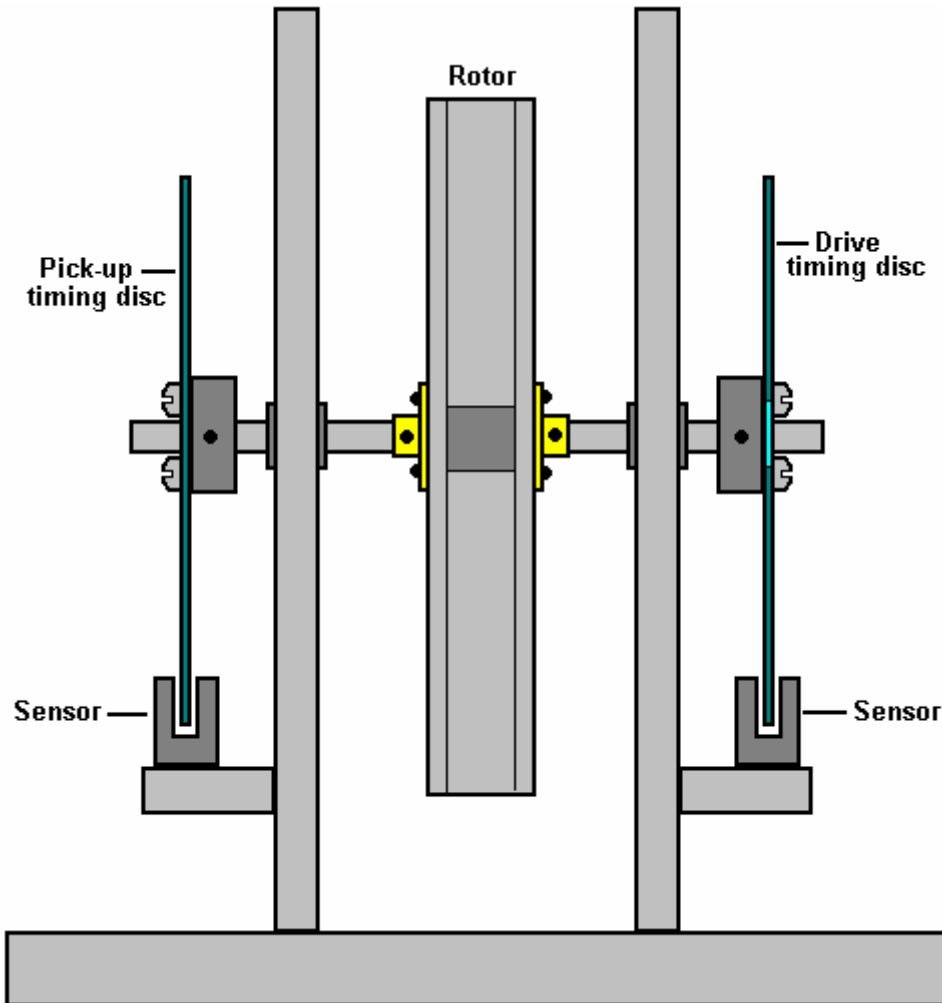
THIS GIVES THE IMPRESSION THAT THE ROTATION OF THE ROTOR CARRYING THE PERMANENT MAGNETS IS DRIVEN BY ELECTRICAL PULSES LIKE JOHN BEDINI'S FAMOUS MOTOR. IT ISN'T. THIS IS A PERMANENT MAGNET MOTOR AND THE ROTATION OF THE ROTOR IS CAUSED PRIMARILY BY THE ROTOR MAGNETS BEING ATTRACTED TO THE SOLID IRON CORES OF THE TWO "DRIVE" ELECTROMAGNETS SHOWN IN THE DIAGRAM ABOVE.

THE ELECTROMAGNETS CONFUSE PEOPLE AS THEY DON'T REALISE THAT THE LEVEL OF POWER APPLIED TO THEM IS SO LOW THAT IT ONLY JUST CANCEL'S THE BACKWARD DRAG OF THE MAGNETS AS SOON AS THEY PASS THE ELECTROMAGNET CORES. THAT HAPPENS FOUR TIMES PER ROTATION AND THE POWER IS ONLY SWITCHED ON WHEN THE MOTOR MAGNET IS EXACTLY ALIGNED WITH THE ELECTROMAGNET, AND THEN, ONLY BRIEFLY.

THESE TWO ELECTROMAGNETS, ALONG WITH THEIR VERY CAREFULLY TIMED ELECTRIC PULSES ARE THE ENTIRE DRIVE FOR THE GENERATOR. THE TIMING OF THE "DRIVE" COIL PULSES IS ARRANGED BY AN OPTICAL TIMING DISC OF THIS TYPE :



SENSOR :



LET'S CONCENTRATE ON THE DRIVE FOR THE MOMENT. AFTER MUCH EXPERIMENTATION, ROBERT FOUND THAT THE MOST EFFICIENT ARRANGEMENT IS WHEN THE CORED OF THE "DRIVE" ELECTROMAGNETS HAVE HALF THE CROSS-SECTIONAL AREA OF THE CROSS-SECTIONAL AREA OF THE ROTOR MAGNETS. SO, IF THE ROTOR MAGNETS HAVE A CIRCULAR CROSS-SECTION, THEN THEIR DIAMETER WOULD BE TWICE THAT OF THE DRIVE ELECTROMAGNET CORES.

