GAP POWER
The GAP POWER Generator
Magnetic Amplification & Neutralization
Electricity for the future

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The Superposition Principle at Work

The Gap Generator
What Is Overunity and Is It Possible?

What is overunity? Simply put, it means, more power output by a device than it takes to operate it. Is it possible? There are believers and non-believers. It takes a long time to prove the so-called impossible. People used to think the world was flat. What about facts? To me, the following article is scientific proof that it is possible.

[MIT Researchers Produce Micro-Light that Outputs More Energy Than It Takes In](#)
Posted by [hipstomp](#) | 12 Jun 2012 | [Comments (16)](#)
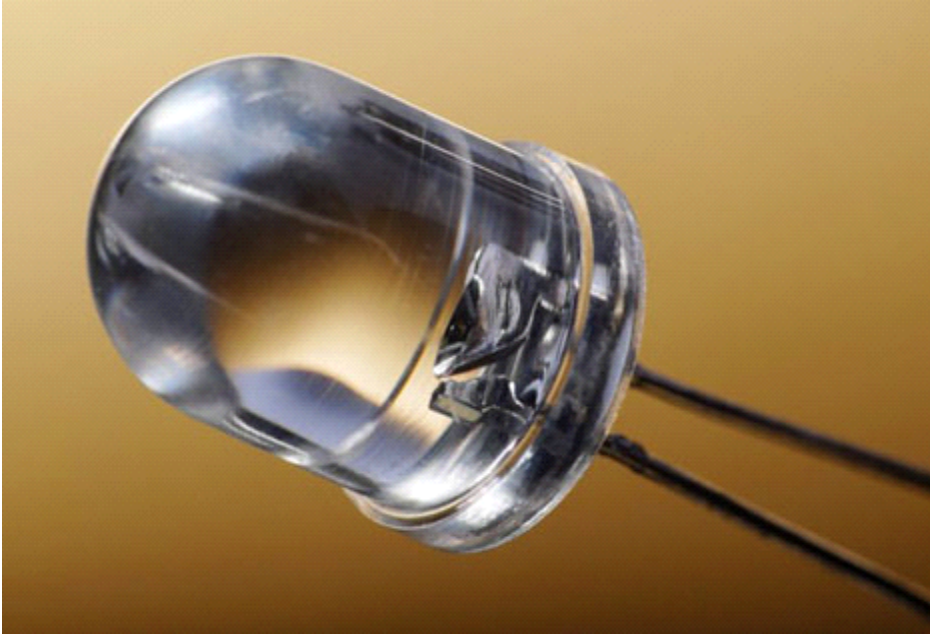
Materials scientists know that things behave differently on a microscale than they do on a larger, more human scale. And now, researchers at MIT have apparently proved that this is true of light as well.

The MIT team, comprised of Parthiban Santhanam, Dodd Joseph Gray, Jr., and Rajeev J. Ram, have created a common-sense-busting [ultra-efficient LED](#) with **an efficiency of *230 percent*.** Their light **draws 30 picowatts of power, yet produces 69 picowatts** of light. How the heck is that possible? The long answer looks like what Good Will Hunting was scrawling out on the chalkboard between bouts of mopping. The short answer is,

> The researchers chose a light-emitting diode with a small band gap, and applied such small voltages that it acted like a normal resistor. With each halving of the voltage, they reduced the electrical power by a factor of 4, even though the number of electrons, and thus the light power emitted, dropped by only a factor of 2. Decreasing the input power to 30 picowatts, the team detected nearly 70 picowatts of emitted light. The extra energy comes from lattice vibrations, so the device should be cooled slightly, as occurs in thermoelectric coolers.

The gist of the "lattice vibrations" is that the device draws in ambient heat from outside of itself and converts that into light. It's an exciting prospect, even if the breakthrough is currently more academic than anything else: "These initial results provide too little light for most applications," the [research synopsis](#) admits. A picowatt is just one milion *millionth* of a watt.

The Gap Generator
## What Is Overunity and Is It Possible?

One picowatt is one trillionth of a watt. There are one trillion picowatts in **One** watt. That's small. Very small. So very very small. Is there power in anything so small? Let's look at something very very small.
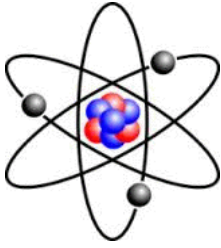
To the left is a drawing of an atom. The atom is a basic unit of matter that consists of a dense central nucleus surrounded by a cloud of negatively charged electrons. When I think of the atom I think of the atom bomb. You know, the two dropped on Japan in 1945. We have an old old saying, "dynamite comes in small packages".

Just because the scientists at MIT, *Massachusetts Institute of Technology*, was working on a very small scale, doesn't mean that's the only level which overunity can be acquired. **Their light draws 30 picowatts of power, yet produces 69 picowatts** of light. That's **230** percent of unity, with 39 picowatts of power over unity.

My device, The GAP Generator, draws 48.95 watts of power and outputs 113.08 watts of power. That's **231.02** percent of unity, with **64.13** watts of power over unity.
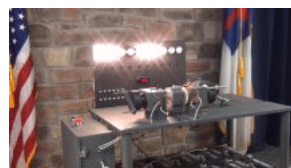
Remember their statement from above? "*Materials scientists know that things behave differently on a microscale than they do on a larger, more human scale*". I don't know about that, but when I look at the atom, *something so small we can't see*, I can't help but think about the solar system, which is certainly greater than their term, **microscale**, and how the planets, Earth, Mars, Saturn, and so on, rotate around the Sun. **Just like the above drawing of the atom with the electrons revolving it.** Makes me wonder just how big is big and how small is small?

The GAP Generator certainly presents overunity on a more human scale rather than the microscale. I wonder if a human being could even see light at the level of 69 picowatts. I **don't** have to wonder whether or not I can see light at the 64.13 watt level.

I'm not knocking their findings at all. I'm in agreement with them that overunity is possible. It's their statement, "*Materials scientists know that things behave differently on a microscale than they do on a larger, more human scale*" that I disagree with.

