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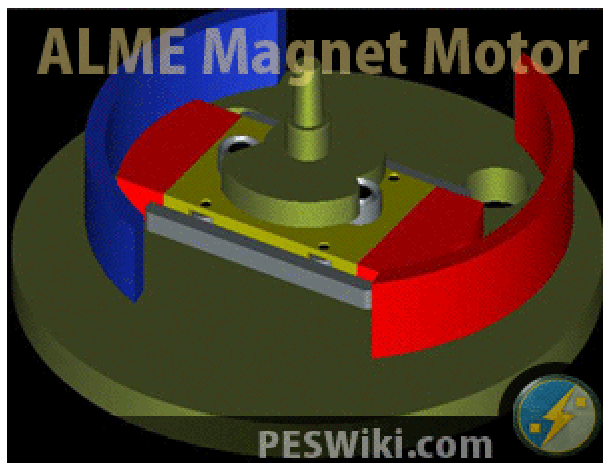
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OS:Achilles Ligeras' Magnetic Engine (ALME)

From PESWiki

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An Open Source Magnet Motor Project



ALME (Achilles Ligeras' Magnetic Engine)

The diagram is a simplification. The red signifies one polarity as seen by the magnet in proximity. The opposite polarity, of course, would be present on the opposite side.

[Download alme12.exe](#) (472 kb) - executable file that allows stop/start, speed up, slow

down of the device animation.

NOTE: The prototype only ran counterclockwise, not clockwise as is being depicted in the animated gif above.

American-Grecian inventor, Achilles ("Archie") Ligeras, who resides in New York, claims to have built a working prototype that demonstrate his original concept of a motor driven by magnets only, with no other input. An animation of his design is shown to the right.

This is another in a long stream of claims to working [magnet motors](#), none of which have yet emerged with a clear public demonstration.

If this one can be proven and refined for commercial application, this technology could revolutionize the energy industry, providing a clean energy source that is everywhere present and constant, replacing the need for any kind of fuel, and allowing a pure "distributed energy" paradigm -- to the point of each appliance having its own power source. Smaller versions may be limited, such as for a cell phone, but the repowering station for the batteries could be portable.

Achilles claims that his working prototype achieved a rotation speed of approximately 1500 rpm for fifteen minutes, and ran continuously at a slower speed for about 48 hours. At the end of that run, the motor box housing was hot to the touch, but not too hot to touch. The heat was most likely a function of friction from the various rollers and bearings. He applied a Schwinn bike generator to generate a few watts of electricity. He also tried stopping the shaft wearing leather garden gloves, and that it was quite hard to stop the rotation.

In the process of removing the housing from the motor in preparation for its photographing and videotaping, the device broke. A second, more professionally-machined prototype is in process of being built.

Achilles now wishes to give this idea away to the world for open source development. ***He has chosen this site, PESWiki.com, to be the official location for this project development by the world community.*** This site is a publicly editable site, like Wikipedia. You are welcome to log in and join in the development of this material as new information becomes available.

CAVEAT

In open sourcing this idea, Achilles only asks that he receive a 6% royalty on any commercial development of the technology (whether plans, kits, or

finished units), which royalty he will share with [PES Network, Inc.](#), which is coordinating this project.

Also, as complete plans are developed, those will be available in finished format for a small fee, though the more rough information will be available for free on this site.

Kits will also be made available. And eventually, finished units.

Project Status (As of Jan. 26, 2009)

Plans are in process of being delivered but are not yet complete. Only one working prototype is claimed, which has broken. Archie has CAD drawings which he plans to release once the new prototype is complete and demonstrated.

Contents

- [1 About](#)
 - [1.1 Official Website](#)
 - [1.1.1 Animations](#)
 - [1.2 Latest Developments](#)
 - [1.2.1 Jan. 23, 2009](#)
 - [1.2.2 Nov. 29, 2008](#)
 - [1.2.3 Nov. 13, 2008](#)
 - [1.2.4 Oct. 30, 2008](#)
 - [1.2.5 Oct. 15, 2008](#)
 - [1.2.6 Oct. 1, 2008](#)
 - [1.2.7 Sept. 29, 2008](#)
 - [1.2.8 Sept. 28, 2008](#)
 - [1.2.9 Sept. 26, 2008](#)
 - [1.2.10 ~June, 2008](#)
 - [1.3 How it Works](#)
 - [1.3.1 Diagram Description](#)
 - [1.3.2 Relative Sizes of the Magnets in the ALME](#)
 - [1.3.3 Diagrams: Jan. 2009](#)
 - [1.4 Correspondence](#)
 - [1.5 Photos](#)
 - [1.6 Plans](#)

- [1.7 Materials](#)
- [1.8 Costs](#)
- [1.9 Advantages](#)
- [1.10 Applications](#)
- [1.11 Independent Testing](#)
- [1.12 Patents](#)
- [1.13 Replications](#)
 - [1.13.1 Anand Aadhar](#)
- [1.14 Variations](#)
- [1.15 Profiles](#)
 - [1.15.1 Inventor:Achilles Ligeras](#)
- [2 Coverage](#)
 - [2.1 In the News](#)
 - [2.2 Other Coverage](#)
 - [2.3 Discussion](#)
 - [2.4 Related Technologies](#)
 - [2.5 Contact](#)
 - [2.6 Directories](#)
- [3 See also](#)

About

Official Website

This PESWiki page is the preferred destination by the inventor, Achilles Ligeras, for information regarding his device.

