Finally, an Appropriate Wattage for an EV

TEM_LMD_GRID_V6.CIR

177kW in 33 hr & 9 min!

119.362K,177.070K

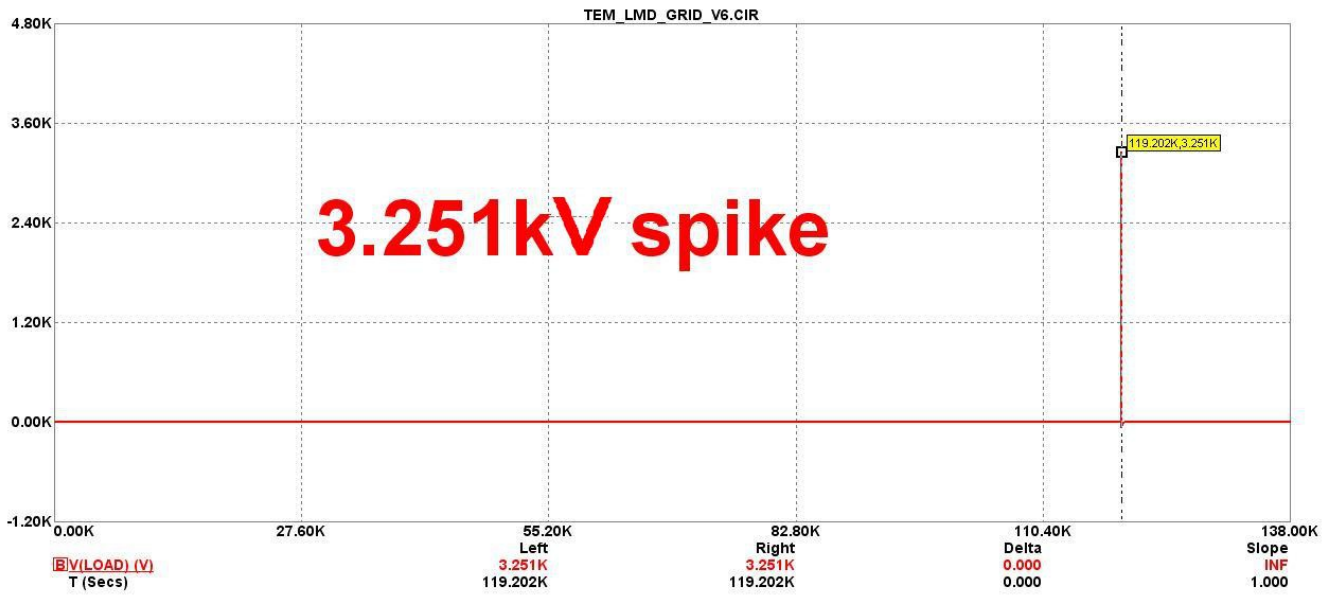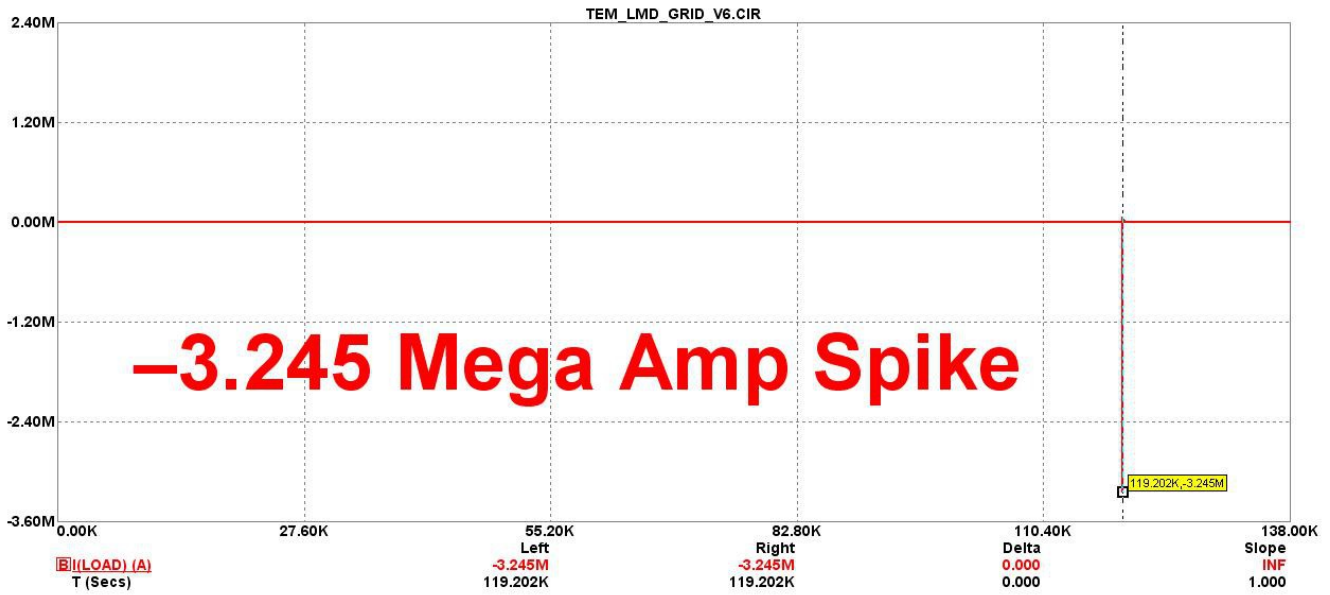|	Left	Right	Delta	Slope
RMS(I(LOAD))*RMS(V(LOAD))	177.070K	177.070K	0.000	INF
T (Secs)	119.362K	119.362K	0.000	1.000

TEM_LMD_GRID_V6.CIR

RMS VALUES
13.293kA vs 13.32V
is a ratio of 1k:1!

119.362K,13.320

	Left	Right	Delta	Slope
RMS(I(LOAD))	13.293K	13.293K	0.000	INF
RMS(V(LOAD))	13.320	13.320	0.000	INF
T (Secs)	119.362K	119.362K	0.000	1.000

2.40M

1.20M

0.00M

–1.20M

–3.245 Mega Amp Spike

–2.40M

119.202K,–3.245M

–3.60M

0.00K   27.60K   55.20K   82.80K   110.40K   138.00K

	Left	Right	Delta	Slope
I(LOAD) (A)	-3.245M	-3.245M	0.000	INF
T (Secs)	119.202K	119.202K	0.000	1.000

4.80K

3.60K

119.202K,3.251K

3.251kV spike

2.40K

1.20K

0.00K

–1.20K

0.00K   27.60K   55.20K   82.80K   110.40K   138.00K

	Left	Right	Delta	Slope
V(LOAD) (V)	3.251K	3.251K	0.000	INF
T (Secs)	119.202K	119.202K	0.000	1.000

Top circuit

.99

LOAD PRIMARY

R_LOAD

1m Ohm

4H @ 25 AWG

-20.27MEG | 0.27ME | -20.27M | -24.495MEG | 495MEG

1μ

-20.27MEG

10k

-24.495MEG

10k

-20.263MEG

-24.501MEG

1kH @ 25 AWG

-1.66K | -371.66K | -371.66K | -371.66K
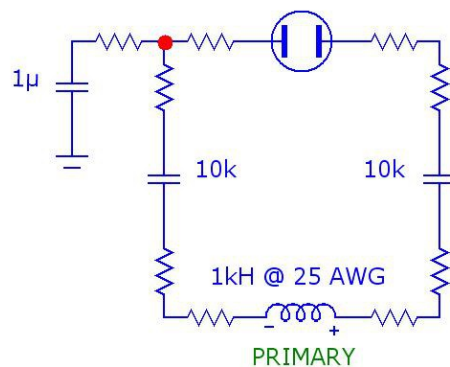
LOAD

-20.263M | -20.263MEG | 501MEG | 501MEG

PRIMARY
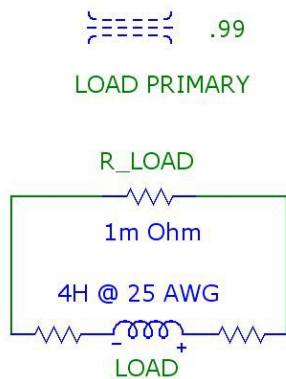
All resistors are 1μ Ohm. All capacitors have 10m Ohm of equivalent series resistance. 1½+ days of run-time yields 177kW, 13.3kA RMS and 13.3V RMS is a ratio of 1k to 1.

The beauty of Micro-Cap is that there is no voltage, nor is there any current, source in explicit evidence. Instead, a few behavioral voltage and current sources are embedded within the neon bulb (spark gap).

Bottom circuit

.99

LOAD PRIMARY

R_LOAD

1m Ohm

4H @ 25 AWG

LOAD

1μ

10k

10k

1kH @ 25 AWG

PRIMARY

All resistors are 1μ Ohm. All capacitors have 10m Ohm of equivalent series resistance. 1½+ days of run-time yields 177kW, 13.3kA RMS and 13.3V RMS is a ratio of 1k to 1.

The beauty of Micro-Cap is that there is no voltage, nor is there any current, source in explicit evidence. Instead, a few behavioral voltage and current sources are embedded within the neon bulb (spark gap).