The GAP Generator operates on something known as **The Superposition Principle**. For a good technical description, I suggest you go to Wikipedia, the free encyclopedia, on the internet. To put it simply and as it pertains to **The GAP Generator**, it means that I get to add, *I'll use the term combine,* the three separate input powers that operates **The GAP Generator** and the **result** of combining the **three** separate input powers is in **fact,** .. the **true** input power. The same applies to the **output** of **The GAP Generator.**

The three input powers are: Number one is the power from the batteries. Number two is the power produced by the magnets on the piston as they inter-act with coils. This creates power. And number three is the power that comes out of the coils when they're de-energized.

The three output powers are the same three as the input. ... From the schematics below, you can see how the power from the batteries come into the coils of **The GAP Generator**. From there the power from the batteries goes right back into the batteries. **But**, it picks up, or **combines,** the power produced by interaction between the magnets on the piston and the coils. Added to that, is the power which comes out of the coils when they're de-energized.
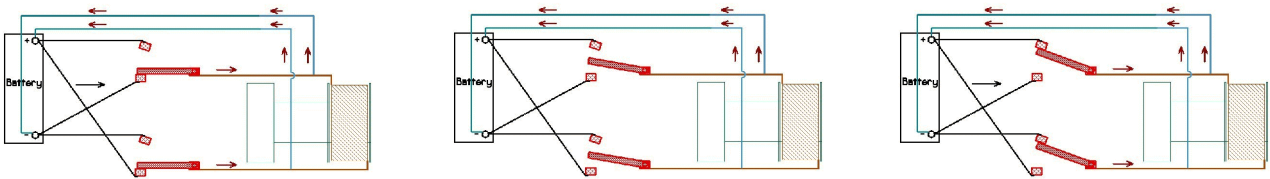
On the input side of **The GAP Generator**, the power produced by the piston magnets interacting with the coils and the power produced when the coils are de-energized, are driving **down** the input power that would normally be going to the coils. And what would **normally be** going to the coils?

Per Ohm's Law, 40 volts divided by 10.6 ohms equals 3.773 amps times 40 volts equal 150.92 watts. This **150.92 watts of power** would **normally** be dissipated as **heat** in the coil windings. ... As you can see from the results of the heat test in the video, there was no heat build up in the **coils** on **The GAP Generator.** So, I have to ask the question. **Is The GAP Generator** consuming 150 watts of power, **in each coil,** as Ohm's law states it should? In my opinion, **NO** . **If there's anything** about **The GAP Generator** that breaks the laws of physics, it's this right here. Personally I don't think the laws of physics are being broken at all. What I think is going on is the result of **The Superposition Principle** as it applies to **The GAP Generator.**

The main reason for the video of February 28ᵗʰ. 2013 was for the heat test. Which was very interesting. If you watch the video of the heat test, you'll find that there was no heat buildup at all in the coils on **The GAP Generator,** which is very unusual. I've had lots of questions concerning heat build-up in those coils and I think the reason for the questions is what I just described about **Ohm's Law.**

For those wanting to make an easy and **non expensive** comparison of what kind of heat build up should be taking place in the coils of **The GAP Generator**, try the following. Get yourself a 150 watt light bulb, plug it into a normal ac outlet in your home, and using an infrared thermometer, start checking the **temperature**

produced in the bulb. It will climb very high and very rapidly. **Remember, there are two bulbs.** This should give a **good** representation of the amount of energy that's **NOT BEING WASTED,** by **The GAP Generator**. Yet on the output side, of **The GAP Generator**, there's **lots** of heat build up. **Lots of power** that can be used for most anything.

My Future Plans:
As I've stated in an earlier video, it takes lots of money to work on this project and I'm not spending any more on it. **If I were to**, I'd go back to the rotary style, which I no longer have. I didn't realize this device **was a generator itself** until we'd built the linear version. We used some of the items from the rotary to build the linear and I gave the rest to one of the men working on the project to sell for scrap. **What a mistake!!**

I have, put on my web-site, all the prints of both the liner and rotary versions. I've also posted more photos of the rotary.

I don't have and do not intend to apply for a patent. What I **would** like to do is donate my two devices, along with all the data I have, to some qualified entity to take over this project. I'll include the oscilloscope. This person, or business, would have to have a substantial amount of money to dedicate to this project and would have to do so in writing to make it binding and legal. I estimate an amount from six to ten million dollars to bring this technology to **full** production. Should this person, or business, already have a suitable building and some machinery the dollar amount could be reduced quite a bit.

What **The GAP Generator** really needs, to advance it much further, is a person very knowledgeable in industrial electronics. One who can design the control circuits and probably have them produced by an outside source.

I feel **this technology has merit** and deserves more research and development. Currently I don't have the expertise to take it to a higher level and I know there are lots of people who already possess the knowledge and could do this very quickly.

After reviewing the videos and this information, anyone wishing to talk to me about this matter can call me at 276-628-5069 or 276-608-8210. My email address is art.porter@bvu.net. All videos, along with other information is on my web-site www.gap-power.com

I thank you for your interest and for taking the time to review this technology.

Sincerely,

Art Porter

Art Porter

Superposition principle

From Wikipedia, the free encyclopedia

This article is about the superposition principle in linear systems. For other uses, see Superposition (disambiguation).

In physics and systems theory, the **superposition principle**,[1] also known as **superposition property**, states that, for all linear systems, the net response at a given place and time caused by two or more stimuli is the sum of the responses which would have been caused by each stimulus individually. So that if input A produces response X and input B produces response Y then input $(A + B)$ produces response $(X + Y)$.

Superposition is one of two requirements for a function to be linear. A linear function is one that satisfies the properties of superposition (additivity) and homogeneity of degree 1 (scalar multiplication) which are defined as