Animations

- [Download alme12.exe](#) (472 kb) - File is a Windows-only executable file that allows stop/start, speed up, slow down of the device animation.

- [Download ALME_engine](#) (2 Mb) - File is a Windows-only executable file that allows stop/start, speed up, slow down of the device animation.

Note: It seems the timing on the "red" and "blue" rotor portions is backwards. Red is shown as being attracted to red and repelled from blue. This view does show the cam much better. -- [Sterling D. Allan](#)

Latest Developments

Jan. 23, 2009

Posted a photo of the arc magnets and holders; and diagram of the full assembly.

Nov. 29, 2008

Archie wrote:

The second ALME prototype is coming along. Waiting for few remaining parts. Assembly will not take more than an hour when all parts are in.

Nov. 13, 2008

Archie wrote:

Hi Sterling. I have to report some good progress. The rollers-shafts, bearings, assembly screws and slider mechanism are all in. Waiting for the magnet housings, rotor and the rest of the rapid prototyping parts. The custom neodymium arc magnets' lead time has shrunk to about two weeks remaining. Anticipated completion of the prototype based on the input I am getting is between three to five weeks.

PS. "Energy (comes from the Greek word *energeia*) can neither be created nor destroyed. It can only change forms. The ultimate form is overunity, which can only be created by sheer ingenuity".

Thermodynamically correct

Oct. 30, 2008

Archie [said](#):

"The CAD drawings are in hand and the second prototype is already in development. The CAD drawings and the prototype's video will be available to you and your readers as soon as the prototype is ready. I guess that it will not take that long."

Oct. 15, 2008

Archie writes: "I spent some time today with my mechanical engineer-designer fine-tuning the Auto-Cad design of the ALME prototype in order to be assembled with as many as possible "off the shelf" non magnetic parts. Hard plastic parts are used extensively. This approach is cheaper plus it will allow more people to duplicate the ALME engine with minimal out of pocket expenses. The sources and corresponding part numbers will also be available to them. In other words I am kind of creating an ALME kit ready to be assembled. We will be done with the Auto-Cad design by this Friday and the latest this coming Monday (as I was promised) and then we will go ahead right away developing the rapid prototype."

Oct. 1, 2008

- [#Relative Sizes of the Magnets in the ALME](#) section posted

Sept. 29, 2008

This open source project page is commenced at PESWiki.com with permission from Achilles Ligeras.

Sept. 28, 2008

Achilles entered the A.L.M.E. idea into Google's, [Google's 10 to the 100th](#) competition.

Sept. 26, 2008

Archie returned from Greece where he demonstrated the first prototype and guided work on starting a more polished second prototype.

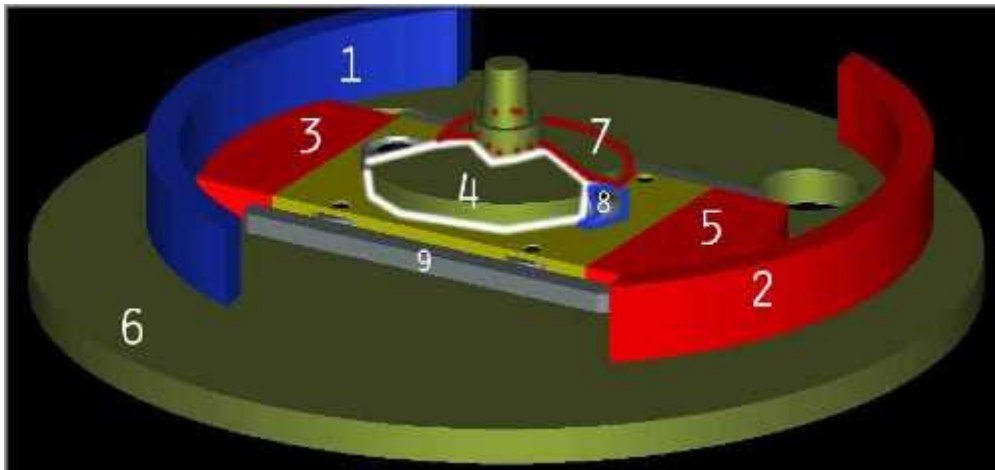
~June, 2008

The first prototype is built and works on the first try, according to Achilles.

How it Works

Diagram Description

The following description was obtained from a phone interview [Sterling D. Allan](#) had with Achilles on the evening of Sept. 29, 2008.



The diagram is a simplification to make visualization of the concept easier. We'll call red "south (S)", and blue "north (N)".

In Archie's prototype, all of what is depicted in this diagram was housed inside a vented plywood box of dimensions 14" x 14" x 8" high, with the shaft protruding from the [black] box. After he gave the shaft a spin by hand, it would begin accelerating on its own until it reached a stable speed of approximately 1500 rpm (not accurately measured). [Editor's note: it could be that the eddy effect between magnets and the aluminum components prevents the motor from spinning faster, creating a self-braking effect. If brass, plastic or other non-magnetic material were used this effect would go away, allowing for greater torque and speed.] The points of friction were lubricated with synthetic oil.