ROBERT ALSO FOUND THAT THE BEST GAP BETWEEN THE ROTOR MAGNETS AND THE "DRIVE" ELECTROMAGNET CORES IS ABOUT HALF AN INCH WHICH IS 12 mm.

A FURTHER TWEAK TO THE DRIVE SYSTEM IS THE FACT THAT THE DRIVE ELECTROMAGNETS ARE FED A CONTINUOUS STREAM OF ELECTRIC PULSES. WHEN A COIL IS POWERED UP AND THEN THE CURRENT SWITCHED OFF, THE COIL GENERATES A

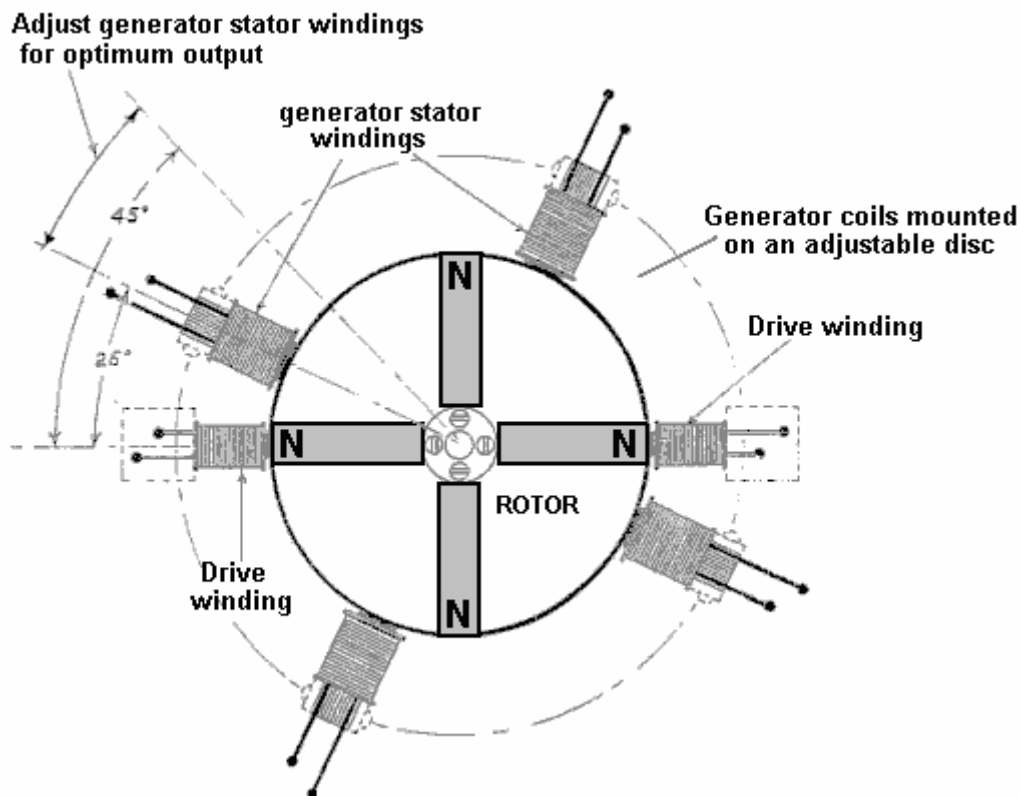
REVERSE VOLTAGE PULSE, SOMETIMES CALLED THE “BACK-EMF” PULSE. IN ROBERT’S MOTOR/GENERATOR, THOSE BACK-EMF PULSES ARE USED TWICE:

FIRST, AS THE COILS WERE ENERGISED IN ORDER TO OPPOSE THE ATTRACTION BETWEEN THE ROTOR MAGNETS AND THE ELECTROMAGNET CORES, THE BACK-EMF BEING IN THE OPPOSITE DIRECTION, CAUSES THE REVERSE EFFECT, INCREASING THE ATTRACTION TO THE NEXT APPROACHING ROTOR MAGNET.

SECOND, ROBERT RECTIFIES THE BACK-EMF PULSES AND FEEDS THEM BACK TO THE DRIVE BATTERY AND THAT RECOVERS 95% OF THE CURRENT NEEDED TO MAKE THE MOTOR/GENERATOR WORK.

NOW WE COME TO THE POWER GENERATING SYSTEM, AND ONE PERSON WHO REPLICATED THIS DEVICE HAS AN EXCESS OUTPUT OF 33 KILOWATTS AND THAT POWERS HIS HOUSE AND HIS BUSINESS.