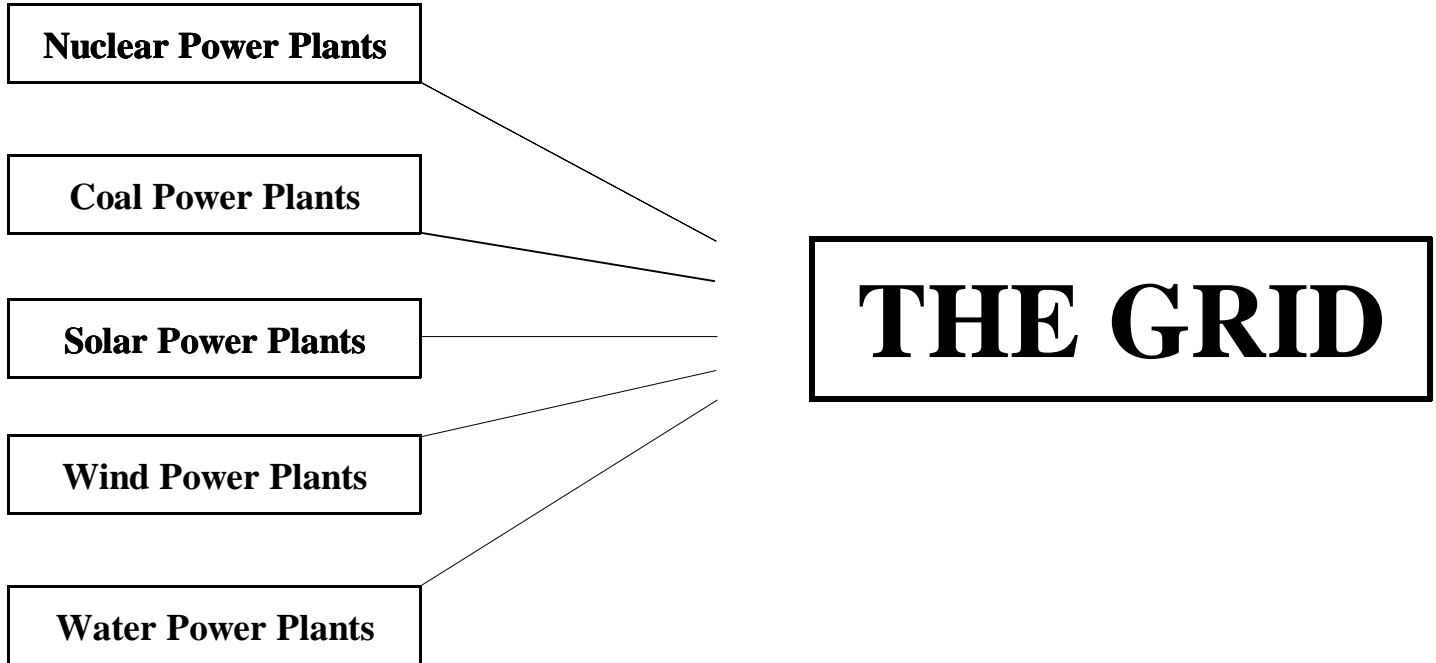$$F(x_1 + x_2 + \cdots) = F(x_1) + F(x_2) + \cdots$$
Superposition

$$F(ax) = aF(x)$$
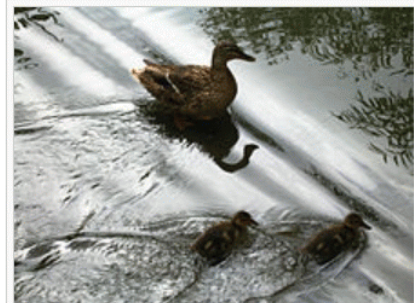
Superposition of almost plane waves (diagonal lines) from a distant source and waves from the wake of the ducks. Linearity holds only approximately in water and only for waves with small amplitudes.

I first received this information on February 14th 2012 from Ken House, who is a NASA scientist.

Nuclear Power Plants

Coal Power Plants

Solar Power Plants

Wind Power Plants

Water Power Plants

THE GRID

Our electrical grid system is a classic example of The Superposition Principle. To Keep this explanation simple let's say that each of the power plants produce **1,000 watts of power.** Each would feed that power into the grid. The grid would have a total of **5,000 watts of power** to distribute as needed.

There are three power plants on the two cylinder linear version of The GAP Generator.
1 = The batteries, which power the two coils and then just flows back into themselves.
2 = The coils as they produce electricity from the magnets on the piston interacting with the coils.
3 = The coils as they produce electricity when they're de-energized.

Steps 2 and 3 is where the excess energy is created. The batteries are the grid for The GAP Generator system.
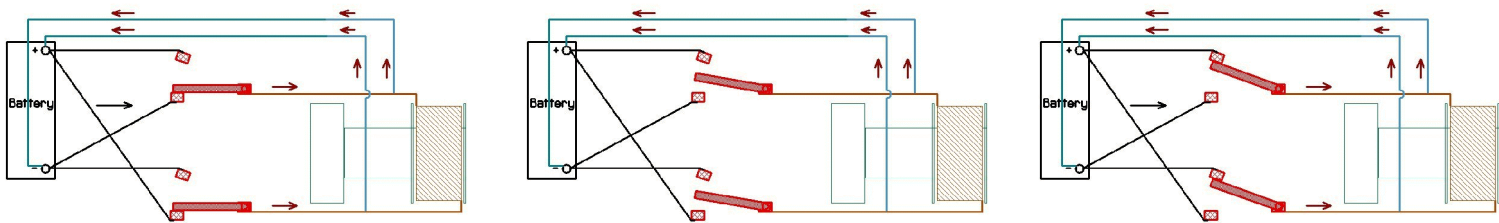
The three images above are of the same coil. I'm just showing the contacts as they reverse the polarity in the coils and that while in the mid section where no power from the batteries is applied, power is still being generated from the coils. There's a good **animation** of this in the video "GAP POWER Update July 4th 2012".

The **GAP POWER** Generator
Input and Output Power 11-13-2012
Two Cylinder
171.71 percent of unity with 35.33 watts over unity.

		The GAP Motor-Generator		
		11-13-12 08:56		
		Output to lights from piston only at 660 rpm.		
	24.59	Total Average output watts by piston action only.		
		Two full bridge rectifiers 276-1181		

		The GAP Motor-Generator		
		11-13-12 10:00		
		Output to lights when Neutralization is turned off. 660 rpm.		
	30.00	Average output of 2nd half of cycle.		
	12001.02	Sum of 2nd. half of cycle.		
	15.00	Sum divided by 800 = average watts output for entire cycle		
	60.01	Sum divided by 800 times four equals total output watts for		
		both coils. **Each coil is energized and de-energized two times.**		
		15 x 4 = 60 watts. ... Or 30 x 2 = 60 watts.		

		The GAP Motor-Generator		
		11-13-12 11:40		
		Input to GAP. Amplification & Neutralization Mode. 660 rpm.		
	49.26	Average input watts.		
		Volts and amps measured at batteries.		
	1.23	Average Input amps.		