I dislike how LTSPICE demands I prevent the buildup of voltage by throwing an error and calling it, "floating node"! So, I thwart this by adding an extremely low capacitance of 1e-18 Farads, at C4, between this "erroring" node and ground on the far left-side of the schematic...
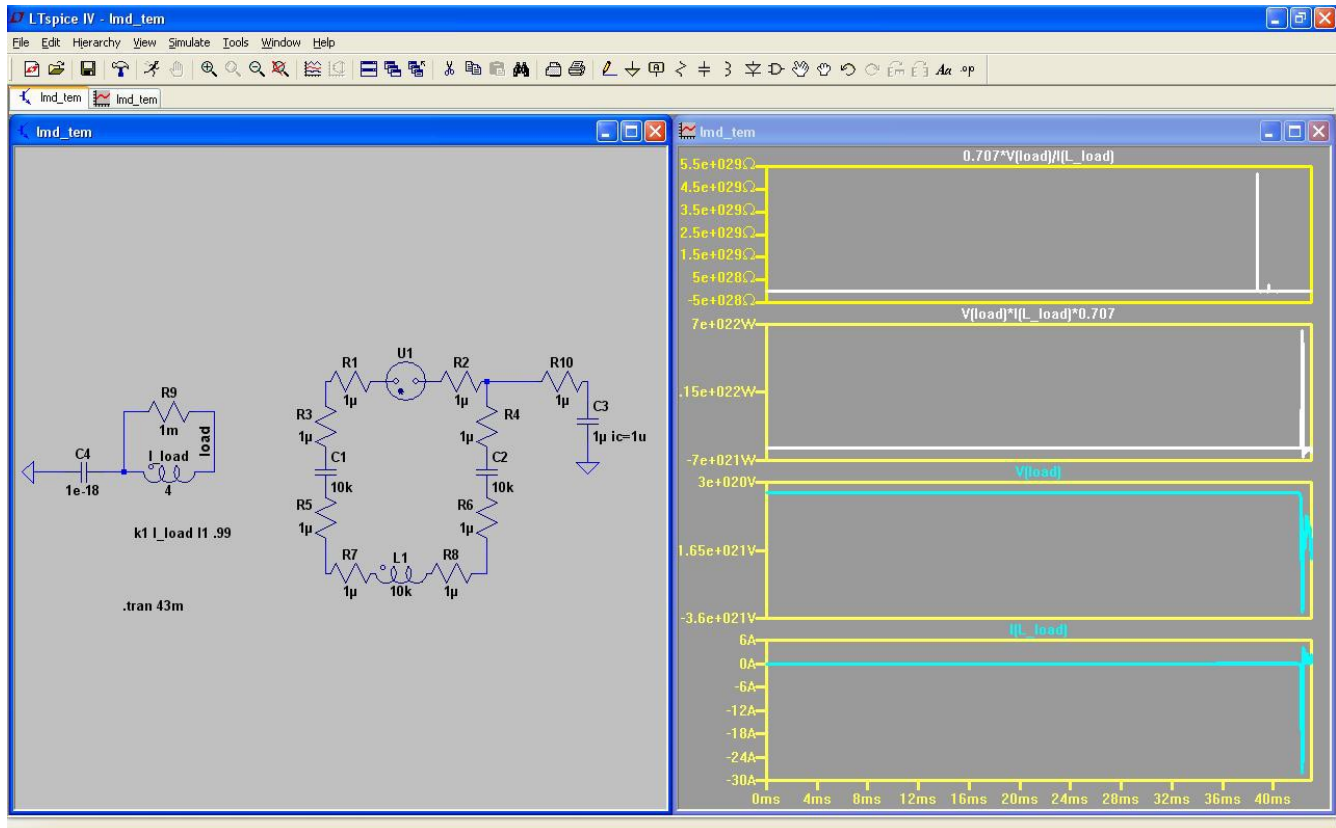
All resistors are 1μΩ except for R9 which is 1mΩ. Both coils use 25 AWG giving them a series resistance equal to their inductance. All capacitors possess 10mΩ of equivalent series resistance.

Consequently, I usually can never buildup any appreciable amperage, nor self-regulate with pulses. Hence, the impedance is quite high. Especially in this case, the voltage climbs at a rate much faster than does the amperage.

But at least, in principle, I succeeded in replicating this overunity effect in LTSPICE similar to the results in Micro-Cap up above....all due to a capacitance, at C4, so low that it discharges its voltage at an amplitude in excess of its reception. And all the while maintaining its output of amperage equivalent to its reception...

Ohm's Las has been violated!...

Voltage is increasing with no relation to current.

Only as an indirect consequence does current slowly, feebly, rise during the run-time of this simulation probably due to an increasing discharge of current (per unit of time) out through C4 to ground?

So, C4's value of 1e-18 Farads is escalating the retention of voltage (within the context of L_Load) while throwing away current (to ground?) at an equally rapid rate!
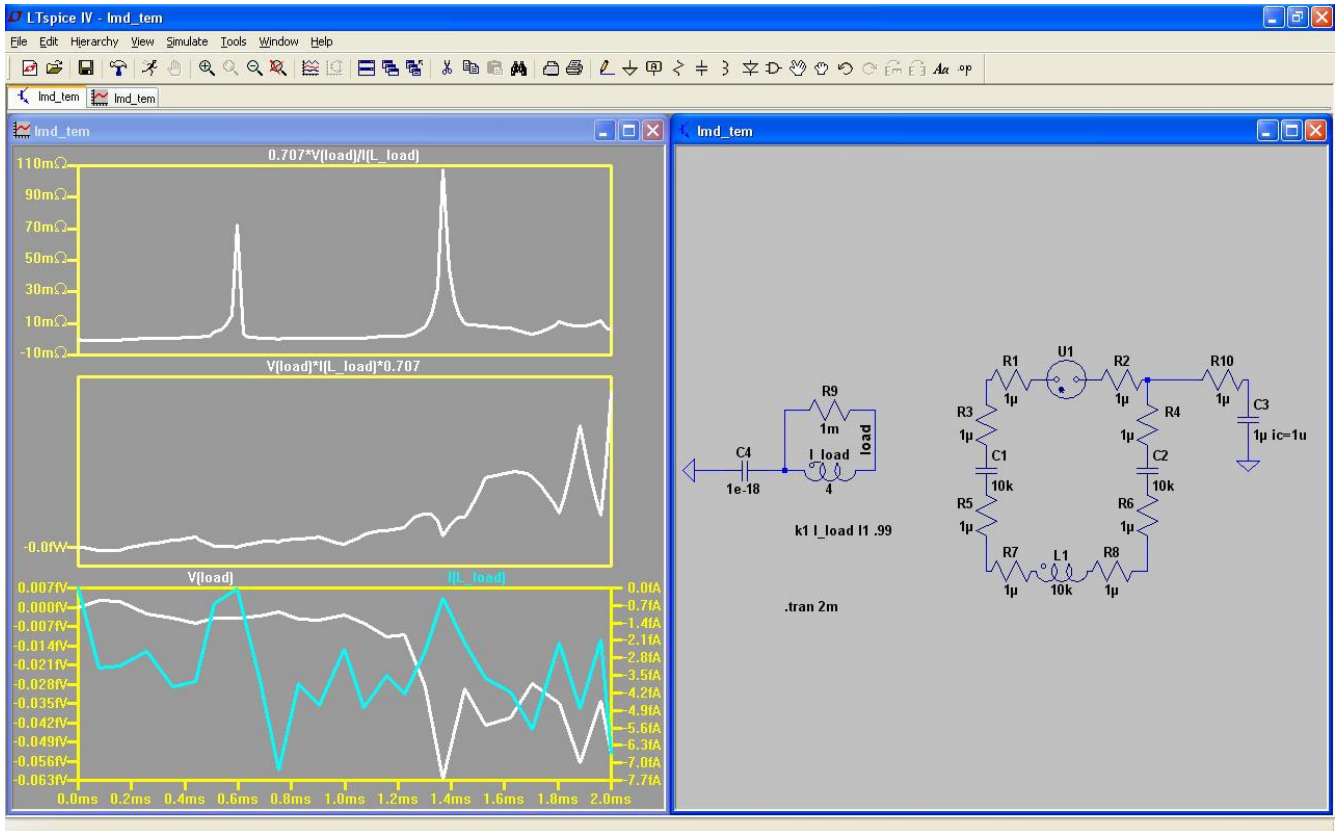
Two milli-seconds of run-time...
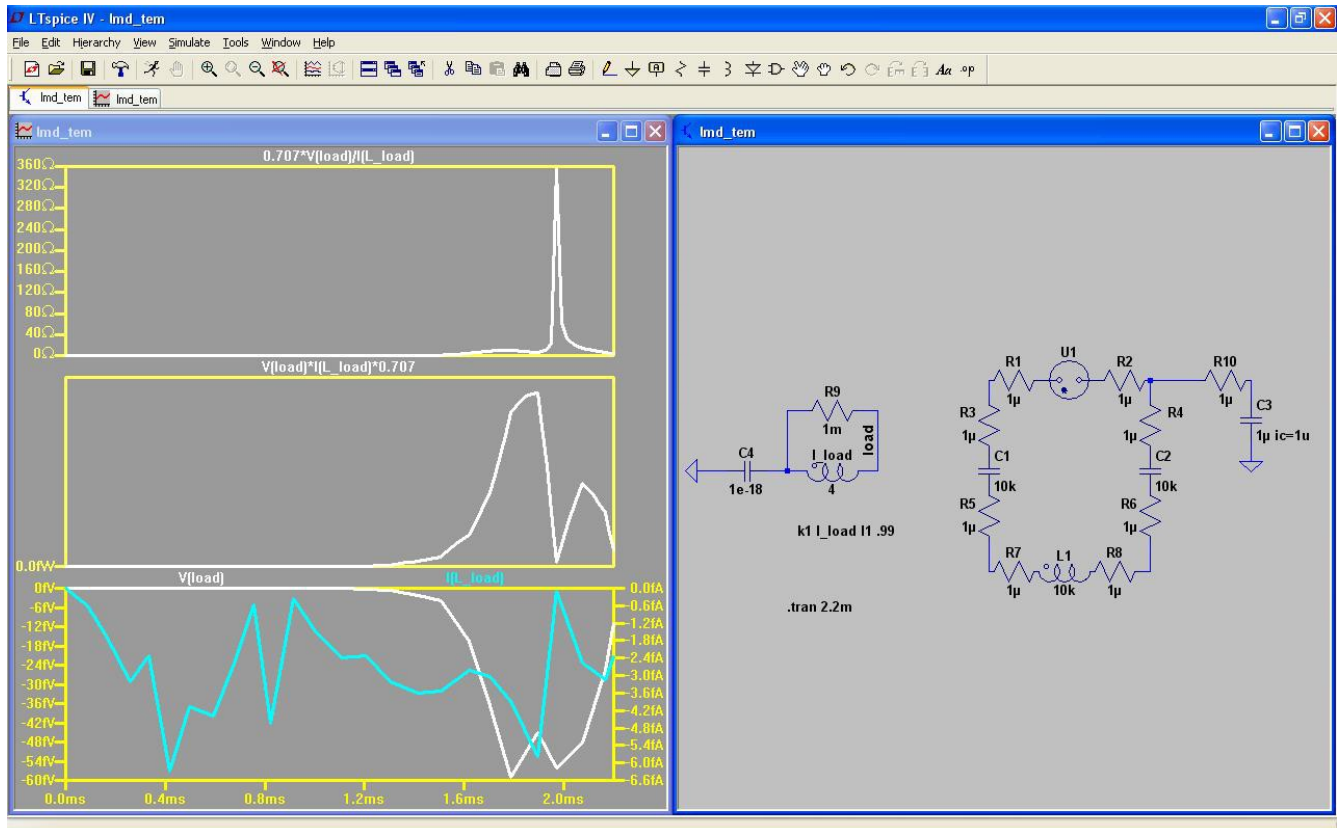
Two and two-tenths milli-seconds of run-time...