THE POWER GENERATION IS THROUGH FOUR ADDITIONAL ELECTROMAGNETS WHICH ACT AS PICK-UP COILS. THIS IS ROBERT’S DRAWING OF HIS ARRANGEMENT :



NOTICE A NUMBER OF THINGS HERE : THE FOUR GENERATOR COILS ARE PHYSICALLY ATTACHED TO A DISC OR RING WHILE THE TWO DRIVE COILS ARE MOUNTED SEPARATELY. THIS MEANS THAT THE GAP BETWEEN THE GENERATOR COILS AND THE DRIVE ELECTROMAGNETS CAN BE ADJUSTED WHILE THE MOTOR IS RUNNING.

ALSO, THE WIDTH OF THE CORES OF THE GENERATOR COILS IS VERY MUCH GREATER THAN THE WIDTH OF THE CORES OF THE DRIVE COILS, AND THE GENERATOR COILS ARE NEARLY SQUARE ON THIS DRAWING.

NEXT, NOTICE THE PROPORTIONS OF THE ROTOR MAGNETS – THEY ARE VERY MUCH LONGER THAN THEY ARE WIDE, SEPARATING THE OUTER NORTH POLES FROM THE INNER SOUTH POLES.

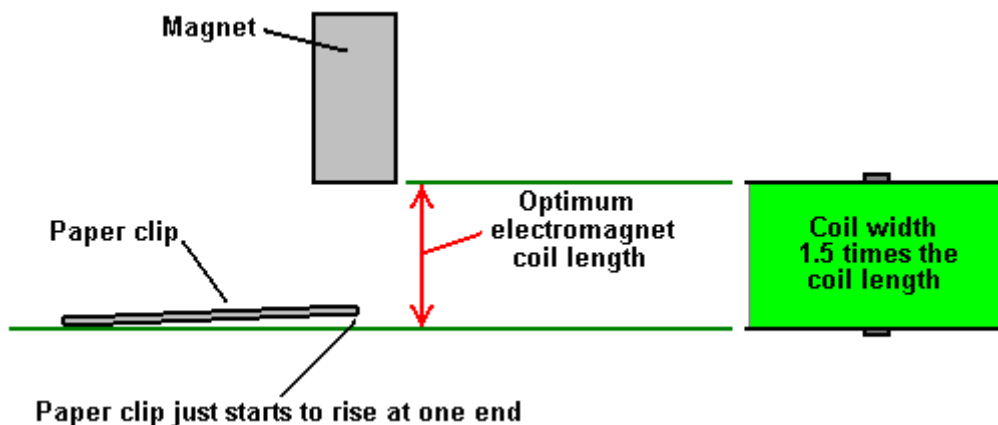
HOWEVER, A POINT WHICH SEEMS TO ESCAPE MOST PEOPLE IS THE FACT THAT A CRITICAL PART OF THE DESIGN IS THE TECHNIQUE OF CUTTING OFF THE OUTPUT POWER AT THE APPROPRIATE MOMENT. CUTTING OFF THE OUTPUT POWER SOUNDS ALL WRONG TO MOST PEOPLE, AND YET IT IS A VERY IMPORTANT THING TO DO.

THE REASON IS THE SAME AS FOR THE DRIVE COILS. IF YOU DON'T CUT OFF THE ELECTRICAL CONNECTION, THEN THE ATTRACTION BETWEEN THE SOLID IRON CORES OF THE GENERATOR COILS AND THE ROTOR MAGNETS TRIES TO PULL THE ROTOR MAGNETS BACK TOWARDS THE FIXED GENERATOR COIL CORES – AN EFFECT CALLED “DRAG”. BUT, IF THE OUTPUT CURRENT GENERATED IN THE COILS BY THE PASSING MAGNETS IS CUT OFF AT JUST THE RIGHT INSTANT, THEN THE BACK-EMF GENERATED BY THAT CUT-OFF CAUSES A MAGNETIC FIELD IN THE GENERATOR COILS WHICH BOOSTS THE ROTOR ON ITS WAY INSTEAD OF DRAGGING IT BACKWARDS.

ROBERT ALSO RECTIFIES THAT BACK-EMF PULSE AND FEEDS IT BACK TO THE DRIVE BATTERY. SO FAR, THIS IS A HIGHLY EFFICIENT SYSTEM.

ROBERT'S DIAGRAM DOES NOT SHOW WHEN THE GENERATOR COILS ARE BEST SWITCHED ON OR OFF. A BUILDER WITH A FORUM ID OF “MAIMARIATI” FOUND OPTIMUM SWITCHING WITH SWITCH ON AT 42 DEGREES AND SWITCH OFF AT 44.7 DEGREES. THAT TINY 2.7 DEGREE PART OF THE ROTOR TURN GAVE HIM AN INPUT OF 27.6 WATTS AND AN OUTPUT OF 33.78 KILOWATTS, WHICH IS COP=1223 OR 122,300% WHICH IS SPECTACULAR.