		The GAP Motor-Generator		
		11-13-12 11:40		
		Input & Output. Amplification & Neutralization Mode. 660 rpm.		
	49.26	Average input watts.		
		Volts and amps measured at batteries.		
	24.59	Output by piston action only. 11-13-12 @ 08:56.		
	60.00	Output when Amp & Neut turned off. 11-13-12 @ 10:00.		
	84.59	Total output watts produced by The GAP Generator.		
	171.71	Percent of unity.		
	35.33	Watts over unity.		
		These test were done with two rectifiers 276-1181.		

This information was used for **GAP POWER** *Update 02-28-13*

The GAP Generator
Input and Output Power 08-12-2013
231.02 Percent of unity with 64.13 watts over unity

	The GAP Motor-Generator
	08-12-13 08:40
	Output to one 36 volt 60 watt forklift light from piston only at 660 rpm.
30.42	Total Average output watts by piston action only.
	Two full bridge rectifiers 276-1185

	The GAP Motor-Generator
	08-12-13 10:08
	Output to one 36 volt 60 watt light when coils are de-energized. 660 rpm.
41.23	Average output of 2nd half of cycle.
16531.68	Sum of 2nd. half of cycle.
20.66	Sum divided by 800 = average watts output for entire cycle
82.66	Sum divided by 800 times four equals total output watts for
	both coils. **Each coil is energized and de-energized two times.**
	20.66 x 4 = 82.64 watts. ... Or 41.23 x 2 = 82.46 watts.
82.66	Total output watts when coil is de-energized.

	The GAP Generator
	08-12-13 08:07
	Input to GAP. Amplification & Neutralization Mode. 660 rpm.
48.95	Average input watts. Volts and amps measured at batteries.
30.42	Output from piston action only.
82.66	Output when coils are de-energized.
113.08	Total watts output by **The GAP Generator.**
231.02	Percent of unity.
64.13	Watts over unity.

The only difference in the tests done today and the ones before is:
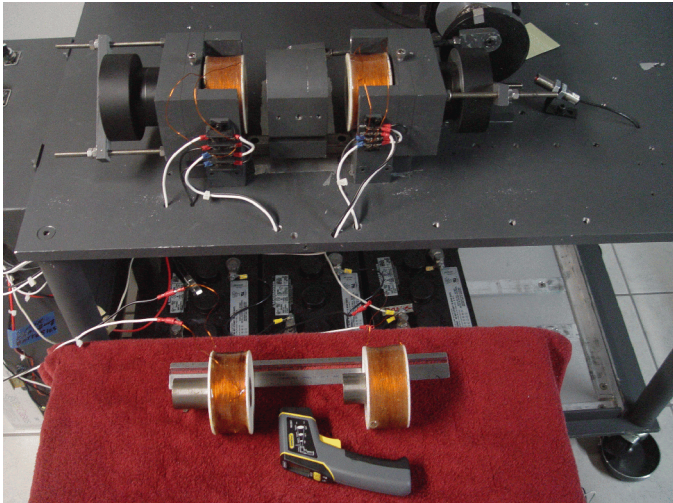**The light** used in these test was a 36 volt, 60 watt, forklift light. Part no. G.E. 4350. The test before used four of part no. 3157, which is a small automotive 12 volt bulb.

171.71 = Percent of unity on previous test of 11-13-2012. **An increase of 36.6 percent.**
  35.33 = Watts over unity on previous test of 11-13-2012. **An increase of 81.5 percent.**

The GAP Generator
Heat Test 12-27-2012

| A	B	C	D	E	F	G	H	I
	The GAP Generator. Input and Output Heat Generated. 12-27-12 @ 16:30							
	Output to coils identical to coils on GAP Generator							
Test No.		Left coils			Right Coils			
	Time	Temp In	Temp Out		Temp In	Temp Out		RPM
0	04:30 PM	71.0	71.8		71.6	72.0		
1	04:31 PM	72.5	89.9		71.6	82.5		661
2	04:32 PM	71.0	100.5		71.2	90.6		661
3	04:33 PM	73.0	113.0		71.1	102.0		658
4	04:34 PM	71.4	123.2		71.4	109.1		656
5	04:35 PM	71.0	136.5		71.2	120.6		654
6	04:36 PM	72.6	144.3		71.6	129.1		652
7	04:37 PM	73.8	155.5		71.7	137.3		651
8	04:38 PM	73.0	168.8		72.9	144.1		650
9	04:39 PM	72.8	167.7		73.5	150.8		651
10	04:40 PM	73.3	175.2		72.6	154.9		651
11	04:41 PM	73.6	180.1		72.8	164.6		651
12	04:42 PM	73.4	193.8		73.7	168.6		650
13	04:43 PM	73.6	199.9		74.1	177.4		652
14	04:44 PM	74.4	207.6		74.4	181.4		652
15	04:45 PM	73.7	211.3	2.87	73.7	185.5	2.52	652

This photo shows the two coils on **The GAP Generator** along with two identical coils on the table with an infrared thermometer. These two coils are on the output side of **The GAP Generator.**
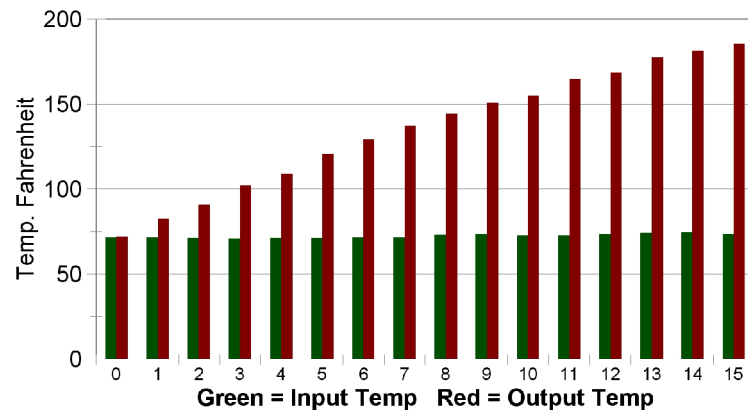
The information above is the data taken during the heat test.