This is unlike Ohm's Law which requires an inverse relation between voltage and current.

This is more like the Law of Conductance (measured in Siemens), and very similar to Gas Laws, in which current varies directly (not inversely) with voltage. Its gaseous analog is the direct relation between temperature and pressure rising, or falling, together rather than inversely.

This is why it is so convenient to use a gas discharge tube (filled with a noble gas) to encourage this phenomenon and stand back and wonder why we never thought of this before?

Therefore, I believe that the secret to the Ammann brothers' mystery may be Tesla's Plasma Lamp. Even the Wikipedia article admits to an increase in current should the lamp be covered with a winding of wire, or a metallic plate, and connected in parallel with a step-down transformer causing current to increase at the high-voltage electrode in the center of the lamp.

This is also analogous to Joseph Newman's secret use of rotating, PVC canisters of helium (wrapped with an open coil) instead of using rotating permanent magnets. The latter was his public claim. Yet, the truth (according to Byron Brubaker, an electrical engineer who gave him this secret) is: Newman lied! He _used to use_ permanent magnets and kept telling people that magnets would give them overunity if they made their replication large enough! Bogus...

We see from the following outcome that a negative unity, power factor exists as an inverse relation between the voltage and the current waveforms in the second pane from the bottom – V(Load) and I(L_Load) – creating power rather than consuming it. Freely available reactive power is a fact. And free energy (the conversion of reactive power into real power) is the result of non-reactive resistance at R9 (in the pane immediately below it), exactly matching the voltage waveform of V(Load) immediately above I(R9)...
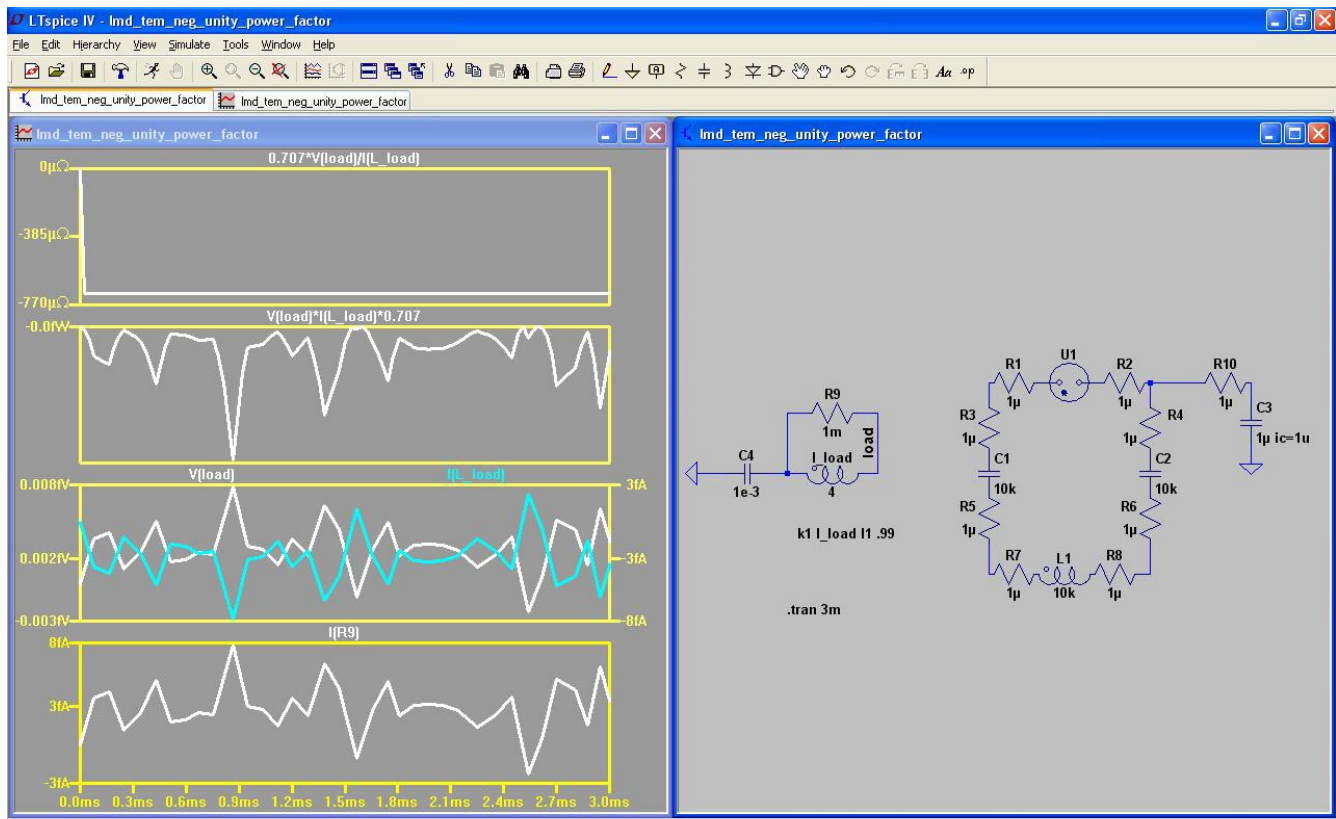
Capacitor, C4, has its capacitance reduced to 1mF or else this phenomenon of negative unity, power factor would not be obvious since it was overwhelmed by exponential (hyperbolic) growth.

Which law of physics does electrical reactance violate?

Surely, you jest? You can't possibly be serious to suggest this is an error of electrical engineering?...

Or, of electronic simulators?

All of the standard electrodynamic relations, defined by mathematics, have been upheld.

What gives physics the legal right, via the Patent Office, to override electrical engineering?

Is that a breach of the separation of powers? Namely, the power to distinguish between nuclear physics and electrodynamics? Between the nucleus of the atom and its valence electrons?