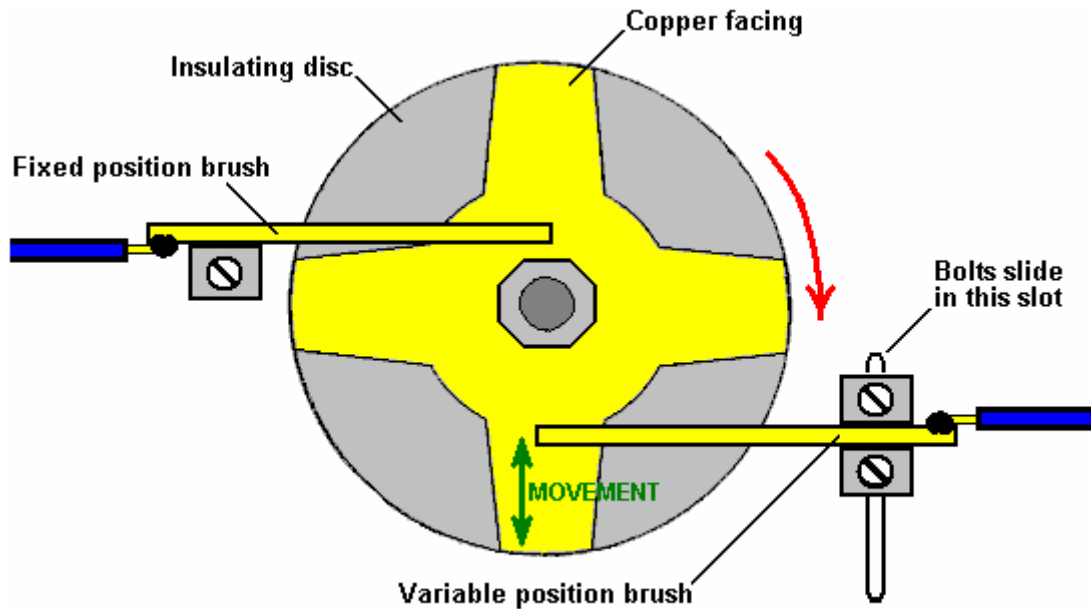
IT IS SUGGESTED THAT A GOOD LENGTH FOR THE GENERATOR COILS IS SHOWN WHEN YOUR PARTICULAR ROTOR MAGNETS JUST START TO LIFT ONE END OF A 32 mm PAPER CLIP OFF THE TABLE LIKE THIS :



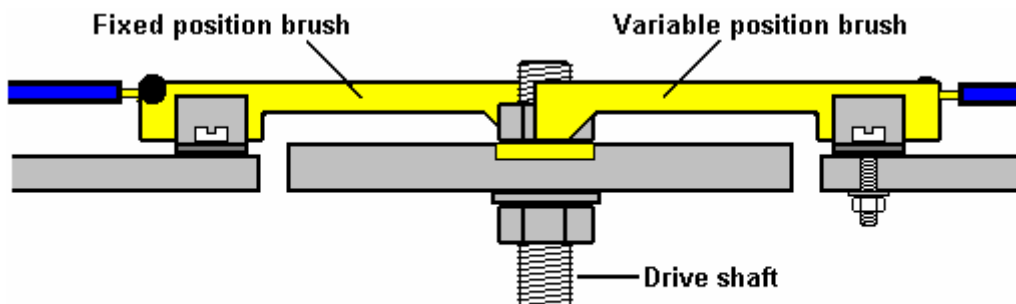
ROBERT TAKES HIS DESIGN FURTHER BY USING SHORT PULSES OF CURRENT.

THIS IS SOMETHING WHICH IS DONE AFTER THE ROTOR OPERATION HAS BEEN OPTIMISED USING CONTINUOUS BATTERY POWER. THAT IS, AFTER MOVING THE GENERATOR COILS ON THEIR DISC TO FIND THE VERY BEST PERFORMANCE POSITION.

ROBERT PREFERRED TO USE MECHANICAL CONTACTS ON A DISC AS THEY ALLOW CURRENT FLOW IN BOTH DIRECTIONS. HIS METHOD IS SHOWN HERE :