The GAP Generator
Left Input and Output Coils

Green = Input Temp   Red = Output Temp
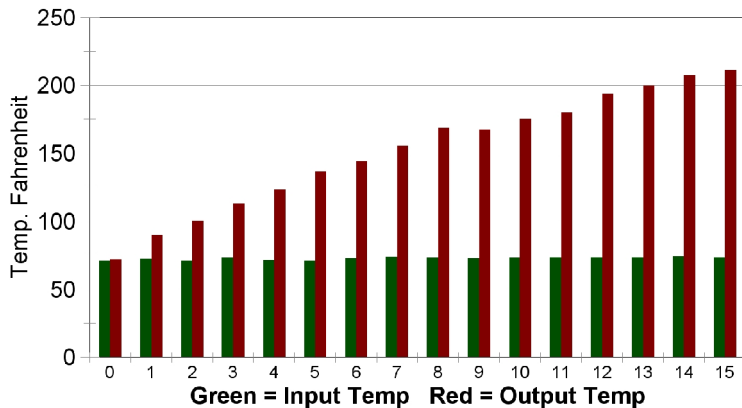
The GAP Generator
Right Input and Output Coils

Green = Input Temp   Red = Output Temp

If more heat is on the output side than on the input side, is it over unity, (producing more energy than it takes to operate it)? From the test results above one can see that The GAP Generator is certainly producing more heat on the output side than on the input side. To me, it does verify the tests where both input and output was measured electrically, using an oscilloscope.

Look on the next page to see answers to some questions I found on the Internet:

Question One:

In a real machine, why is the work output always less than the work input?

Best Answer - Chosen by Voters

Some of the work input is turned into waste byproduct. For example, heat (or in the case of internal combustion, exhaust). Even a simple machine has friction to overcome, and in so doing, heat is generated.

Question Two:

Resolved Question   Show me another »

Explain why work output is always less than work input.?

5 years ago   🏳 Report Abuse

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Best Answer - Chosen by Voters

If for no other reason than some input energy will be converted to heat energy and lost prior to becoming the energy measured as output.

Question Three:

Answers.com > Wiki Answers > Categories > Science > Physics > Why can't the output work be greater than the input work?

Why can't the output work be greater than the input work?

In: **Physics** [Edit categories]

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                            www.deditec.de/CAN-Module

Answer:

When you input force to do work, the output work cannot be greater than what is put in, because work is energy, and energy is 'conserved'. That means it can't be created out of nothing.

If you had a box that could put out more work than you put in, you would be king of the world. Once you get the box going, you could take off enough of the output work to put back into the input and keep it going, and you'd have some left over that could be used to generate electricity, run a car, lift a load, cut wood, cook a fish, heat a room, power a boat, weave a rug, boil water, plow a field, etc. And your box could do any of these things without a single drop of oil or lump of coal!
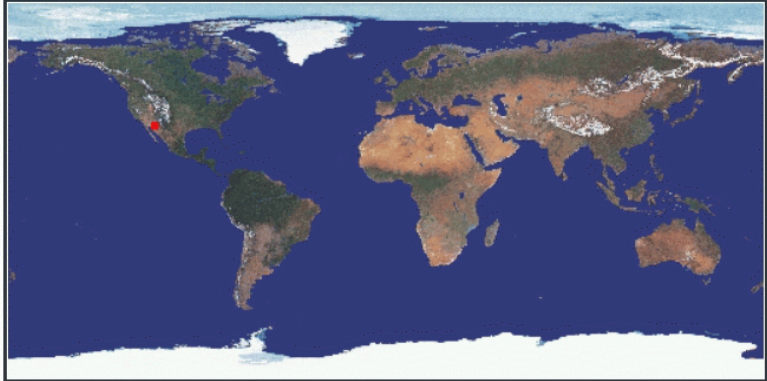
It's called "perpetual motion". It's fundamentally impossible, but scam artists for hundreds of years have been able to shake millions of dollars out of investors who could be convinced that you can get more work out of a machine than you put it.

The GAP Generator
Visitors to my web-site

There are lots of people from all over the world get on my web-site www.gap-power.com
I get many emails and phone calls from people very interested in this project. The photos below are of two that really caught my interest. Nasa has been there several times in the past. Note how long the Department of Defense stayed on there in one session.

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Location:	Fort Huachuca, Arizona, United States	Resolution:	1280x1024
Returning Visits:	0	Javascript:	Enabled
Visit Length:	5 hours 22 mins 0 secs	ISP:	Us Department Of Defense Network

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🔍	Jun 4	15:41:53	Firefox 19.0 Win7 1920x1200	🇺🇸 Huntsville, Alabama, United States	National Aeronautics And Space Administration (128. www.gap-power.com/ (No referring link)
🔍	Jun 4	14:36:53	Firefox 17.0 WinXP 1024x768	🇺🇸 Huntsville, Alabama, United States	National Aeronautics And Space Administration (128. www.gap-power.com/ www.google.com/url?sa=t&rct=j&q=&esrc=s&source
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🔍	Jun 4	12:54:11	Firefox 17.0 WinXP 1024x768	🇺🇸 Huntsville, Alabama, United States	National Aeronautics And Space Administration (128. www.gap-power.com/ www.google.com/url?sa=t&rct=j&q=&esrc=s&source

Today, February 28th 2015, I updated my web-site with some new information. Not really new, it's actually over one year old. This information is about how I personally believe The GAP Generator works and just exactly what it is. It's taken me a long time to figure this out but, it takes me back to what I thought was happening at the very beginning. The new part of this information is that I have discovered scientifically proven information confirming my beliefs about this technology.

In this update, which is older information, I explain just what the GAP Generator is and how it operates. It's really quite simple. So simple, it's easy to overlook. **The old saying, a picture is worth a thousand words,** is certainly so in this case. In the video you'll see The GAP Generator attached to heating elements and lights with detailed descriptions of what's happening. You'll also see results of The GAP Generator successfully charging batteries.

RMS of common waveforms
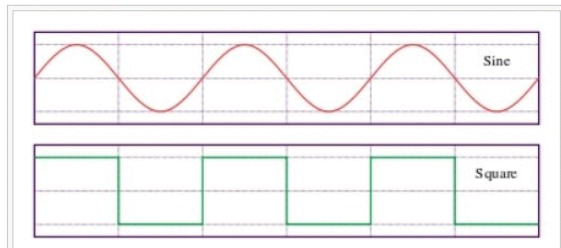
For those who don't understand very much about electricity, you'll see and have explained things like the waveforms in the photo to the left and how they relate to The GAP Generator.