Here's an interesting anomaly? Perhaps, not! I managed to get the amperage to equal the voltage, but at a cost of the software becoming incapable of graphing it. I did this by sandwiching a neon bulb in between two capacitors of 1e-29 Farads, each, between the grounded node on the far left and L_Load on its immediate right. We have to infer from an impedance of one Ohm that this equivalence is valid (and not speculation) for lack of graphical evidence!...
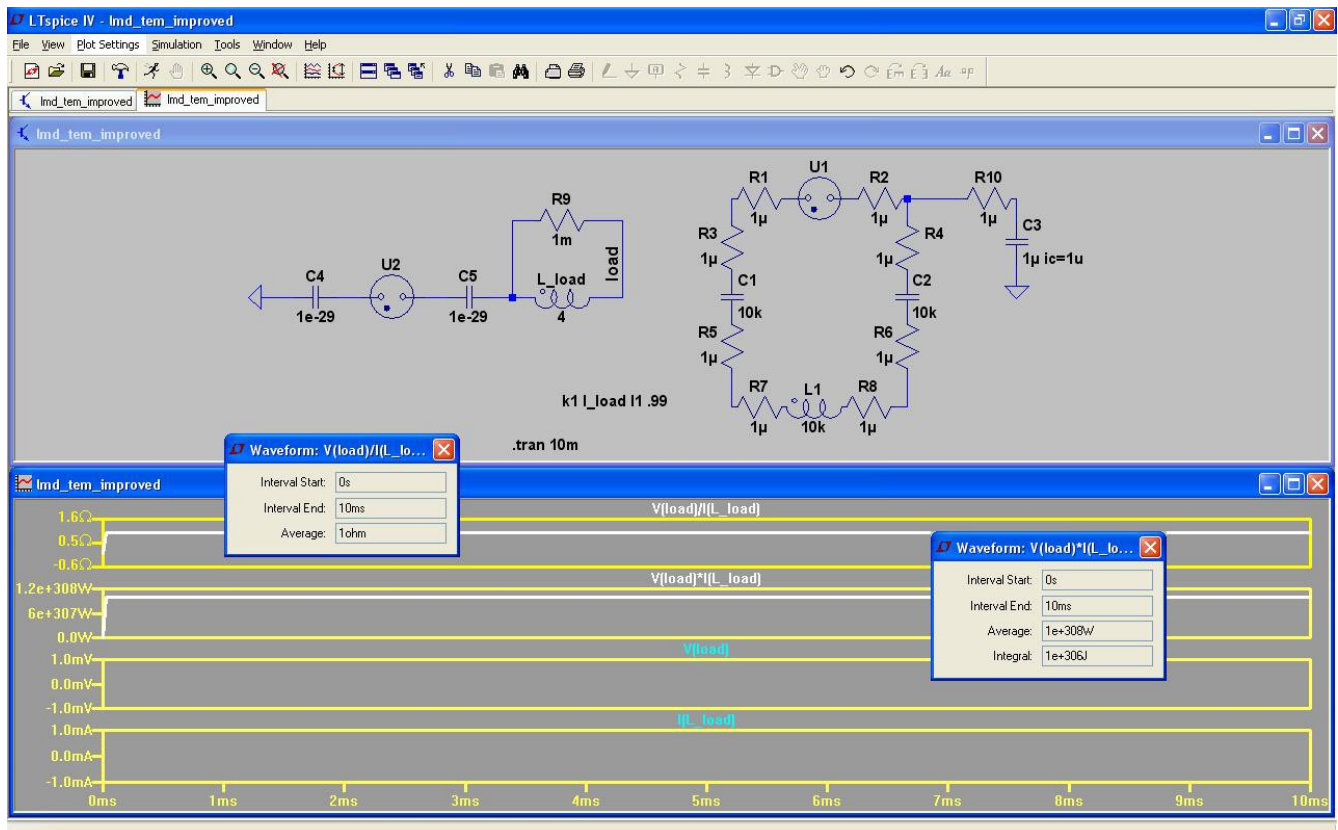
So, now I've learned how to completely thwart any policy by LTSPICE to suppress overunity!

Wow...hallelujah, amen!

This brings us right back to what I consider to be the basic archetype, electrically analogous, to the Ammann brothers' copper spheres and Tesla's Plasma Lamp...
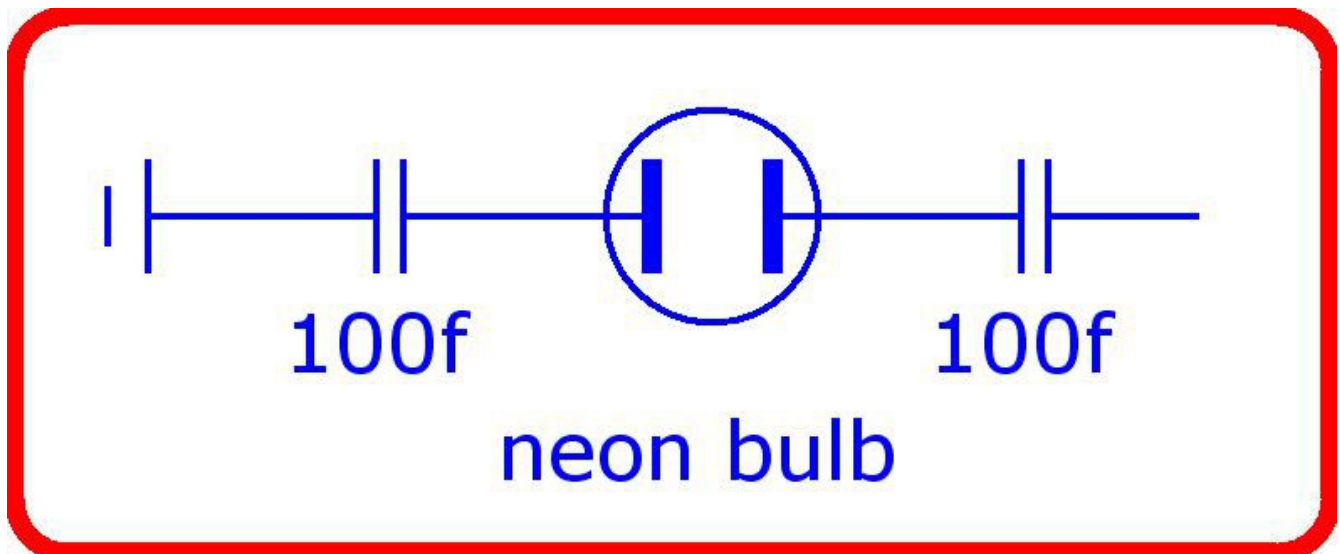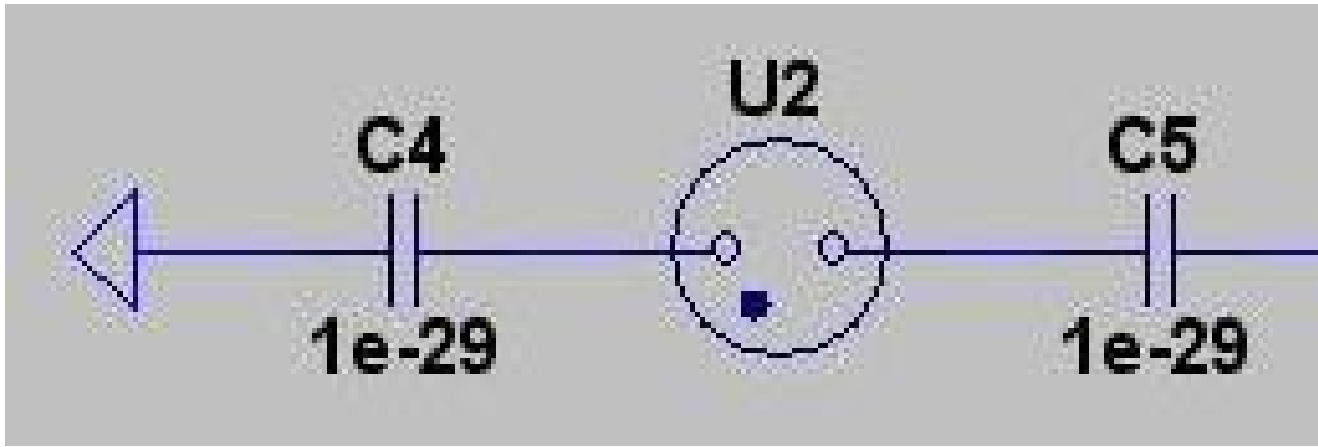
Although there are probably infinite variations possible as the schematic screenshots within this text, and "An Ideal Circuit.pdf" attest to.

Based on the low level of capacitance in the images, above – especially the 1e-29 Farads used in the LTSPICE simulation – I surmise that the pair of copper spheres are hollow, and their inner surface is coated with a dielectric material, such as: glass or better still Tesla's favorite mixture (according to Mark McKay, a researcher of the Edwin Gray motor) composed of 5% carnauba wax, plus the remaining 50/50 balance is beeswax and pine rosin.

Like the central location of the high-voltage electrode within plasma lamps, a hollow copper tubing terminates in the center of each sphere and allows for movement of the noble gases between each

sphere. This tubing passes through the center of the core of a transformer.

This can be easily accomplished by bundling a wrapping of iron wire around the copper tube. This bundled iron wire serves as the transformer core. Additional bare iron wire is wound alongside the insulated copper winding to further enhance the "capture" of the copper wire's magnetic field. If a steel drum is used to encapsulate this whole affair, then all the better.

This transformer is used to step-down the voltage buildup accumulating as a consequence of the action of the copper tubing interconnecting the pair of copper spheres filled with plasma.

I suspect that the drum was not filled with mineral oil as is commonplace, today.