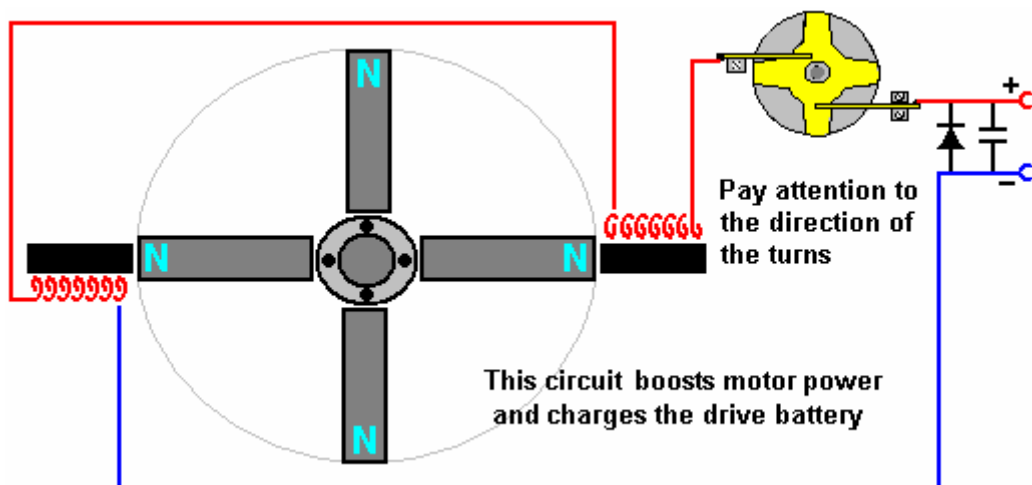


**TIMING GEAR - TOP VIEW**



**TIMING GEAR - SIDE VIEW**

THE OBJECTIVE IS TO ADJUST THE VARIABLE POSITION BRUSH CONTACT TO GET THE INPUT POWER CONNECTED TO THE MOTOR/GENERATOR FOR ONLY ABOUT 25% OF THE TIME. THE TIMING DISC SHOWN ABOVE IS ATTACHED TO THE ROTOR SHAFT AND SO NO ADDITIONAL POWER IS NEEDED TO ACHIEVE THE SWITCHING, AND THE SWITCHING ALLOWS CURRENT FLOW IN BOTH DIRECTIONS, WHICH IS CONVENIENT.

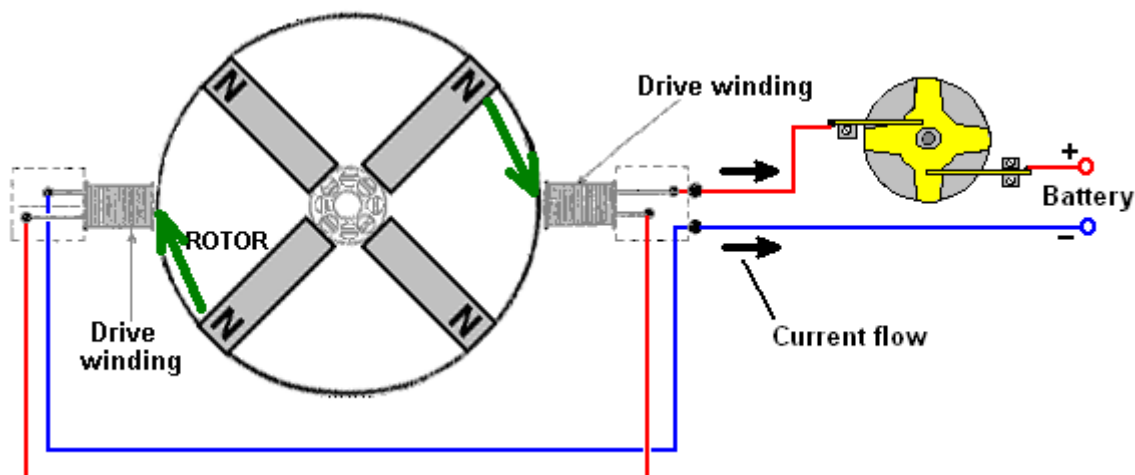


THE OVERALL ARRANGEMENT IS LIKE THIS :

BIG CIRCUIT GAINS WILL NOT BE ACHIEVED UNLESS THE DRIVE VOLTAGE IS HIGH. THE MINIMUM SHOULD BE 48 VOLTS BUT THE HIGHER THE VOLTAGE, THE HIGHER THE ENERGY GAIN, SO VOLTAGES IN THE 120 VOLTS TO 230 VOLTS SHOULD BE CONSIDERED. NEODYMIUM MAGNETS ARE NOT RECOMMENDED FOR DRIVE VOLTAGES UNDER 120 VOLTS.

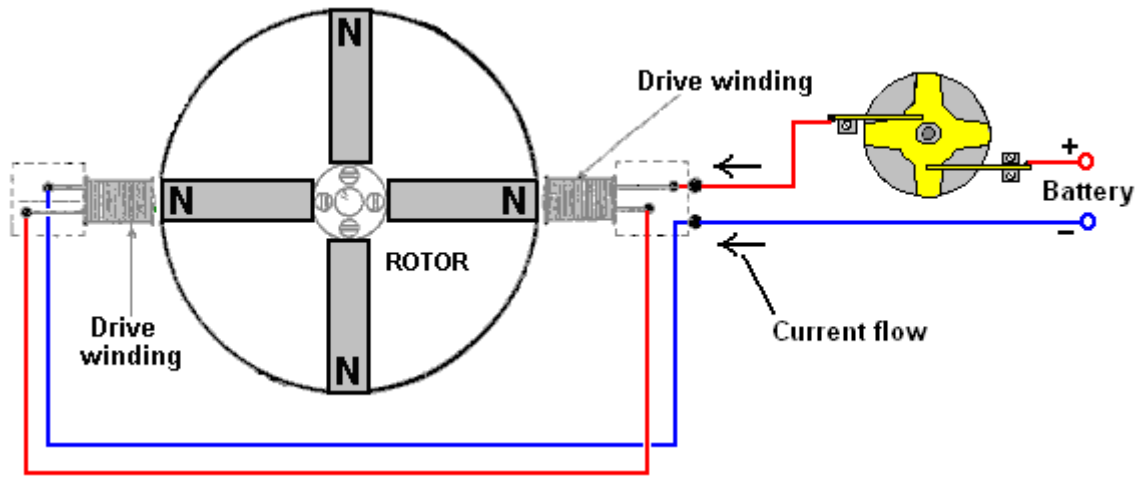
THERE ARE SEVERAL IMPORTANT STEPS IN THE WAY THAT THE ROBERT ADAMS MOTOR/GENERATOR WORKS AND IT IS IMPORTANT FOR YOU TO UNDERSTAND EACH OF THE STEPS.