For those who **don't understand** very much about electricity, I'll tell you something that's so and most people who **do understand** lots about electricity **don't know.** And that is: Both AC and DC Current can be present in the same electrical circuit. Another thing is: How an oscilloscope, *a fancy device for measuring electricity*, responds to both AC and DC. When I made these discoveries, that's when things about the device starting clearing up for me. **I'll use another old saying: Sometimes you can't see the forest for the trees.** That describes me in regards to The GAP Generator. If you've watched my earlier videos and listen to me try to explain what's going on and how it works, you'll agree that I couldn't see the forest for the trees. Also if you go back to my earlier videos and can interpret an oscilloscope screen, you'll see that I was almost checking it right and didn't know it.

I've had lots of comments and helpful information from people all around the world and I really appreciate it. But, it's hard to beat NASA. A couple of their scientist, Mike Nelson and Ken House, have been a tremendous help.

The GAP Generator
Compared To Other Power Sources:

I want to compare the possibilities of **The GAP Generator** to some other energy sources. I'm going to **exclude** wind, solar, and water.

First: At this point in time, 2013, there's lots of interest in the new technology called **L E N R.** Short for Low Energy Nuclear Reaction. It sounds good and I'm sure it is. Along with hydrogen and another **secret** ingredient, it uses **nickel** and according to reports I've read, the consumption rate for the **L E N R** would be 350,000 tons per year. Current nickel consumption is 1,500,000 tons per year. This would bring the consumption rate of nickel to 1,850,000 tons. Worldwide nickel reserves are 140,000,000 tons. So 140,000,000 divided by 1,850,000 tons equals **75.67 years** supply of nickel. There's **hardly any** nickel at all in the United States. Much of our nickel comes from recycling nickel-containing alloys.

Second: Let's look at **Oil.** Again, according to reports I've read , there's one trillion, six hundred fifty three billion barrels of oil left in the world. The world consumes thirty one billion twenty five million barrels each year. So one trillion, six hundred fifty three billion divided by thirty one billion twenty five million equals **53.28 years** supply of oil left.

Now for the **third** energy source: Let's look at **coal.** Coal is used to produce 42 percent of the electricity consumed in the United States. The **United States alone** has **483 billion tons** of coal in reserve. In 2011, we mined **1.09 billion tons.** Of which, 90 percent was use to generate electricity in this country. 483 billion divided by 1.09 billion equals **443.12 years.** At our current usage, that's **443.12 years supply** of coal left for the United States.

It's my belief that we, the United States, are producing clean energy with coal. It **isn't** causing global warming. That comes along every spring and goes away every fall. Unlike some countries there are filters and scrubbers on all our coal fired electric generating facilities which prevent contaminants from escaping into the atmosphere. Just like catalytic converters on our vehicles.

If we, the United States, are made to stop using coal, other countries will use the coal we **would have** used, therefore, contributing to more contaminants in the atmosphere.

Based on this information and at the world's current rate of consumption, the following would apply:

This year, 2013, plus 53.28 equals 2066.28. That means the world runs out of oil in 2066.
2013 plus 75.67 equals 2088.67. In 2088 the world runs out of nickel.
2013 plus **443.12** equals 2456.12. In the year **2456** the **United States alone** runs out of coal. I have to ask myself this question. **Why** would we, the United States, trade a **443 year supply of energy** for a **75** year supply? Does anybody else think like I do, or am I just weird?

Now, The GAP Generator. It uses none of the above materials. Most components could be made from aluminum or even plastics. Very little low carbon steel for the core of the coils, Copper, which is in **great** supply, for the wire in the coils. Magnets made from neodymium or other materials. **It'll produce electricity as needed or twenty four seven. With very little maintenance.**

The GAP Generator
Sources for my information
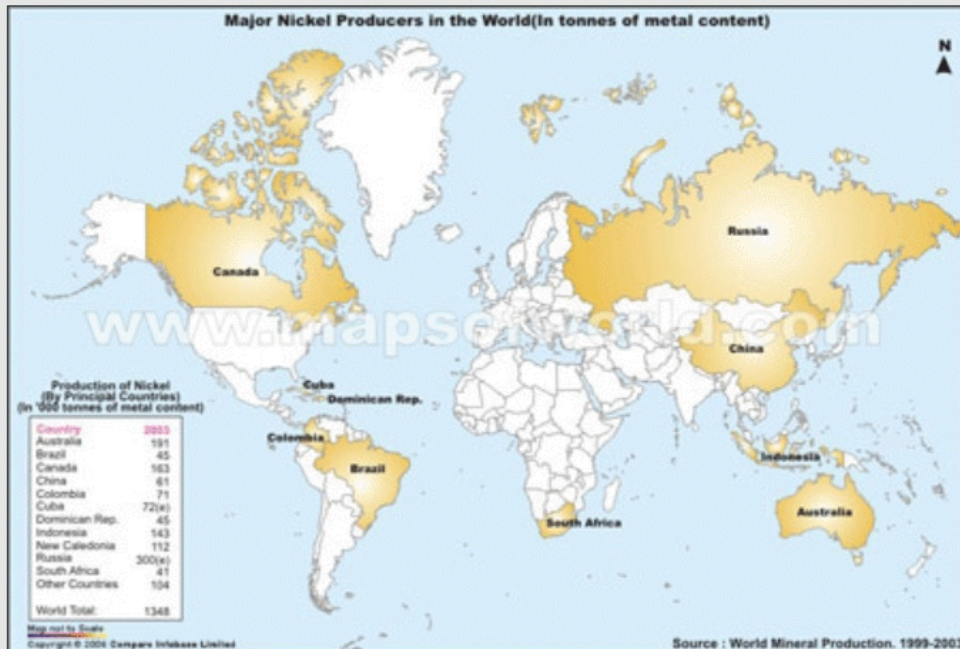## LENR
The Worlds Production and Reserves of Nickel:

World Mine Production, Reserves, and Reserve Base: Reserves estimates for Botswana, Philippines, South Africa, and Zimbabwe have been revised based on new information from the mining industry.