All magnets were neodymium, custom shaped by a U.S. company per the specs given. Most of the remaining assembly was made of aluminum. The shaft in the middle came from another motor. It was probably steel, and it had a groove which could be used for fastening things to the shaft to prevent them from twisting on the shaft.

The two aluminum tracks, 9, were fitted with a groove for the four rollers on the two sides of the slider to ride in. Archie says that in a well-machined prototype, such tracks would not be necessary. The tracks are held stationary by the housing (not shown in diagram), while the rest of the apparatus moves within the housing. The slider (5, 3 and between) moves like a piston, two cycles per full rotation of the flywheel, 6.

The Cam, 7, and also the counterbalance, 4, were shaped from hard wood.

6 is the rotating flywheel to which 1 and 2 are attached. 1 and 2 are the rotor magnet sets, held in a housing with five magnets each. These magnets are spaced with about a 1/4" gap between them.

The housing for the rotor magnet sets, 1 and 2, each have two points at which they are fastened to the flywheel. In the top of the diagram, there is one bolt that is stationary -- the pivot point. On the bottom of the diagram, the bolt is in a hole that is adjustable so that the magnet housing can be moved closer to or further from to the perimeter. *The closer this end of the rotor housing is to the magnets 3 and 5, the more torque the motor has. The further away the rotor housing is, the less torque the motor has.* "In the new prototype I am incorporating a servo motor mechanism controlling both spinning housings' angles containing the magnets."

These two items, 1 and 2, are positioned symmetrically on the flywheel. The hole depicted in the diagram (not numbered, but above and to the right of 5) were not in the first prototype. The purpose is to provide balance in the weight distribution.

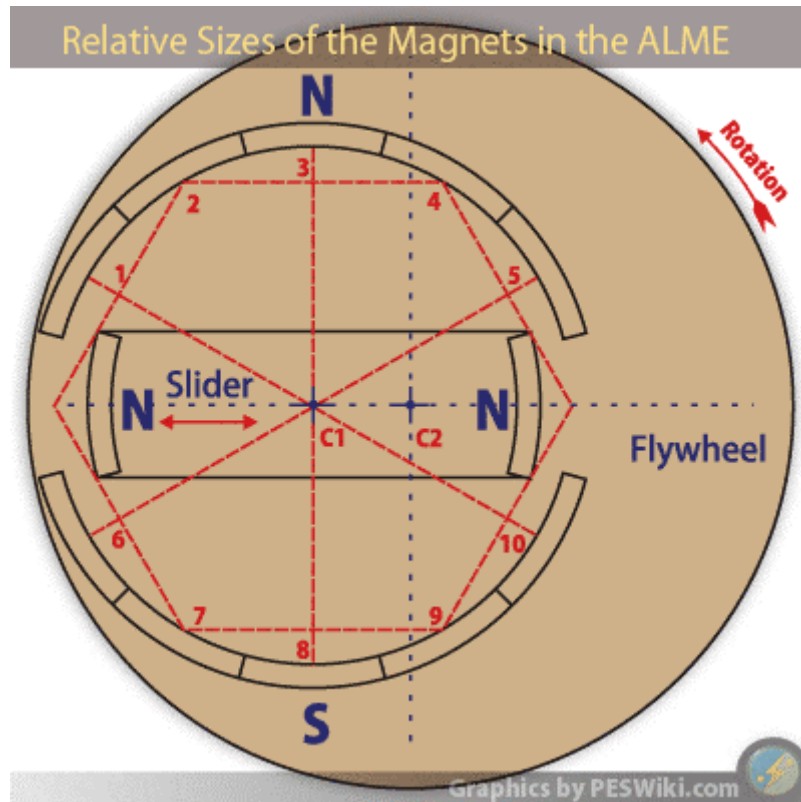
[Editor's note: Other, adjustable counterweight measures will need to be employed to offset the adjustment of 1 and 2.]

In 1, the five magnets are oriented so that "N" faces inward, and "S" faced outward. In 2, the five magnets are oriented so that "S" faces inward, and "N" faced outward. 3 and 5 are single magnets each, with "S" facing outward and "N" inward. In the first prototype, they were held in place by an upper and lower plate that extended from the sliding apparatus (not labeled in the diagram), with screws protruding to tighten into the magnet, making a pressure fit.

There are four rollers 8: two on the top, and two on the bottom. These are made of plastic, with metal bearings between the plastic and the protruding post. The four rollers in the slider, though smaller, are of similar composition. The bearings holding

the main shaft in the middle in place on the top and bottom of the housing (not shown), were regular steel ball bearings.

Relative Sizes of the Magnets in the ALME



Information received from Archie via phone to [Sterling D. Allan](#) on Sept. 30, 2008 and Oct. 1, 2008.

Important note: While it depicts the general idea of motion, the animation above is not an accurate depiction of magnet size and shape. This present section and diagram are to define the proper shape and relative size and focal point of the magnets involved in the ALME. In the final assembly, the elevation of the rotor magnets should be the same as the elevation of the slider magnets.

Please bear in mind that this diagram is not intended as an assembly diagram. The placement and spacing of the rotor magnets will be different in the assembly.

In the diagram, you will see that we are essentially taking a cylindrical magnet and are chopping it into twelve equal segments -- except that the magnetic orientation will be different for each set of magnets. In terms of size, all magnets have the same arc,

thickness, width, and height. Ten of those segments will be used in the rotor section of the device, five in each rotor segment, with a gap between them; and two of the segments will be used on the slider, one for each side.