STEP 1: A ROTOR MAGNET IS ATTRACTED TO THE IRON CORE OF A STATOR "DRIVE" ELECTROMAGNET. AS IT APPROACHES THE ELECTROMAGNET THE LINES OF MAGNETIC FORCE FROM THE STATOR MAGNET MOVE ACROSS THE DRIVE ELECTROMAGNET COIL. THIS GENERATES AN ELECTRIC CURRENT IN THE DRIVE ELECTROMAGNET COIL AND THAT CURRENT IS FED BACK TO THE BATTERY WHICH IS POWERING THE MOTOR/GENERATOR:



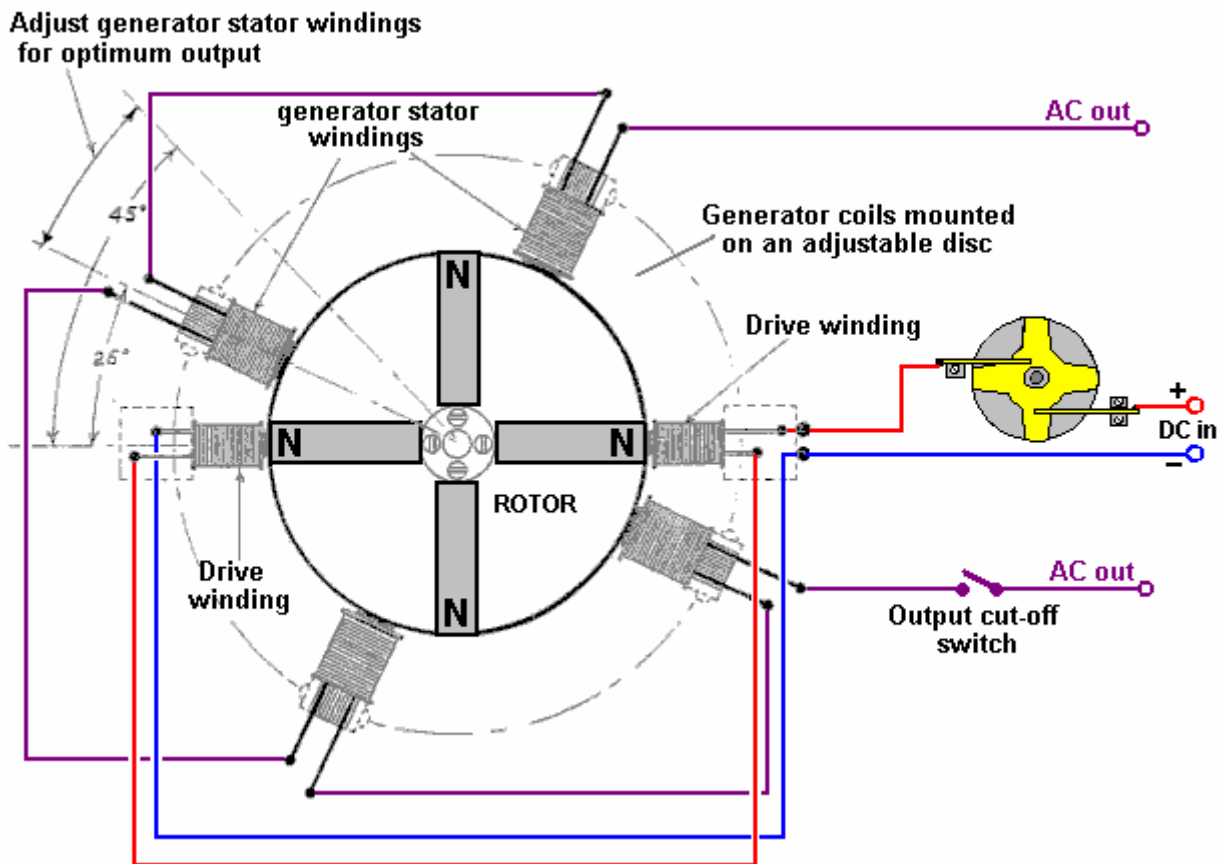
NOTICE THAT THE MOVEMENT OF THE ROTOR IS CAUSED BY IT'S PERMANENT MAGNETS BEING ATTRACTED TO THE IRON CORES OF THE DRIVE ELECTROMAGNETS AND **NOT** BY ANY ELECTRIC CURRENT. THE ELECTRIC FLOW IS GOING BACK INTO THE BATTERY AND IS BEING CAUSED BY THE MOVEMENT OF THE ROTOR WHICH IN TURN IS BEING CAUSED BY THE PERMANENT MAGNETS.