I suspect that it may have been filled with either a baking soda (trona) or a borax electrolyte to *encourage arcing* in a unipolar direction towards whatever aluminum fittings are used to connect the transformer coils. The aluminum will then proceed to oxidize and create a diodic effect favoring a direction of current chosen to occur towards the larger coil of the transformer intended to accumulate voltage and encourage the inversion of current to travel towards higher voltage, rather than away from it, and separate the phases of current and voltage from each other by one-half cycle. This creates negative unity, power factor and a closed loop between the step-down action of the transformer and the diodic leakage of current. - {speculations}
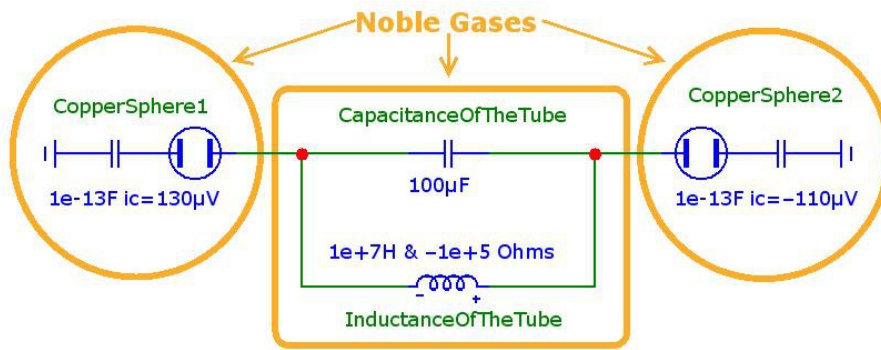
The copper tube serves as another leakage of current completing a loop that is partly capacitive and partly inductive.

Anyway...I'm just speculating on the basis of simulating this archetype attached to Eric Dollard's analog computer of two coils (one coil is replaced by another type of conductive element, a neon bulb, spark gap) and two capacitors placed on opposite sides of a square loop. This is the most efficient method of accumulating energy acquired by the geometrical construction of the Ammann Brothers' mysterious copper spheres.
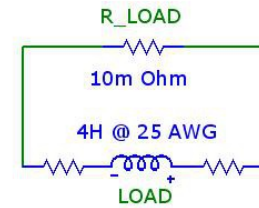
But since Tesla is the originator of this archetype, and giving it some further thought, I've come to the conclusion that they/he did not make use of Eric's method and completely resorted to simplistic methods. Hence, the following screenshots of what I imagine is their design...

Tesla's (Ammann Bros) Plasma Lamp, aka Cosmic Accumulator/Generator

Noble Gases

CopperSphere1
1e−13F ic=130μV

CapacitanceOfTheTube
100μF

1e+7H & −1e+5 Ohms
InductanceOfTheTube

CopperSphere2
1e−13F ic=−110μV

Copper Tube Connecting Both Spheres

R_LOAD
10m Ohm

4H @ 25 AWG
LOAD

LOAD POSSESSES...
4 Ohms of Series Resistance
1mF of Parallel Capacitance

10% Coupling
InductanceOfTheTube LOAD

~123 KILO WATTS IN 2 HOURS, 11 MINUTES AND 4 SECONDS AND IT'S A SINE WAVE OF INCREASING AMPLITUDE DUE TO THE NEGATIVE RESISTANCE WITHIN BOTH SPHERES AND WITHIN THE COPPER TUBE CONNECTING THEM.

Voltage Threshold of Neon Bulbs is 900kV
Voltage across Spark Gap once Struck is 10V
Sustaining Current under which the Arc is Stopped is 500mA
Negative Resistance once Struck is -1k Ohms
Lead/Electrode Inductance is 1.3nH
Lead/Electrode Resistance is 2k Ohms
Gap Capacitance is 1pF
Arc Capacitance is 3pF

TESLA'S PLASMA LAMP, v2B.CIR

~122.84kW in 7.8638 kilo sec, ergo... 2 hr, 11m, 3 & 1/8 sec » » » » » »

RMS(I(LOAD))*RMS(V(LOAD))

T (Secs)

But that circuit is difficult to simulate without the simulator exhibiting instability in the form of not consistently giving me a virtual oscilloscope tracing for a window of duration without frequently refusing to give me a result intermittently throughout the range of this window. In other words, normally, an error of "matrix is singular" only occurs whenever the simulator reaches its upper boundary of numeric amplitude. But this error occurs often enough to make my efforts difficult to get a tracing at my target wattage, etc.

So, I've had to resort to taking parallel capacitance of the LOAD coil out of itself and significantly increase it to get desirable results. So, please disregard its parameter of 100 Mega Farads as a simulation necessity not worthy of building into any physical device...
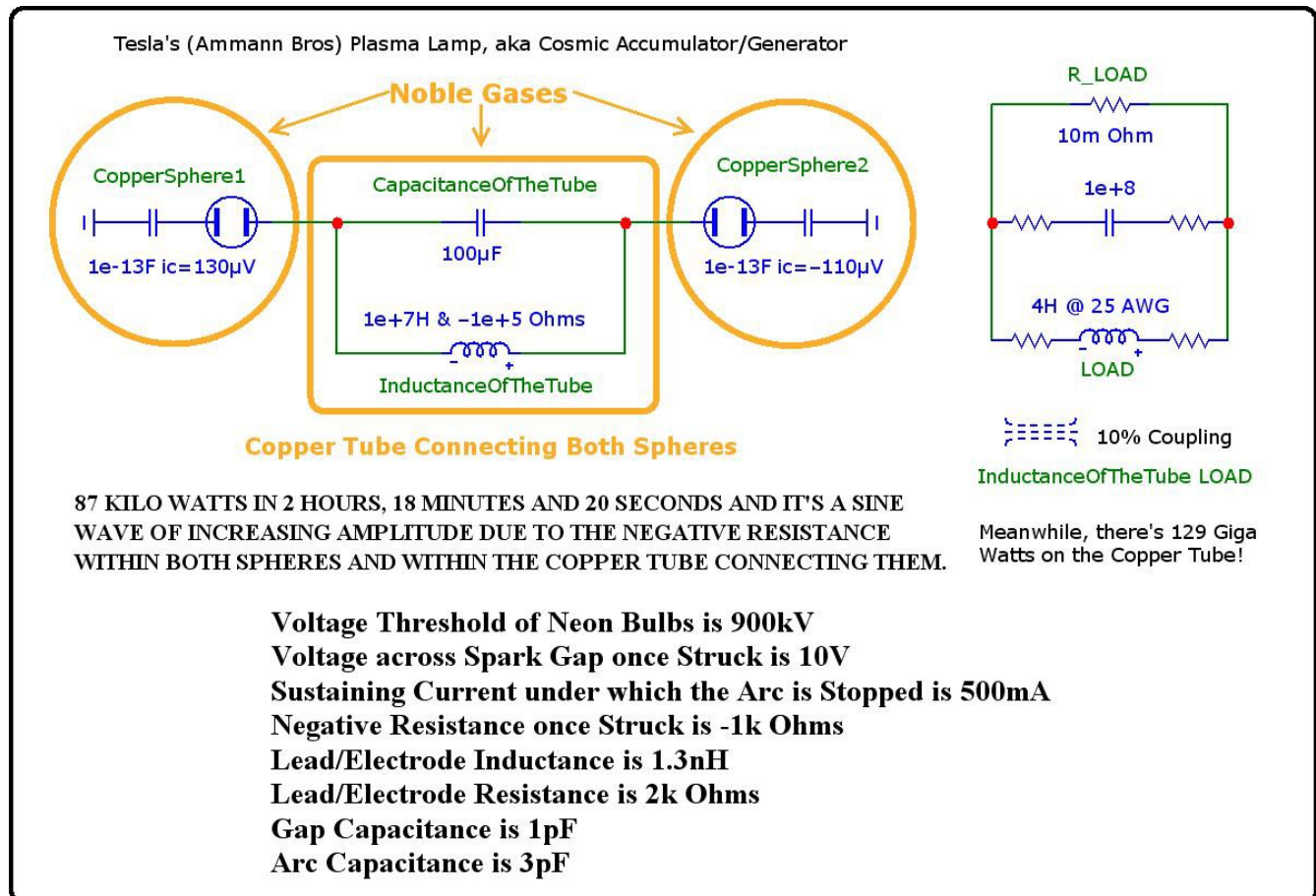
Tesla's (Ammann Bros) Plasma Lamp, aka Cosmic Accumulator/Generator