Important note: Magnet manufacturers are able to give magnets their magnetic orientation as well as a "focal point". The focal point of all the rotor magnets will be inward, like a parabolic dish focusing solar rays. Five of the rotor magnets will have the N side inward, and five will have the S side inward. However, on the slider magnets, even though the shape of the magnet would suggest that the focal point would be inward, toward the center of the circle, the magnet manufacturer needs to be instructed to place the focal point outward.

The centers of the two circles are depicted. C1 refers to the flywheel center. C2 refers to the rotor magnet circle. Note that circle 1 and circle two both line up on the left side. The reason for this depiction is to drive the distance that the slider will travel back and forth so that the cam can be engineered properly. The slider travel distance will be 2x the distance between C1 and C2.

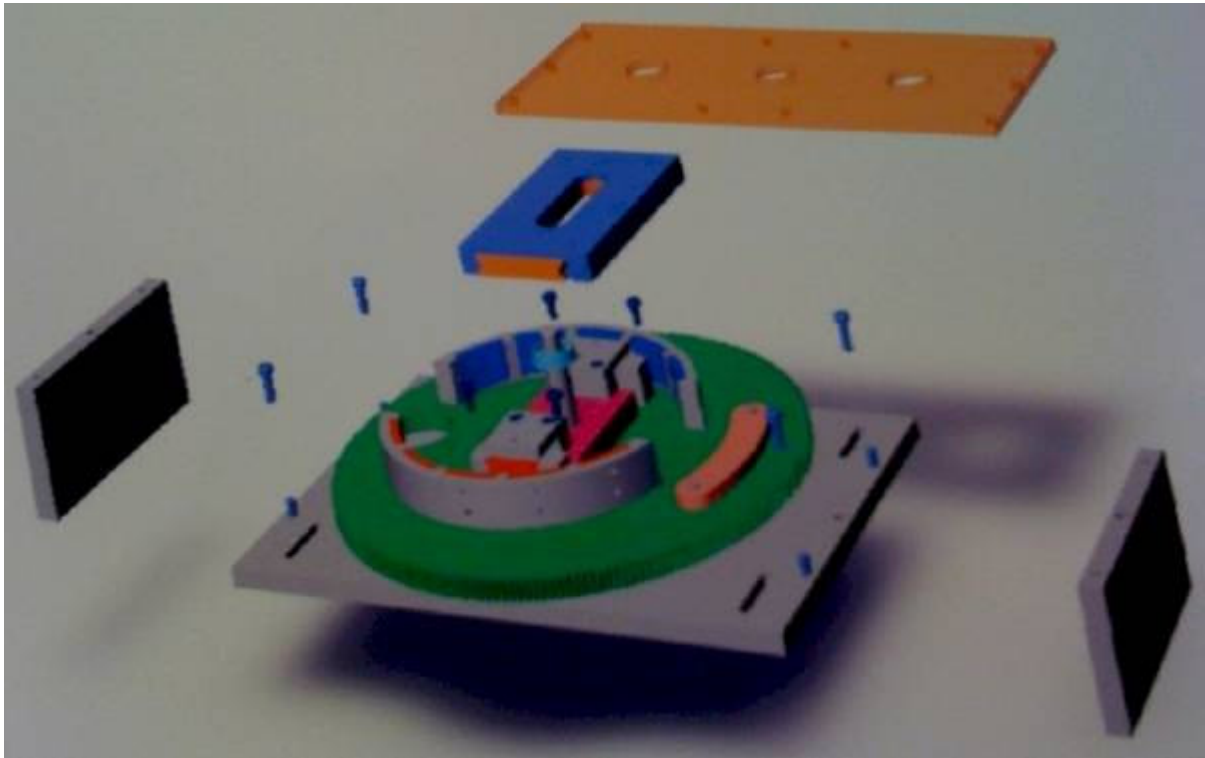
Also derived from this schematic is the size of the slider in relation to the arc of the circle that makes the magnets. Note that the slider is as long as the inside of the hexagon formed by the lines inside the circle.

Remaining Questions:

What is the size of the Flywheel in relation to the size of the rotor circle?

What the relative thickness of the magnets is supposed to be (inside v/ outside perimeter of rotor circle)?