	Mine production 2001	Mine production 2002[e]	Reserves[5]	Reserve base[5]
United States	—	—	—	—
Australia	197,000	186,000	22,000,000	27,000,000
Botswana	26,200	23,200	490,000	920,000
Brazil	45,400	44,900	670,000	6,000,000
Canada	193,361	188,000	5,200,000	15,000,000
China	51,500	55,700	3,600,000	7,600,000
Colombia	52,962	55,400	900,000	1,100,000
Cuba	70,662	73,100	5,600,000	23,000,000
Dominican Republic	31,000	24,300	690,000	1,000,000
Greece	20,830	22,400	490,000	900,000
Indonesia	102,000	105,000	3,200,000	13,000,000
New Caledonia	117,554	98,200	4,400,000	12,000,000
Philippines	27,359	31,800	940,000	5,200,000
Russia	325,000	328,000	6,600,000	9,200,000
South Africa	36,443	38,000	3,700,000	12,000,000
Venezuela	13,600	20,600	610,000	610,000
Zimbabwe	8,145	9,690	15,000	260,000
Other countries	9,240	13,700	1,300,000	5,100,000
World total (rounded)	1,330,000	1,320,000	61,000,000	140,000,000

The World's Nickel Deposits:

World Nickel Deposit

Nickel (Ni) is the fifth most abundant element in the earth, even so, it is rare in crustal rocks. This element has became important commodity and been used in many industrial and consumer product such as stainless steel, magnet, rechargeable batteries electric guitar string and special alloy. About 65% of the nickel consumed in the Western World is used to make austenitic stainless steel. Another 12% goes into superalloys (e.g., Inconel 600) or nonferrous alloys (e.g., cupronickel). Both families of alloys are widely used because of their corrosion resistance. The aerospace industry is a leading consumer of nickel-base superalloys. Turbine blades, discs and other critical parts of jet engines are fabricated from superalloys. Nickel-base superalloys are also used in land-based combustion turbines, such those found at electric power generation stations. The remaining 23% of consumption is divided between alloy steels, rechargeable batteries, catalysts and other chemicals, coinage, foundry products, and plating.

Major Nickel Producers in the World(In tonnes of metal content)

Source : World Mineral Production. 1999-2003

The GAP Generator
Sources for my information
LENR
How Much Nickel will be consumed

2 – What about the price of Nickel? Won't it go through the roof? Well, not yet. Lets say that tomorrow the world started using e-cats to produce 150,000,000,000,000 kw/hours of energy, enough to maintain our current lifestyle. Well, according to Rossi, 0.00005 pounds of nickel produces 1 kw/h. So the consumption rate of nickel will be about 350,000 tons per year. Current nickel consumption is 1,500,000 tons. So nickel consumption would jump by about 25%. This is hardly enough to freak out the price of nickel. Nickel is one of the most abundant metals. There are significant untapped reserves. We'll be using A WHOLE LOT more energy before we suffer from significant nickel price increases. That said, by time we have our personal flying machines, by time we each have a greenhouse that grows all of the crops we need with artificial light, by time we have found every way of exploiting this cheap power, we'll probably get there.

World's Production of Nickel

World production [edit]

World nickel production in metric tons, in 2005. The Russian Federation is the largest producer, followed by Canada.

In 2011, Russia was the largest producer of nickel with about one-fifth world share closely followed by Canada, Australia, and Indonesia and Philippines, as reported by the US Geological Survey.[17] The largest deposits of nickel in non-Russian Europe are located in Finland and the second largest in Greece. A nickel deposit in western Turkey had been exploited, with this location being especially convenient for European smelters, steelmakers, and factories.

Identified land-based resources averaging 1% nickel or greater contain at least 130 million tons of nickel. About 60% is in laterites and 40% is in sulfide deposits. In addition, extensive deep-sea resources of nickel are in manganese crusts and nodules covering large areas of the ocean floor, particularly in the Pacific Ocean.[34]

The one locality in the United States where nickel was commercially mined is Riddle, Oregon, where several square miles of nickel-bearing garnierite surface deposits are located. The mine closed in 1987.[35][36] The Eagle mine project is a proposed new nickel mine in Michigan's upper peninsula.

Mine production and reserves[34]	2010	2011	Reserves
Australia	170,000	180,000	24,000,000
Botswana	28,000	32,000	490,000
Brazil	59,100	83,000	8,700,000
Canada	158,000	200,000	3,300,000
China	79,000	80,000	3,000,000
Colombia	72,000	72,000	720,000
Cuba	70,000	74,000	5,500,000
Dominican Republic	0	14,000	1,000,000
Indonesia	232,000	230,000	3,900,000
Madagascar	15,000	25,000	1,600,000
New Caledonia	130,000	140,000	12,000,000
Philippines	173,000	230,000	1,100,000
Russia	269,000	280,000	6,000,000
South Africa	40,000	42,000	3,700,000
Other countries	99,000	100,000	4,600,000
World total (metric tons, rounded)	1,590,000	1,800,000	80,000,000

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NASA: A Nuclear Reactor To Replace Your Water Heater

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This reactor does not use fission, the process of splitting atoms into smaller elements employed by every commercial power reactor currently operating on earth.

And it does not use hot fusion, the union of hydrogen atoms into larger elements that powers the sun and stars.

Instead, a low-energy nuclear reactor (LENR) uses common, stable elements like nickel, carbon, and hydrogen to produce stable products like copper or nitrogen, along with heat and electricity.

NASA scientist Joseph Zawodny with a device used to test low-energy nuclear reactions (NASA)

NASA Wants LENR In Every Home, Car, and Plane

This process, like the "conventional" fusion of hydrogen atoms into helium, produces a lot of heat. (See: 500MW from half a gram of hydrogen: The hunt for fusion power heats up.) The main difference, though, is that the cold fusion process (also known as LENR, or low energy nuclear reaction) produces very slow moving neutrons which don't create ionizing radiation or radioactive waste. Real fusion, on the other hand, produces fast neutrons that decimate everything in their path. In short, LENR is fairly safe — safe enough that NASA dreams of one day putting a cold fusion reactor in every home, car, and plane. Nickel and hydrogen, incidentally, are much cheaper and cleaner fuels than gasoline.

Only one nickel mine is USA August 1995

There is only one nickel mine in operation in the United States. The mine is located in Riddle, Oregon. Most of our new nickel is imported from Canada. Much of our domestic nickel comes from recycling nickel-containing alloys.