Noble Gases

CopperSphere1
1e-13F ic=130μV

CapacitanceOfTheTube
100μF
1e+7H & −1e+5 Ohms
InductanceOfTheTube

CopperSphere2
1e-13F ic=−110μV

Copper Tube Connecting Both Spheres

R_LOAD
10m Ohm
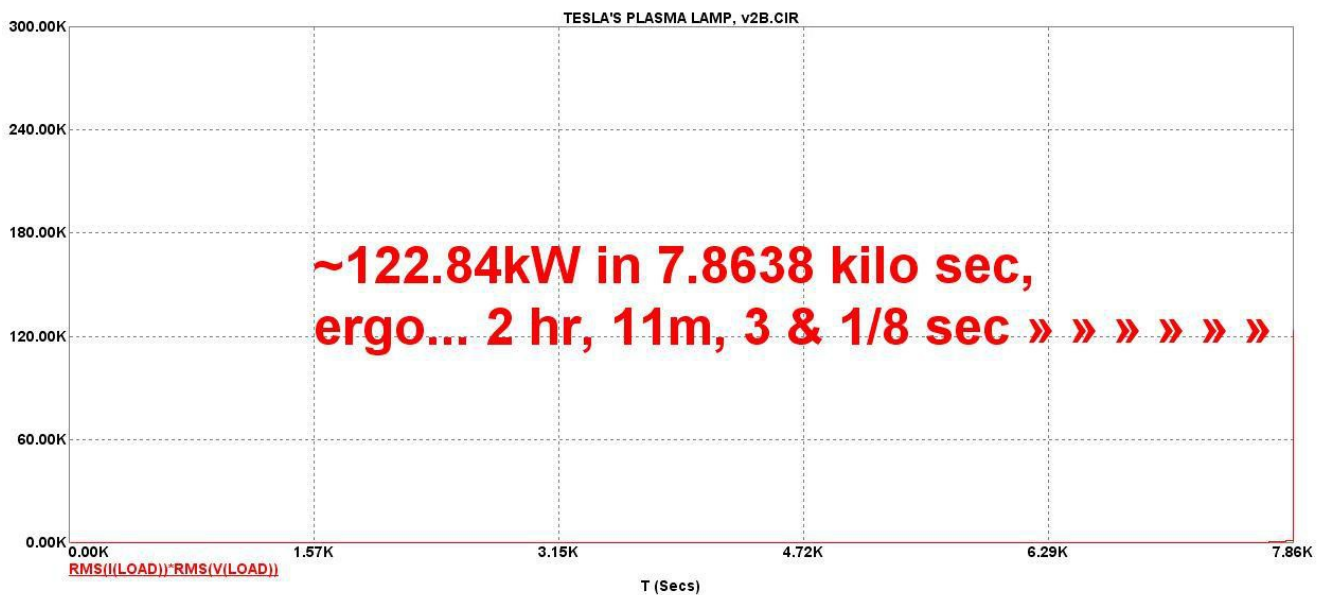1e+8
4H @ 25 AWG
LOAD

10% Coupling
InductanceOfTheTube LOAD

87 KILO WATTS IN 2 HOURS, 18 MINUTES AND 20 SECONDS AND IT'S A SINE WAVE OF INCREASING AMPLITUDE DUE TO THE NEGATIVE RESISTANCE WITHIN BOTH SPHERES AND WITHIN THE COPPER TUBE CONNECTING THEM.

Meanwhile, there's 129 Giga Watts on the Copper Tube!
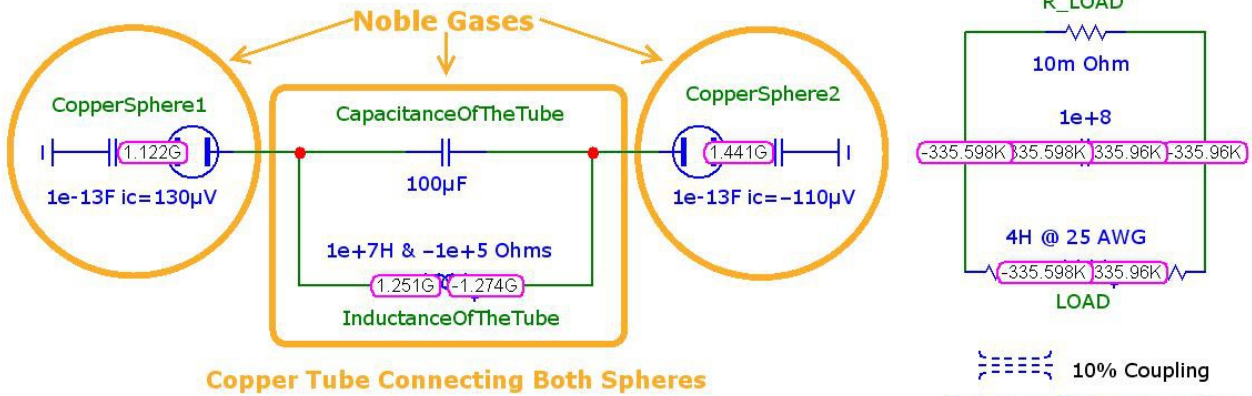
Voltage Threshold of Neon Bulbs is 900kV
Voltage across Spark Gap once Struck is 10V
Sustaining Current under which the Arc is Stopped is 500mA
Negative Resistance once Struck is -1k Ohms
Lead/Electrode Inductance is 1.3nH
Lead/Electrode Resistance is 2k Ohms
Gap Capacitance is 1pF
Arc Capacitance is 3pF

Tesla's (Ammann Bros) Plasma Lamp, aka Cosmic Accumulator/Generator

Noble Gases

CopperSphere1
1.122G
1e-13F ic=130µV

CapacitanceOfTheTube
100µF

1e+7H & –1e+5 Ohms
1.251G -1.274G
InductanceOfTheTube

CopperSphere2
1.441G
1e-13F ic=–110µV

Copper Tube Connecting Both Spheres

R_LOAD
10m Ohm
1e+8
-335.598K 335.598K 335.96K -335.96K

4H @ 25 AWG
-335.598K 335.96K
LOAD
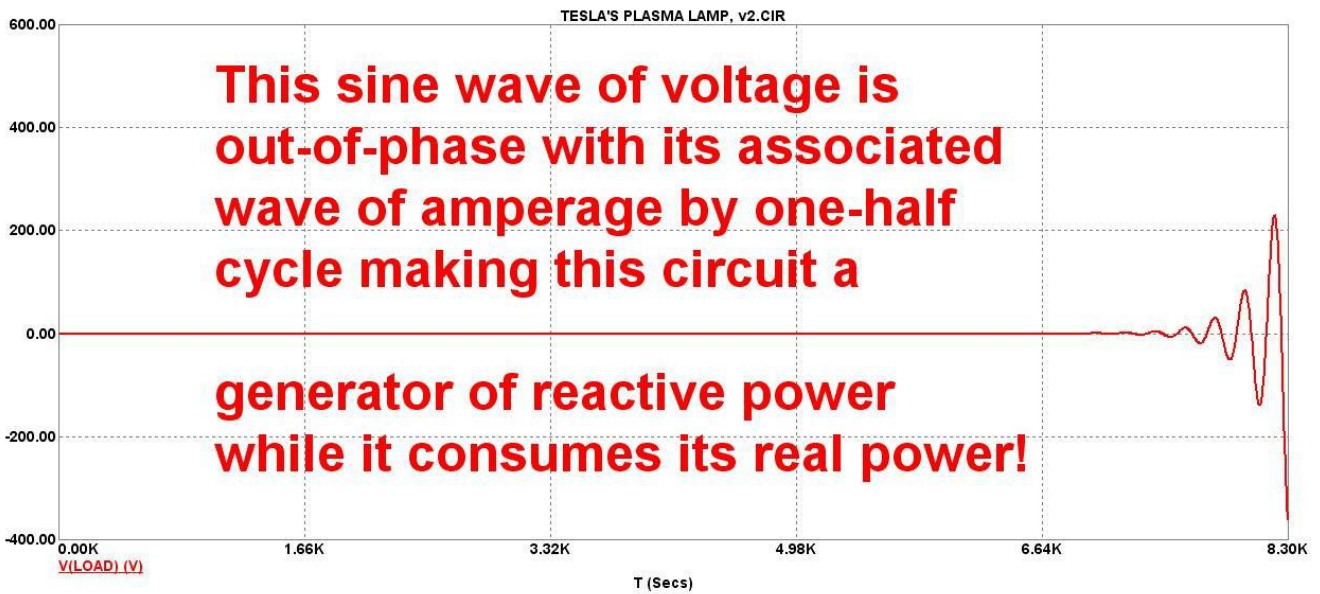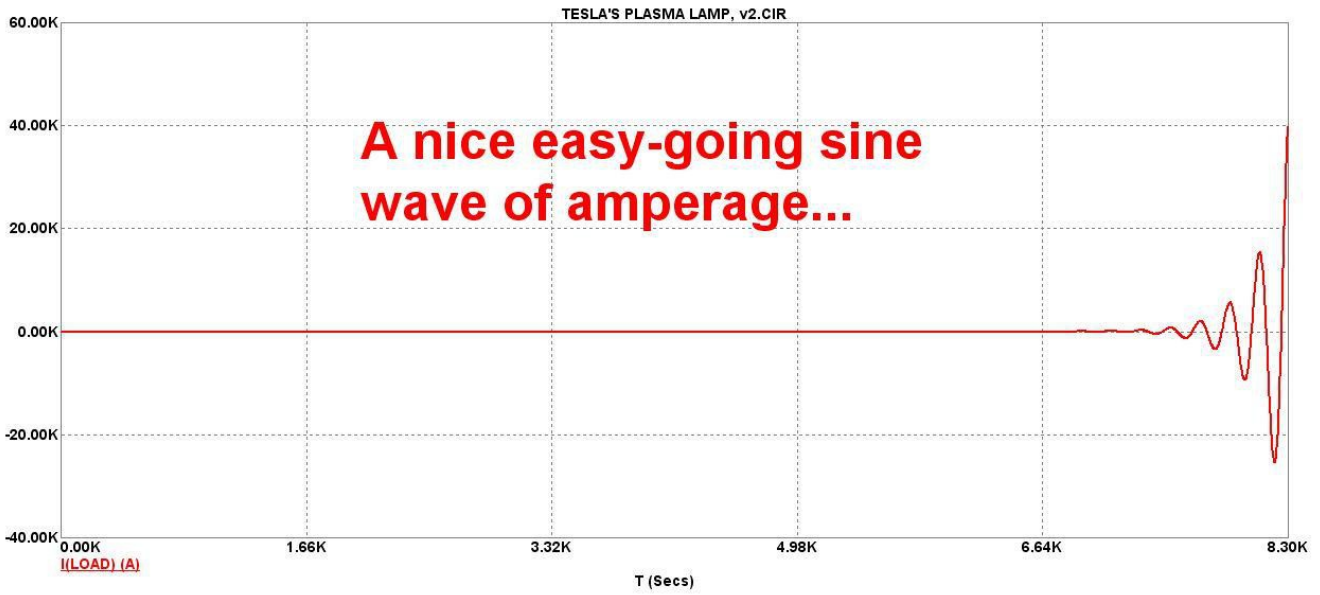
10% Coupling
InductanceOfTheTube LOAD