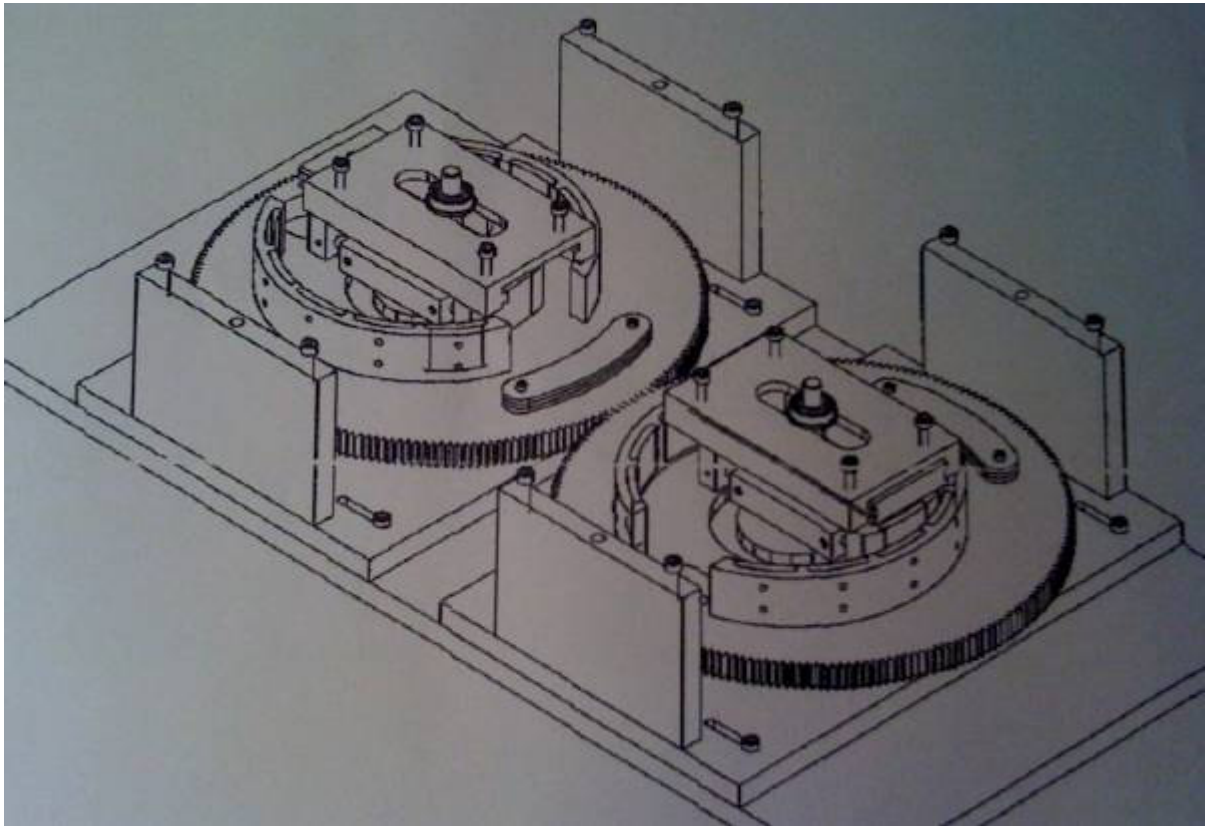
Diagrams: Jan. 2009



On Jan. 23, 2009, Achilles wrote:

It is time to partially reveal how A.L.M.E. will look with one condition though....No further questions till it's ready to be shown to the public.

I want to answer all the questions when the A.L.M.E. will be shown to the public via video



On January 25, 2009 9:25 AM Mountain, Achilles wrote:

Here is the secret: ALME is actually a double ALME at 90 degrees offset engagement through permanently connected rotor/flywheel gears. This arrangement overcomes friction and magnetic lock because it's no longer a closed loop system, it's an endless open loop mechanical system. We are getting close to have it totally assembled.

We now have inner cam(s) and top mounted slider(s). This arrangement is way better than the original design. In a computer simulation [of the completed assembly], the engine works.

On January 26, 2009 7:07 AM Mountain, Achilles wrote regarding the above image:

The slider reverses direction at the end of the stroke before the first rotor magnet and the slider's magnet start to engage. This is critical. The other critical point is that the inner cam is designed in such a perfect way that the dead center of both the sliders' magnets maintain the exact same distance from the rotor magnets during rotation. Also the slider's magnets are both adjustable in order to achieve the desired (lower or higher) rpms.

I have chosen almost frictionless and non magnetic rollers/bearings and sliders. The counter-weights are made with brass, and the rest of the construction is made with delrin and laser infused raisin materials. The screws and pins are also non magnetic. All these facts along with the CAD plans will be revealed with the introduction of the ALME.

Correspondence

The following are some slightly-edited excerpts from correspondence with Achilles, addressed to [PES Network, Inc. CEO, Sterling D. Allan](#).

Sent: Tuesday, June 24, 2008 7:55 AM

Subject: ALME (Achilles Ligeras' Magnetic Engine)

Hello Mr. Sterling [Allan],

I do have a rough unbalanced prototype that works well, but it vibrates a lot. Is it possible that the unwanted vibrations keep it going?

Sent: Tuesday, June 24, 2008 8:37 AM

Subject: Re: ALME (Achilles Ligeras' Magnetic Engine)

I do not have a video. By the way I visit your web-site on a daily basis and I love it.

Sent: Tuesday, June 24, 2008 7:43 PM

Subject: No objection to post the ALME animation.....

I hope you are not offended that I am not sending to you the prototype ALME video. I have no problem if you post the ALME animation in your web site. The prototype is "home made", very unprofessional and creates an image of a half-hearted effort. I brought another invention of mine to the market and I know first hand how things can work against or for you.

If you really think that the ALME has potential I have the funds ready to invest on an ALME professional prototype, since the RD phase has been completed anyway.

Sent: Friday, September 26, 2008 9:23 AM

Subject: Just came back.....

Just came back home. After talking and meeting countless times with my technical people in Greece it seems in theory that the reason we are getting the "A.L.M.E." engine to work is the "controlled" unbalanced fly-wheel which makes the engine wobbling-vibrating, and therefore as a consequence the wobbling-vibration breaks its extremely minimal magnetic lock at the stroke's changing position.

