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Off-Topic

May oscillations approximate infinite Quality factor?

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May oscillations approximate infinite Quality factor?

Vinyasi Qx · Jun 29, 2019

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Thread Starter

Vinyasi Qx

Joined May 8, 2017 19

Jun 29, 2019

#1

Maybe one of you can contribute a comment to this question over at stackExchange since it is closed at the moment for answering?

[May oscillations approximate infinite Quality factor?](#)

Anything to help me to rephrase it might help get it out of its "hold" status.

Or, maybe you could answer it here?

Thanks.

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Papabravo

Joined Feb 24, 2006 17,611

Jun 30, 2019

#2

Vinyasi Qx said: ↗

Maybe one of you can contribute a comment to this question over at stackExchange since it is closed at the moment for answering?

May oscillations approximate infinite Quality factor?

Anything to help me to rephrase it might help get it out of its "hold" status.

Or, maybe you could answer it here?

Thanks.

The simple answer is no. It is actually kind of a stupid question. To approach an infinite Q factor you would need either infinite energy over a finite bandwidth, or a finite amount of energy over a bandwidth that approaches zero in the limit. Neither one of these things is available to you in any practical sense. You can't even approach either of these things.

In the following Wikipedia article:

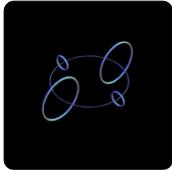
https://en.wikipedia.org/wiki/Q_factor

they mention a High-Q laser at 10^{11} and one of the references mentions a higher value, but the link is broken.

That is still a very long way from infinite.

Why is the answer important to you?

Like Reply



BR-549

Joined Sep 22, 2013 4,938

Jun 30, 2019

#3

What was the original question?

Can you directly ask your question here?

Like Reply



Thread Starter

Vinyasi Qx

Joined May 8, 2017 19

Jun 30, 2019

#4

Papabravo said: 

The simple answer is no. It is actually kind of a stupid question. To approach an infinite Q factor you would need either infinite energy over a finite bandwidth, or a finite amount of energy over a bandwidth that approaches zero in the limit. Neither one of these things is available to you in any practical sense. You can't even approach either of these things.

In the following Wikipedia article:

https://en.wikipedia.org/wiki/Q_factor

they mention a High-Q laser at (10^{11}) and one of the references mentions a higher value, but the link is broken.

That is still a very long way from infinite.

Why is the answer important to you?

That's it! A finite bandwidth. Bravo. You solved my problem.
Just because I read the same article doesn't mean I understood what I read.
But the way you paraphrased it made immediate sense to me.

Consider my dilemma...

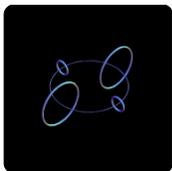
I'm attempting to understand how a displacement of current versus voltage of half an A/C cycle can surge without limits in the test circuit displayed within that posted question. This displacement is not actual, but a mathematical resultant of its two parent waves which are not fictions, and both of which are reactive with either capacitive reactance or inductive reactance dominating in each parent wave. Since their displacements amount to equal values of forward displacement (in time) versus backwards displacement (in time) of their electric and magnetic fields, then their resultant duration is a timeless moment of zero bandwidth....Yes?

Again, the bandwidths of the two parent waves are irrelevant since it is only their resultant daughter wave which is pertinent. Yet, the subject of an Infinite Quality factor's bandwidth becomes irrelevant when the daughter wave's duration is set to zero, yes?

This is the essence of a standing wave in which duration is zero; only wavelength exists for this case.

Last edited: Jun 30, 2019

[Like](#) [Reply](#)



BR-549

Joined Sep 22, 2013 4,938

Jun 30, 2019

#5

"When does a motor become a generator? Or, when does an inductive load become a source?"

Is that your question?

Like Reply



Thread Starter

Vinyasi Qx

Joined May 8, 2017 19

Jun 30, 2019

#6

BR-549 said: 

What was the original question?

Can you directly ask your question here?

OK, here goes...

May oscillations approximate infinite Quality factor?

This may be reworded as...

When does a motor become a generator? Or, when does an inductive load become a source?

When the motor becomes an induction (asynchronous) generator upon acceleration of its rotor. This is automatically induced by a rise in frequency as its energy accumulates (as noted, below). –

https://en.wikipedia.org/wiki/Induction_generator#Principle_of_operation

...or, when the current reverses – under the influence of a [torque induced precession](#) between the phases of current and voltage within an A/C cycle – resulting in a negative power factor.