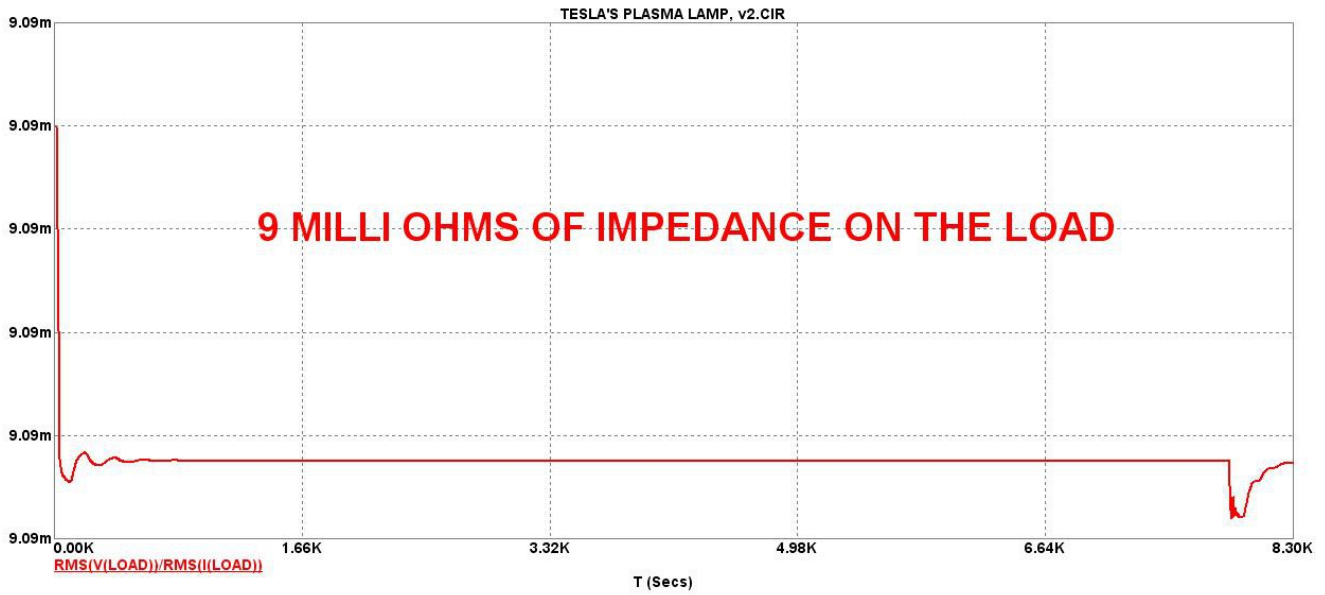Meanwhile, there's 129 Giga Watts on the Copper Tube!

87 KILO WATTS IN 2 HOURS, 18 MINUTES AND 20 SECONDS AND IT'S A SINE WAVE OF INCREASING AMPLITUDE DUE TO THE NEGATIVE RESISTANCE WITHIN BOTH SPHERES AND WITHIN THE COPPER TUBE CONNECTING THEM.

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Lead/Electrode Inductance is 1.3nH
Lead/Electrode Resistance is 2k Ohms
Gap Capacitance is 1pF
Arc Capacitance is 3pF

TESLA'S PLASMA LAMP, v2.CIR

8.300K,86.857K

86.857KW IN 8.3KS

	Left	Right	Delta	Slope
B RMS(I(LOAD))*RMS(V(LOAD))	86.857K	86.857K	0.000	INF
T (Secs)	8.300K	8.300K	0.000	1.000

TESLA'S PLASMA LAMP, v2.CIR

A nice easy-going sine wave of amperage...

I(LOAD) (A)

T (Secs)

TESLA'S PLASMA LAMP, v2.CIR

This sine wave of voltage is out-of-phase with its associated wave of amperage by one-half cycle making this circuit a

generator of reactive power while it consumes its real power!

V(LOAD) (V)

T (Secs)

9 MILLI OHMS OF IMPEDANCE ON THE LOAD

RMS(V(LOAD))/RMS(I(LOAD))

T (Secs)

Average RMS impedance of the inductance of the copper tube...

8.243K,318.007K

318K OHMS OF IMPEDANCE
AVG(RMS(V(InductanceOfTheTube))
DIVIDED BY...
RMS(I(InductanceOfTheTube)))

B AVG(RMS(V(InductanceOfTheTu	Left	Right	Delta	Slope
	318.007K	318.007K	0.000	INF
T (Secs)	8.243K	8.243K	0.000	1.000
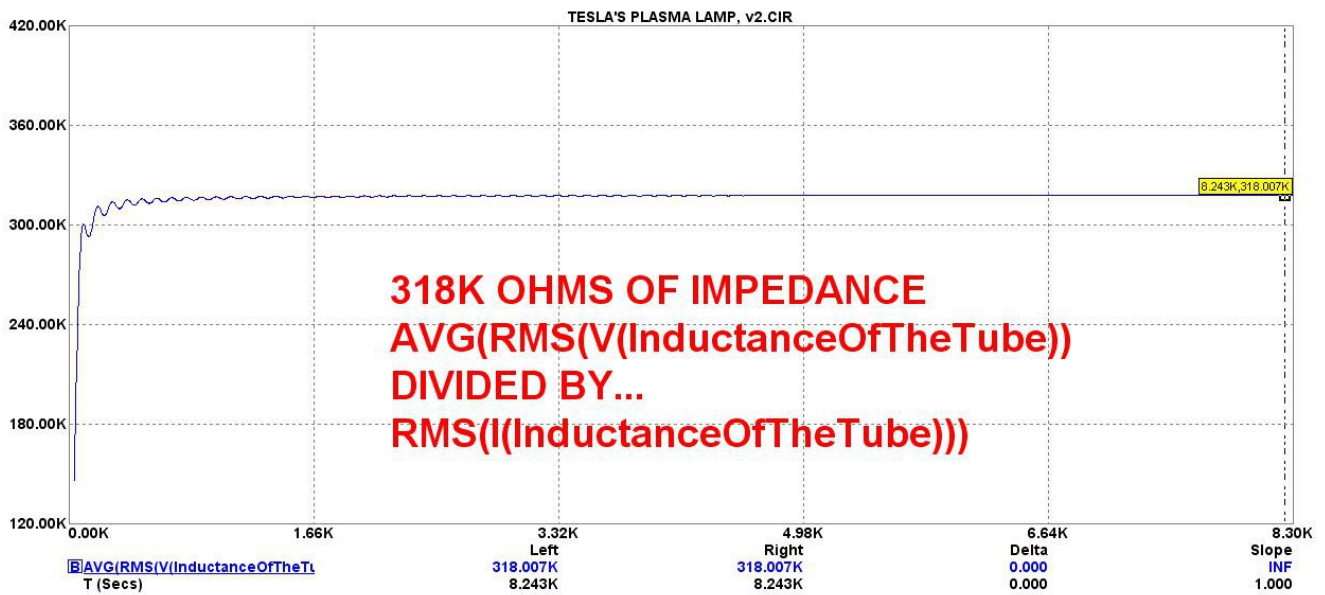
Raw data for the impedance of the tube...
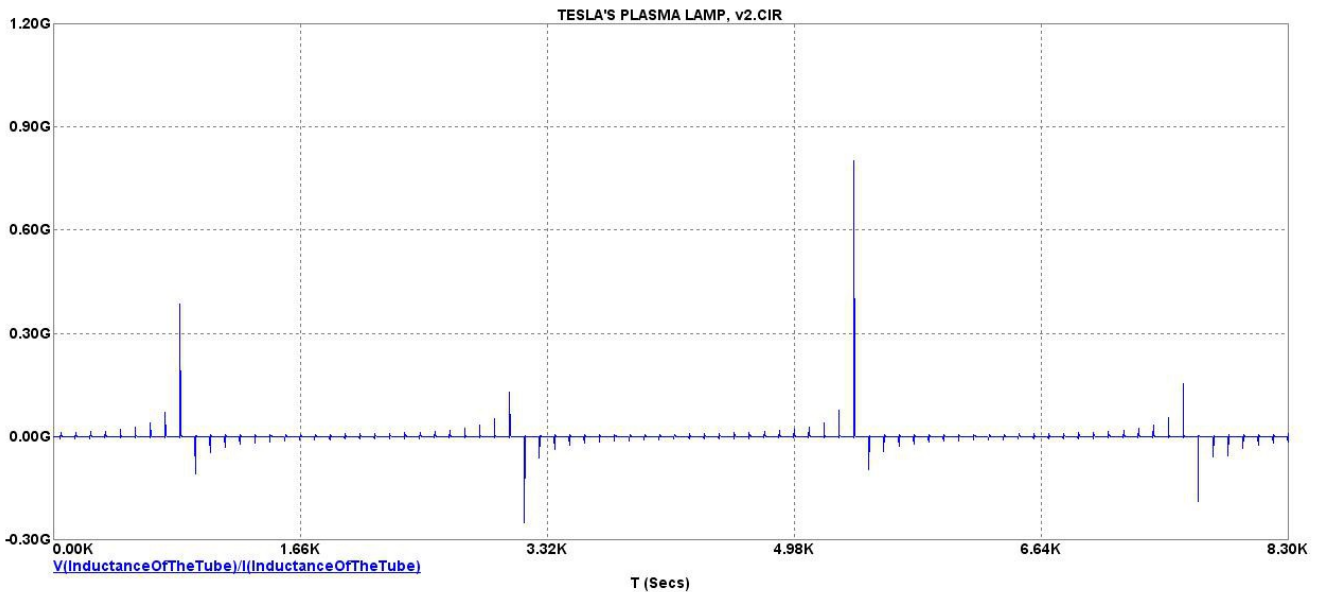
Again... The tube is hollow and the spheres are hollow. And all three are coated on their interior with a *thin* film of dielectric to mimic the properties (stated in the Wikipedia article on plasma lamps) of a glass globe covered with a coil, or a plate, on its exterior surface.