A number #2 professional prototype is in the works. The first crude one has been partially dismantled in order to be videotaped (big mistake) and during the partial dismantling process it was rendered unworkable.

You can reveal the whole thing to the incubator business group you are associated with and also show them the A.L.M.E.'s animation. The whole thing is very time consuming and as well it requires further expensive research and development. We will need their help. I thought to raise public money but the way things are going the only way to have the project move forward is an incubator business group like the one you are associated with.

- - - -

Sent: Friday, September 26, 2008 4:46 PM

Subject: Re: Just came back.....

Several friends plus the techies witnessed my ALME working. Affidavits? Yes. Running times? From 5 minutes to 48 hours plus continuous. Demagnetized magnets? No.

- - - -

Sent: June 29, 2008 7:23 AM

[...] My ALME has a bank of separate magnets attached on the flywheel but they are shown in the animation as one blue and one red representative of different polarities. In actuality the configuration is [5 and 5] separated with a shield between them [aluminum housing]. I don't show it in the animation intentionally.

I will eventually send you the video. My problem is time. I am the owner of [...], I am also a real estate developer and I do few other things on the side. Please also check out my [...] for one of my patented products that its rights have been already acquired by another company. On top, I am extremely creative and the new ideas come to me naturally and frequently.

At the present time we are in the very beginning stage with a mechanical engineer-designer to create a PTP (Personal Transportation Pod) concept driven by pedals

attached to my ALME's modified Flywheel-Chain Gear and with an on board battery-motor (plug in) power assist unit. The PTP will have either a ball or an egg shape and it will be convertible with all the bells and whistles. Basically, we will use magnetic-pedal power coupled with an electric motor connected to a re-chargeable battery to power the PTP, which will also have a solar panel on its foldable sliding-in-place roof. By the way, the mechanical engineer-designer thinks that my ALME will work efficiently with the attached pedals.

- - - -

Sent: Thursday, October 02, 2008 8:07 AM

Subject: ALME

I would like these thoughts of mine to be posted in your web-site. As you know I was extremely hesitant to go ahead and reveal my ALME engine to the world via your web-site. I also told you that I am a very sensitive guy and I don't want to be subjected to ridicule. At the Google 10 to 100 competition I answered how I envision my ALME to go about if I win the prize: I would prefer the Columbia or the MIT university to certify it first. That was my answer. Columbia was the first preference because my son was graduated from there with a biomedical engineering degree. My ALME seemed to work right from the start with minor adjustments that were controlling its speed. As well it stopped few times while I was playing with different adjustment combinations, that were very difficult to implement due to the way the ALME prototype was constructed.

ALME defies all related laws of physics. I don't want anybody to spend a penny yet on replicating it. My second professional prototype is in the works and till then we all should seat tight. The CAD files will also be available. At the end, ALME may not even be useful at all for a variety of unforeseen technical reasons. It may not even be certified. No certification means that it doesn't work. I want to be very clear about it. The whole premise as it was explained to you Mr. Sterling was to have the worldwide "techies" to try to knock it down. As to the way you present new inventions, I went that road before and I learned from my very costly mistakes. You get only one shot. My shot on PESWIKI was unprofessional at best and that's a fact. Please don't knock down the "Snotty Wallstreeters". If it wasn't for them, science, research and development would all have been dead and it would have only left guys like me spending some of their hard earned money on their inventions. Thanks, Archie.

PS. To your readers: Please don't call my Diner for more ALME related info. It is a place of business and it should be respected as such. ALME is my baby after all. My Diner has nothing to do with this.

Sent: Saturday, January 24, 2009 4:04 PM

Subject: Regarding ALME.....

We can only create energy by thinking outside the box.

Dear friends,

Lets analyze together

ALME's positives and negatives.

Positives:

1. Inertia.
2. Positive acceleration.
3. Slider cannot come to a stop while its two magnets are "engaged" with the rotor magnets.
4. Friction and magnetic lock are overcome by ALME's actual (partially revealed) design.
5. "Magnetic Energy" is transformed to kinetic energy by the manipulation of the magnetic fields and thus resulting in a positive energy output.
6. Energy cannot be created and neither can be destroyed. It can only be transformed. This major Physics Law is not violated in the case of ALME because we have transformation of "Magnetic Energy" into a kinetic one?

Negatives:

1. Friction.
2. Magnetic lock.
3. Negative acceleration.
4. De-magnetization?

In order for ALME to be certified it must be an "over-unity" engine and its neodymium magnets do not lose their strength over a very long period of time. Let us all for a