STEP 2: WHEN THE ROTOR TURNS FAR ENOUGH, THE MAGNETS ALIGN EXACTLY WITH THE CORES OF THE DRIVE ELECTROMAGNETS. THE ROTOR CONTINUES TO ROTATE BECAUSE OF IT'S INERTIA, BUT IF WE DO NOTHING ABOUT IT, THE ROTOR MAGNET ATTRACTION TO THE CORES OF THE DRIVE ELECTROMAGNETS WILL ACT TO SLOW DOWN AND THEN DRAG THE ROTOR BACK SO THAT THE MAGNETS ALIGN EXACTLY WITH THE IRON CORES. WE WANT TO PREVENT THAT AND SO WE FEED A SMALL AMOUNT OF CURRENT INTO THE COILS OF THE DRIVE ELECTROMAGNETS – JUST ENOUGH CURRENT TO STOP THE BACKWARD DRAG OF THE ROTOR MAGNETS. THIS CURRENT IS **NOT** TO PUSH THE ROTOR MAGNETS AWAY, IT IS JUST ENOUGH TO PREVENT THE ROTOR BEING SLOWED DOWN:



**STEP 3: WHEN THE ROTOR MAGNET HAS MOVED AWAY FAR ENOUGH, THE CURRENT BEING FED TO THE DRIVE ELECTROMAGNETS IS CUT OFF. AS HAPPENS WITH ANY COIL, WHEN THE CURRENT IS CUT OFF, A LARGE REVERSE VOLTAGE SPIKE IS GENERATED. THAT VOLTAGE SPIKE IS RECTIFIED AND FED BACK TO THE BATTERY.**

**THE SYSTEM SO FAR, PRODUCES A SPINNING ROTOR FOR VERY LITTLE CURRENT DRAW FROM THE BATTERY. BUT WE WANT THE SYSTEM TO PROVIDE US WITH EXCESS ELECTRICAL OUTPUT, SO FOR THAT, FOUR ADDITIONAL ELECTROMAGNETS ARE ADDED AROUND THE ROTOR. THESE OUTPUT COILS ARE MOUNTED ON A NON-MAGNETIC DISC WHICH CAN BE ROTATED TO ADJUST THE GAP BETWEEN THE DRIVE COILS AND THE OUTPUT COILS. LIKE THE ROTOR MAGNETS, THE OUTPUT COILS ARE SPACED EVENLY AROUND THE CIRCUMFERENCE OF THE ROTOR AT 90-DEGREE INTERVALS:**



**STEP 4: SURPRISINGLY, THE OUTPUT COILS ARE SWITCHED OFF FOR MOST OF THE TIME. THIS SOUNDS MAD BUT IT MOST DEFINITELY ISN'T MAD. WITH THE OUTPUT COILS DISCONNECTED, THE APPROACHING ROTOR MAGNETS GENERATE A VOLTAGE IN THE OUTPUT COIL WINDINGS BUT NO CURRENT CAN FLOW. AS NO CURRENT IS FLOWING, NO MAGNETIC FIELD IS GENERATED AND SO THE ROTOR MAGNETS JUST PULL DIRECTLY TOWARDS THE OUTPUT COIL CORES. THE MAXIMUM OUTPUT COIL VOLTAGE IS WHEN THE ROTOR MAGNETS ARE ALIGNED WITH THE OUTPUT COIL CORES. AT THAT INSTANT THE OUTPUT SWITCH IS CLOSED AND A STRONG PULSE OF CURRENT IS DRAWN OFF AND THEN THE SWITCH IS OPENED AGAIN, CUTTING OFF THE OUTPUT CURRENT. THE OUTPUT SWITCH IS CLOSED FOR ONLY THREE DEGREES OR SO OF THE ROTOR'S ROTATION AND IT IS SWITCHED OFF AGAIN FOR THE NEXT EIGHTY SEVEN DEGREES OF ROTATION, BUT THE OPENING OF THE SWITCH HAS A MAJOR EFFECT. THE SWITCH BEING OPENED CUTS OFF THE CURRENT FLOWING IN THE OUTPUT COILS AND THAT CAUSES A MAJOR REVERSE VOLTAGE SPIKE, CAUSING A MAJOR MAGNETIC FIELD WHICH PUSHES THE ROTOR ON ITS WAY. THAT VOLTAGE SPIKE IS RECTIFIED AND PASSED BACK TO THE BATTERY.**

**THE RECTIFICATION OF EVERY POSSIBLE SPARE VOLTAGE PULSE AS DESCRIBED, RETURNS 95% OF THE DRIVE CURRENT TO THE BATTERY, MAKING THIS AN EXTREMELY EFFECTIVE MOTOR/GENERATOR. THE PERFORMANCE CAN BE FURTHER ENHANCED BY ROTATING THE SET OF FOUR OUTPUT COILS TO FIND THEIR OPTIMUM POSITION AND THEN LOCKING THE DISC IN PLACE. WHEN PROPERLY SET UP, THIS GENERATOR HAS AN OUTPUT CURRENT WHICH IS EIGHT TIMES GREATER THAN THE INPUT CURRENT.**