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How Big Are The Currently Known Oil Reserves And What Are The Chances Of Finding New Ones?

"Global oil reserves rose by 31 billion barrels to 1,653 billion barrels in 2011. Globally, that represents an increase of 30% over the 2001 figure, despite cumulative production of 321 billion bbls during the past ten years. Thus global reserve additions amounted to 707 billion bbls between 2001 and 2011."

How much oil does the world use in a day?

The world uses 85 million barrels *a day*.

At **42 gallons to the barrel**, that's three billion, five hundred and seventy million gallons of oil (3,570,000,000).

Niagara falls has a flow rate of **150,000 U.S. gallons per second**.

3,570,000,000 of oil / 150,000 gallons per second = 23,800 seconds of flow equivalent.

In other words, if by some horrific means you were able to replace the flow over niagara falls with nothing but oil for 6.6 hours a day, that's how much oil the 6 billion inhabitants of the earth burn every single day of every year, and **have been for more or less the past ten years**.

About these ads

That means, in a very loosely-defined and unrealistic way, we currently have 54 years of oil use left at current rates. **But if that's all there was, we'd have oil shortages in about five to ten years**. All oil wells, every single one, produce at their highest rate when they're brand new (or right after a big upgrade/treatment). So if we stopped finding new oil, and stopped drilling new wells, and stopped developing/deploying enhanced recovery technology, our oil production rate would slowly and inexorably decline. It takes constant effort just to maintain existing production rates. Those efforts also tend to increase proven reserves at a similar rate to the decrease caused by sucking oil out of the ground, so R/P ratios usually don't change much year on year.

What is the role of coal in the United States?

The United States holds the world's largest estimated recoverable reserves of coal and is a net exporter of coal. In 2011, our nation's coal mines produced more than a billion short tons of coal, and more than 90% of this coal was used by U.S. power plants to generate electricity.

See all Energy in Brief articles ›

COAL EXPLAINED

Where our coal comes from

In 2011, the amount of coal produced at U.S. coal mines was 1,094.3 million short tons. Coal is mined in 25 states. Wyoming mines the most coal, followed by West Virginia, Kentucky, Pennsylvania, and Texas.

Use of electricity

Most of the electricity in the United States is produced using steam turbines. Coal is the most common fuel for generating electricity in the United States. In 2011, 42% of the country's nearly 4 trillion kilowatthours of electricity used coal as its source of energy.

U.S. Coal Reserves

With Data for 2011 | Release Date: November 20, 2012 | Next Release Date: November 2013

As of January 1, 2012, the demonstrated reserve base (DRB) was estimated to contain 483 billion short tons. In the United States, coal resources are larger than remaining natural gas and oil resources. Annually, EIA reports remaining tons of coal in the DRB, which is comprised of coal resources that have been identified to specified levels of accuracy and may support economic mining under current technologies.

Total coal-related jobs

There are approximately 174,000 blue-collar, full-time, permanent jobs related to coal in the U.S.: mining (83,000), transportation (31,000), and power plant employment (60,000). (See below for details on each sector.) The U.S. civilian labor force totaled 141,730,000 workers in 2005; thus, permanent blue-collar coal industry employees represent 0.12% of the U.S. workforce.[1] (Compare this percentage with the 1.89% of U.S. workers who worked in coal mining *alone* in 1920.)

This total does not include indirect employment - workers who are not directly employed in the coal industry, but whose jobs are supported by that industry. It is entirely possible that thousands - even tens of thousands - of workers are indirectly supported entirely by the coal industry. However, the National Coal Association's 1994 estimate that the coal industry directly and indirectly employs around 1.5 million people [2] seems exaggerated. The level of indirect employment is in the low hundreds of thousands - not in the millions.

Coal mining jobs

In 2006, there were 82,595 people employed in coal mining in the U.S. Of those, 47,475 worked in underground mining, and 35,398 worked in surface mining.

Here is a breakdown of the geographical distribution of underground coal mining jobs in 2006 (with coal production in thousands of short tons):[3][4]

State	Total Coal Production	Underground Mining Jobs	Surface Mining Jobs	Total Jobs	Annual Production Per Miner
West Virginia	152,374	13,190	6,886	**20,076**	7.59
Kentucky	120,848	11,902	6,057	**17,959**	6.73
Pennsylvania	66,029	5,099	2,427	**7,526**	8.77
Wyoming	446,742	128	5,709	**5,837**	76.54
Virginia	29,740	3,623	1,639	**5,262**	5.65
Alabama	18,830	2,621	1,574	**4,195**	4.49
Illinois	32,729	3,507	470	**3,977**	8.23
Indiana	35,119	1,231	1,627	**2,858**	12.29
Ohio	22,722	1,384	1,029	**2,413**	9.42
Colorado	36,322	1,682	547	**2,229**	16.30
Texas	45,548	0	2,138	**2,138**	21.30
Utah	26,018	2,030	6	**2,036**	12.78
New Mexico	25,913	368	1,004	**1,372**	18.89
North Dakota	30,411	0	947	**947**	32.11
Montana	41,823	58	884	**942**	44.40
Washington	2,580	0	673	**673**	3.83
Tennessee	2,804	333	327	**660**	4.25
Maryland	5,054	205	285	**490**	10.31
Arizona	8,216	0	418	**418**	19.66
Louisiana	4,114	0	243	**243**	16.93
Oklahoma	1,998	73	151	**224**	8.92
Mississippi	3,797	0	178	**178**	21.33
Alaska	1,425	0	96	**96**	14.84
Kansas	426	0	61	**61**	6.98
Arkansas	23	41	2	**43**	0.53
Missouri	394	0	20	**20**	19.70
Total U.S.	**1,162,750**	**47,475**	**35,398**	**82,595**	**14.08**

From these data, we can see the huge discrepancy in coal mine productivity between Western and Eastern mines. Montana (with 942 coal miners) produces more coal than Virginia (with 5,262 coal miners). Wyoming (with 5,837 coal miners) produces more coal than West Virginia, Kentucky, Pennsylvania, Virginia, Alabama, and Illinois combined (with a total of 58,995 coal miners). Due to this discrepancy, the coal mining industry has increasingly moved production to these Western states (especially to the Powder River Basin), and has dramatically cut its workforce in Appalachia.