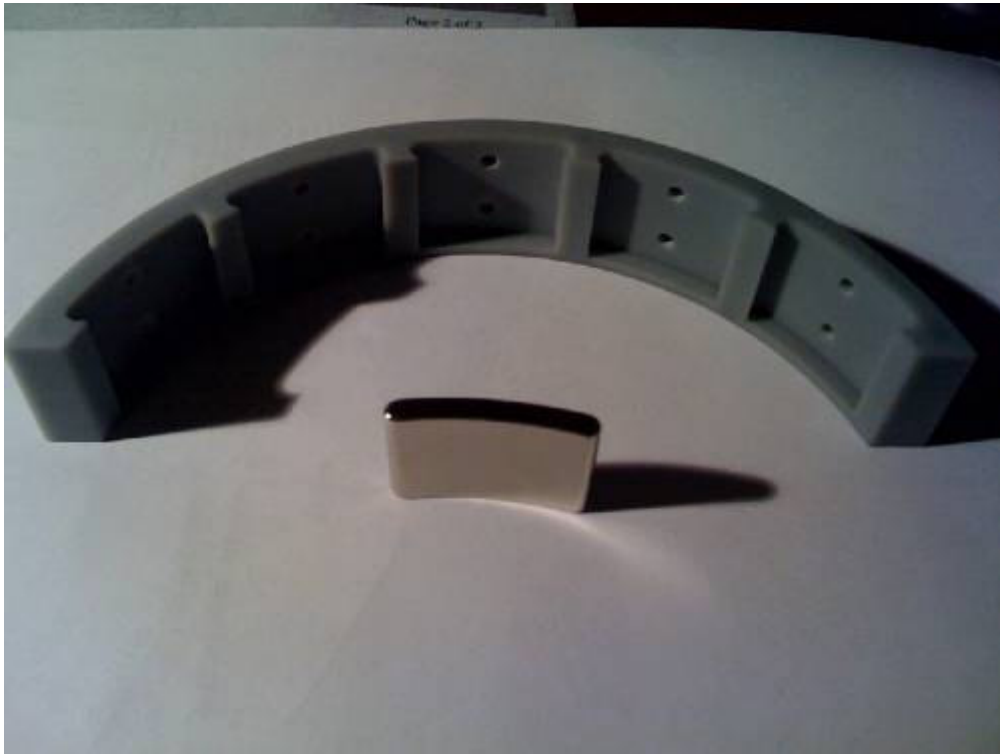
moment think of a car rolling effortlessly down a road-incline with its engine off. Where the energy is coming from to move the car? Gravity? Is then gravity a useful energy form? If yes then why magnetism is not also another useful energy form? Is it then possible that by manipulating magnetic fields we can have as a result an “endless magnetic incline” that is moving forward ALME’s rotor/flywheel? Is it also certain in theory that since ALME’s magnets engage in an alternating polarization sequence, they will not de-magnetize?

Respectfully,
Achilles Ligeras.

Photos



Parts. Jan. 29, 2009.



Arced magnet and holder. Jan. 23, 2009.

Plans

Autocad file drawings will be available in about two weeks (as of Sept. 29, 2008).
See [How it Works](#) section above.

Materials

- Magnets obtained from [Storch Magnetics](#)
 - grade of corresponding magnet grade is 35UH; UHN neo arc grade
 - [Spec Sheet](#)

Costs

Achilles estimated that he has put about \$10,000 in to prototype development so far.
He thinks the device could be replicated for around \$300 in parts.

Advantages

- Runs 24/7 as a primary energy source.
- small
- portable

Applications

- Power generation, probably of outputs of 100 W on low end, to 100 MW on the large end possible.

Independent Testing

"Several friends plus the techies witnessed my ALME working. Affidavits? Yes. Running times? From 5 minutes to 48 hours plus continuous. Demagnetized magnets? No." -- Achilles Ligeras

Patents

This is an open source project. No patent may be be filed in the U.S. Achilles has one year from Sept. 29, 2008 to file in Europe. This PESWiki page established the prior art for public disclosure. An archive version of this page as it appeared on Sept. 30, 2008, 00:16 am Mountain time, can be seen via [this link](#) (from the History tab of this page).

Replications

Anand Aadhar



(2:14 minutes)

- **ALME Magnet Motor Replication** - Originally there were projected neodymium magnets and a slider operating on rollers. We managed with what we had to produce a working model. [More info](#) on free energy motors and theory. ([YouTube](#); November 29, 2008)

'Comment from Achilles

(Nov. 29, 2008)

I viewed the replication of the ALME posted in youtube.com. Three major flaws with the mentioned free-lance replication: 1) The magnets used were not arc neodymium magnets (as noted by the replica-tor) 2) The cam used is not a "bean" type of design coming in continuing touch with the 2 rollers as I saw it in the posted youtube video and 3) A perfect "bean" cam design shape is essential in order to maintain the same "dead center" distance (during rotation) between the 2 slider magnets and the 10 rotor magnets as per ALME design. The lack of slider rollers in the above replication of the ALME is not really important.

Regardless, it was a "gutsy" design with off the shelf available materials and the replica-tor should be congratulated for his creation. Nice job!

Respectfully and according to my humble opinion the replication didn't work because it was unable to overcome the "magnetic lock" and or else known as "the sticking points". Overcoming the "magnetic lock" effortlessly is a must for ALME to work.

Variations

On Oct. 1, 2008, Paul Smith [wrote](#):

Could the curved magnets instead be a series of rectangular magnets of equal size & thickness? They would need to be mounted similarly. Somewhere I read that the ones used were special order.

Instead of the complicated slide mechanism being in the center, why not reverse everything and place the moving magnets on the outside of the flywheel, kind of like a piston on a crankshaft? Do this on two sides like the animation has. Or is there a more encompassing effect of the magnets being inside?

Profiles

Inventor: Achilles Ligeras

Born in Greece in around 1952, Archie has lived in New York state for the past 30 years. As a businessman, he has worked in real estate development.

In a phone interview with [Sterling D. Allan](#) on Sept. 29, 2008, he said: "I have been very creative since I was born. Ideas come easily to me. I like inventing."