**NOTICE THAT THE CORES OF THE OUTPUT COILS ARE VERY MUCH WIDER THAN THE CORES OF THE "DRIVE" COILS. ALSO NOTICE THE PROPORTIONS OF THE MAGNETS WHERE THE LENGTH IS MUCH GREATER THAN THE WIDTH OR DIAMETER. THE FOUR OUTPUT COILS ARE MOUNTED ON A SINGLE DISC AND THE TWO DRIVE COILS ARE MOUNTED SEPARATELY AND HELD CLEAR OF THE DISC. NOTICE ALSO, THAT THE OUTPUT COILS ARE MUCH WIDER COMPARED TO THEIR LENGTH THAN THE DRIVE COILS ARE. THE DIAGRAM ABOVE WAS DRAWN BY ROBERT ADAMS.**

**ROBERT ADAMS ADVISES THE FOLLOWING :**

- 1. USE ONLY PURE IRON FOR THE CORES OF THE DRIVE AND GENERATOR COILS.**
- 2. WIND THE GENERATOR COILS WITH A RESISTANCE IN THE RANGE OF 10 TO 20 OHMS FOR A SMALL MODEL.**
- 3. USE A VOLTAGE BETWEEN 12 VOLTS AND 36 VOLTS FOR A SMALL MODEL.**
- 4. FOR A SMALL MACHINE, MAKE THE CONTACTOR STAR DISC WITH A MAXIMUM DIAMETER OF ONE INCH (25 mm).**
- 5. KEEP WIRING SHORT AND OF A LOW RESISTANCE.**
- 6. FOR A SMALL MACHINE USE A FUSE OF 500 MILLIAMPS TO 1 AMP.**
- 7. INSTALL A SWITCH FOR CONVENIENCE AND SAFETY.**
- 8. USE SMALL BEARINGS BUT DO NOT USE SEALED BEARINGS DUE TO THEIR GREASE DRAG.**
- 9. USE ONLY SILVER CONTACTS FOR THE PULSE SWITCHING.**
- 10. IF USING POWERFUL MAGNETS, VIBRATION BECOMES A PROBLEM.**



11. THE AIR GAP IS NOT CRITICAL, BUT REDUCING IT INCREASES BOTH TORQUE AND INPUT POWER IN PROPORTION.
12. FOR HIGHER VOLTAGE WITH LOWER CURRENT, CONNECT THE GENERATOR COILS IN SERIES.
13. IF THE DRIVE COIL WINDINGS ARE LOW RESISTANCE AND THE INPUT VOLTAGE IS HIGH, THEN IT IS ADVISABLE TO USE TRANSISTOR SWITCHING TO ELIMINATE SPARKING.
14. TUNING THE POINTS IS VITALLY IMPORTANT UNLESS USING TRANSISTOR SWITCHING.
15. USE FERRITE MAGNETS FOR ALL INPUT VOLTAGES BELOW 120 VOLTS.
16. IF CONSTRUCTING A LARGE MODEL INVOLVING LARGE SUPER-POWER MAGNETS, THEN GREATER POWER IS NEEDED TO DRIVE THE MACHINE, THE GREATER THE TORQUE, THE GREATER THE VIBRATION, THE GREATER THE COPPER CONTENT, ETC.

PLEASE REMEMBER THAT ANY WIRING THAT YOU USE NEEDS TO BE ABLE TO CARRY THE CURRENT WITHOUT OVERHEATING. HERE ARE SOME CONTINUOUS CURRENT FIGURES FOR POPULAR WIRE SIZES :

AWG	Dia mm	SWG	Dia mm	Max Amps	Ohms / 100 m
11	2.30	13	2.34	12	0.47
12	2.05	14	2.03	9.3	0.67
13	1.83	15	1.83	7.4	0.85
14	1.63	16	1.63	5.9	1.07
15	1.45	17	1.42	4.7	1.35
16	1.29	18	1.219	3.7	1.48
18	1.024	19	1.016	2.3	2.04
19	0.912	20	0.914	1.8	2.6
20	0.812	21	0.813	1.5	3.5
21	0.723	22	0.711	1.2	4.3
22	0.644	23	0.610	0.92	5.6
23	0.573	24	0.559	0.729	7.0
24	0.511	25	0.508	0.577	8.7
25	0.455	26	0.457	0.457	10.5
26	0.405	27	0.417	0.361	13.0
27	0.361	28	0.376	0.288	15.5
28	0.321	30	0.315	0.226	22.1
29	0.286	32	0.274	0.182	29.2
30	0.255	33	0.254	0.142	34.7
31	0.226	34	0.234	0.113	40.2
32	0.203	36	0.193	0.091	58.9
33	0.180	37	0.173	0.072	76.7
34	0.160	38	0.152	0.056	94.5
35	0.142	39	0.132	0.044	121.2

Notes : <http://www.free-energy-info.com/Adms.pdf>

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