DISCLAIMER...

These simulations are intended to *suggest* what is possible without being taken explicitly as an accurate assessment of what is possible.

They give me hope...

The Venturi Effect helps explain why does these latest simulations of mine (beginning on page ten) actually perform according to spec.

It's because the thin tube *increases* wind speed (so to speak) by reducing the pressure within the narrow confines of the tube by comparison to the higher pressures within the adjoining spheres at either end of the tube. And the wind, in question, is propelled (compelled) by the plasma inside. It's already excitedly vibrating at a medium to high frequency. Add linear motion to these vibrations along the length of the copper tubing, and we have an intensification of the negative resistance (−1e+5 Ohms in the simulations, above) already set into motion by the noble gas (becoming an electrified plasma) plus the linear dimension of organizing this negative resistance along the entire length of the tubing to create

a measurable rise of inductance at the tube (1e+7 Henrys in the simulations, above).

It's not the same thing as whenever atoms of a noble gas become excited within a spherical object, such as a lamp, or a globe, which encourages a radial motion either towards the center of the globe or outwardly towards the globe's periphery. We're dealing, here (instead), with a linear geometry in which these charges will become organized into a tubular column of moving atoms of plasma as they oscillate back and forth along the length of the tube. This combination of reciprocating linear motion in addition to randomized excitement of the noble gases induces both a negative current (resistance) along the length of the tube along with an intense inductance across its cross-sectional circumference. This is why I use these extreme parameters in the schematics on pages 10, 11 and 12 to succeed at getting the effect that I wanted to achieve within these simulations.

But I have to come up with the rationalizations to support these parametric choices. And I believe I have succeeded in convincing myself that these simulations are not "wishful thinking".

The Venturi Effect of a plasma (housed within a copper tube) explains it all...

The Copper Spheres are not of primary significance. They are of secondary importance providing an oscillation of pressurized plasma. It's the tube wherein all of the inductive excitement is taking place.

In fact, when I first began with a low level of inductance for the tube, I discovered that if I raised its inductance, then the power level of the oscillating sine wave rose due to a lack of self-damping.

But in the beginning of my endeavor, when the inductance of the tube was relatively low, power consistently self-damped over time as per expected of normal thermodynamically inclined devices.

But when I crossed a threshold of minimum inductance, and kept its series resistance at a minimum value of at least 100 times less than its inductance, that's when the sine wave oscillations stopped damping out and, instead, began to rise with higher peaks and lower troughs than the previous cycles.

Because reactive impedance equates inductive reactance with inductance, and because reactive impedance equates capacitive reactance with capacitance, inductive and capacitive reactance becomes the new inductance and the new capacitance from which the new inductive and capacitive reactances arise spawning, yet again, the next round of inductance and capacitance in an endless cycle of enlargement, or shrinkage, of kinetic power provided that this process begins from the very moment a circuit is "TURNED ON" or else it will not initiate this self-fulfilling process nor nurture kinetic energy into an infinite amplitude of oblivious self-destruction to the physical circuit which hosts this process. Nor will it nurture kinetic energy into an infinitely small amplitude of constant shrinkage. These cyclic changes – all due to reactance – have a direct impact on the kinetic energy resident within these electrodynamic potentialities defined by inductance and capacitance. Potential energy is for free.

The magnetic and electric fields surrounding reactive components spawns inductive and capacitive reactance leading towards an alteration of these fields and directly modifies how the kinetic energy within these fields behaves-in-time giving us "pure resonance", a phenomenon which causes a wave to grow or shrink in amplitude without the necessity of feeding this wave any additional kinetic energy nor require "thermodynamic leakage" of this kinetic energy to alter its amplitude.

I have a professor at MIT to thank for the mathematics which supports this view and the mathematics of electrical reactance to give it relevance...

Electrical Reactance is a self-fulfilling proposition...

Capacitive reactance X_C

$$X_C = -\frac{1}{\omega C} = -\frac{1}{2\pi f C}$$

Inductive reactance X_L

$$X_L = \omega L = 2\pi f L$$

Reactance Equivalencies...
Capacitance = Capacitive Reactance
Inductance = Inductive Reactance

These equivalencies are derived from the following formula for reactive impedance...

$$X = X_L + X_C = \omega L - \frac{1}{\omega C}$$

...despite the commonplace viewpoint that "damping is always present" for a spring-mass system and, thus, is not applicable to the negative resistance of a noble gas discharge tube bounded on either side by a pair of capacitors despite their being almost similar to a spring-mass system. This, according to the help file within Micro-Cap,...
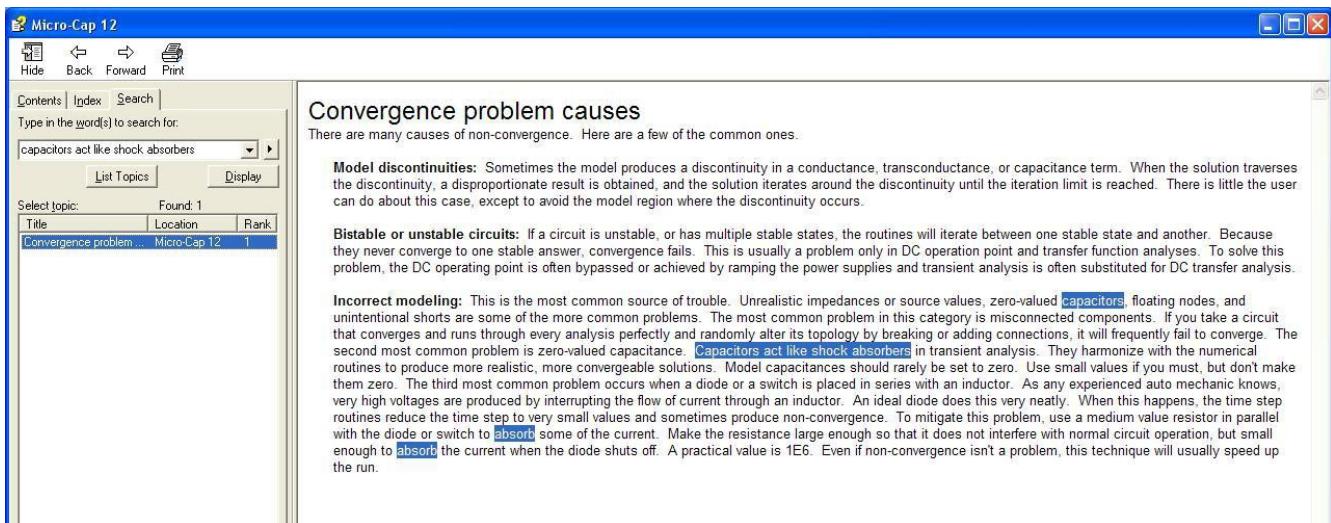
This is the case for a normal capacitor acting as a "shock absorber". But low levels of capacitance do not act as shock absorbers whenever the phase angles of current and voltage are separated by one-half cycle of alternation. Instead, they prefer to *accelerate reactance* and, thus, *provoke pure resonance*.

Low levels of capacitance can occur in the most unlikely of places, such as a 10% coupling coefficient occurring between two or more inductors as shown in schematics on pages 10, 11 & 12.