In email correspondence, he said: "ALME works, but still I can't understand why it works. It defies all relative laws of physics. As a businessman who takes pride to make fast the right decisions, I am undecided at the moment for the ALME's further development and certification."

Coverage

In the News

First revealed/covered here at PESWiki.com.

Other Coverage

List here as other coverage arises.

Discussion

Archie requests that critique comments refrain from ridicule, but that the skeptical comments be kept to scientific arguments, not personal attacks.

See [Discussion page](#)

- <http://groups.yahoo.com/group/ALME-OS> - YahooGroups forum for this project
 - <mailto:ALME-OS-subscribe@yahoogroups.com?subject=subscribe> - to subscribe by email.
- [Yet ANOTHER OU Device - Achilles Ligeras' Magnetic Engine \(ALME\)](#)
(*Steorn Forum*, thread commenced Oct. 19, 2008)
- [ALME: Achilles Ligeras' Magnetic Engine -- new open source project](#) -
(*OverUnity.com*, thread commenced Oct. 1, 2008)

Related Technologies

Dave Squires wrote on November 17, 2008;

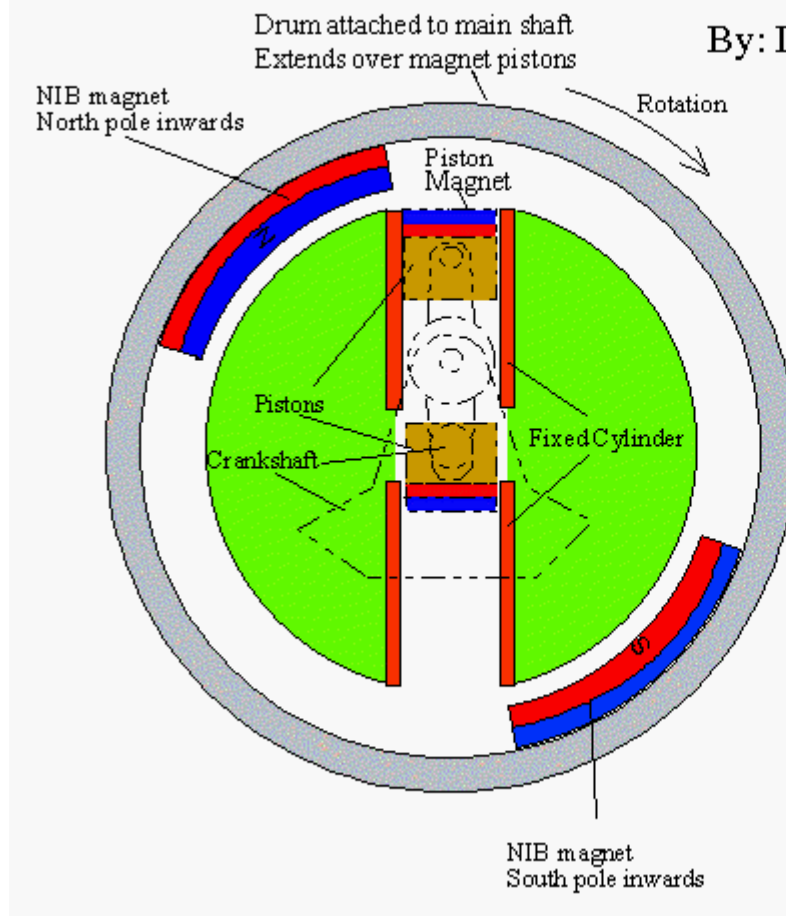
"If I remember right I did build one of these and it didn't work when I tried it. I think it was due to the exponential reduction of magnetic force with distance. Also, the repulsion at the top was not overcome by the attraction at the bottom. Perhaps there is a configuration that would actually work? I don't know."

The "Permanent Magnet Engine" proposed a decade ago by [Dave Squires](#) on 11/14/98 closely resembles the above design. Source: [J Naudin](#)

Permanent Magnet Engine

By: Dave Squires 11-14-98

Email: Djsquires@aol.com



Two cylinders opposed design. The outer ring is part of a drum attached to a flywheel that is attached to the output crankshaft and turns at the same rate. The drum magnets extend over the cylinder heads. The magnets are placed on the drum such that the edge comes into alignment with the top dead center position of the piston magnet. Just past TDC the drum magnet begins pushing the piston away. The drum magnet is rotating and will push on the piston for 60 to 90 degrees of arc. The opposite drum magnet assists with a pull. Since the drum is rotating with the shaft there is no need for timing adjustments. Timing is always fixed. More cylinders creates a smoother engine and will operate much like a series wound DC motor. Care must be taken not to operate in an unloaded condition. Dave Squires 11/14/98

Contact

Achilles ("Archie") Ligeras

New York

E-Mail:

[mailto:kamapi@optonline.net?subject=Achilles_Ligeras'_Magnetic_Engine_\(ALME\)_feature_at_PESWiki.com](mailto:kamapi@optonline.net?subject=Achilles_Ligeras'_Magnetic_Engine_(ALME)_feature_at_PESWiki.com)

Project Director volunteer pending ([let us know](#) if you would be willing to serve as such]

Directories

- [Magnet Push-Pull project](#) - JLN Labs; Nov. 18. 1998)

See also

- [Directory:Magnet Motors](#)
- [Directory:Magnets](#)
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