Why does the power self-amplify? –

<https://physics.stackexchange.com/questions/253114/how-does-negative-power-lead-to-amplification>

Because what would have been the only significant load, instead, becomes its own predominant source.

So, power is not self-amplifying in this circumstance. It merely accumulates, because there is no significant load to spend its energy despite any minor losses due to the inherent imperfections of a physical device (ie, losses due to heat, etc).

How can power become negative without this process of reversal costing more than its gain?

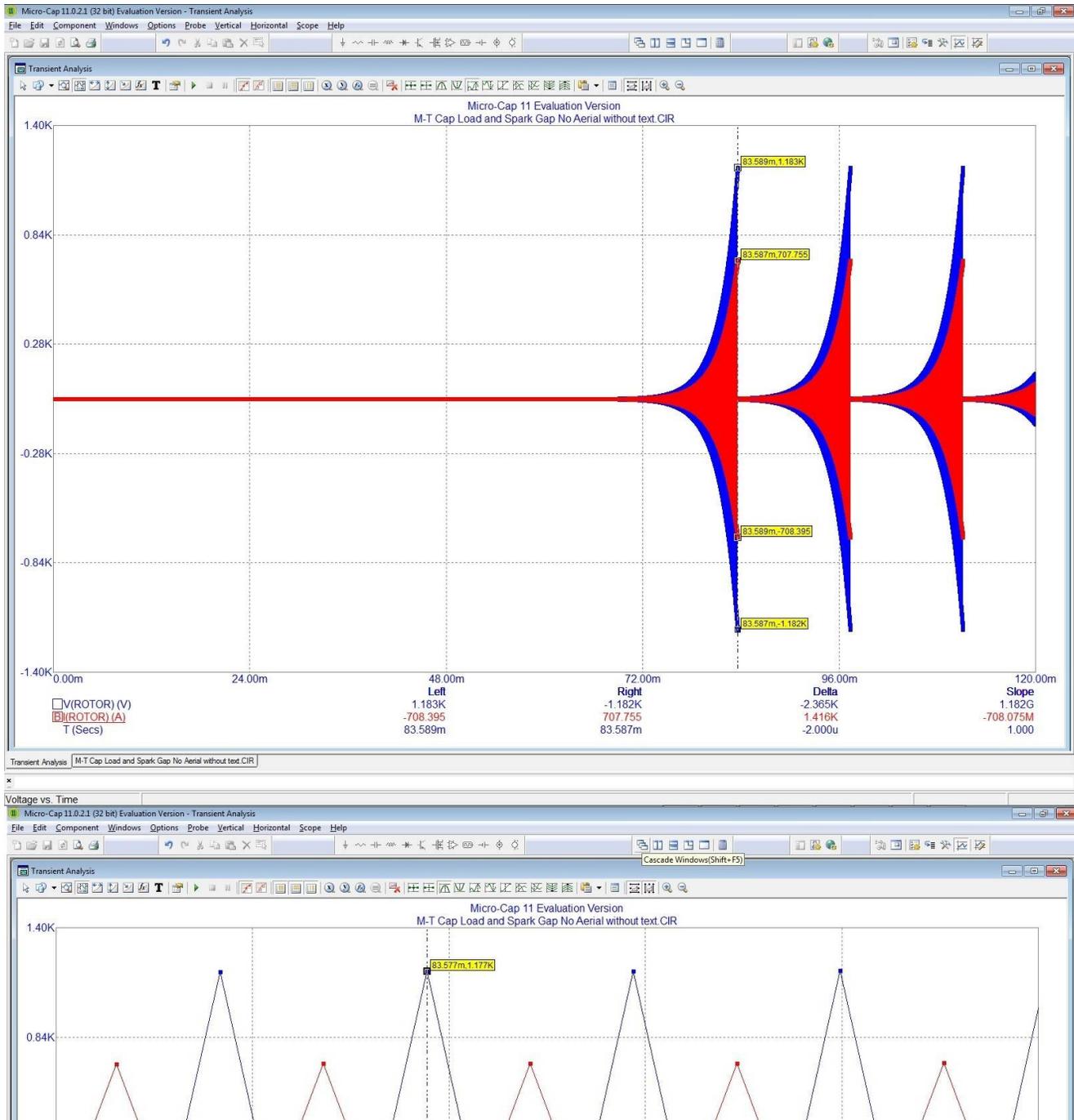
Not resulting from [the use of an op-amp \(embodying the concept of a negative impedance converter\)](#), but from this circuit depicted, below...

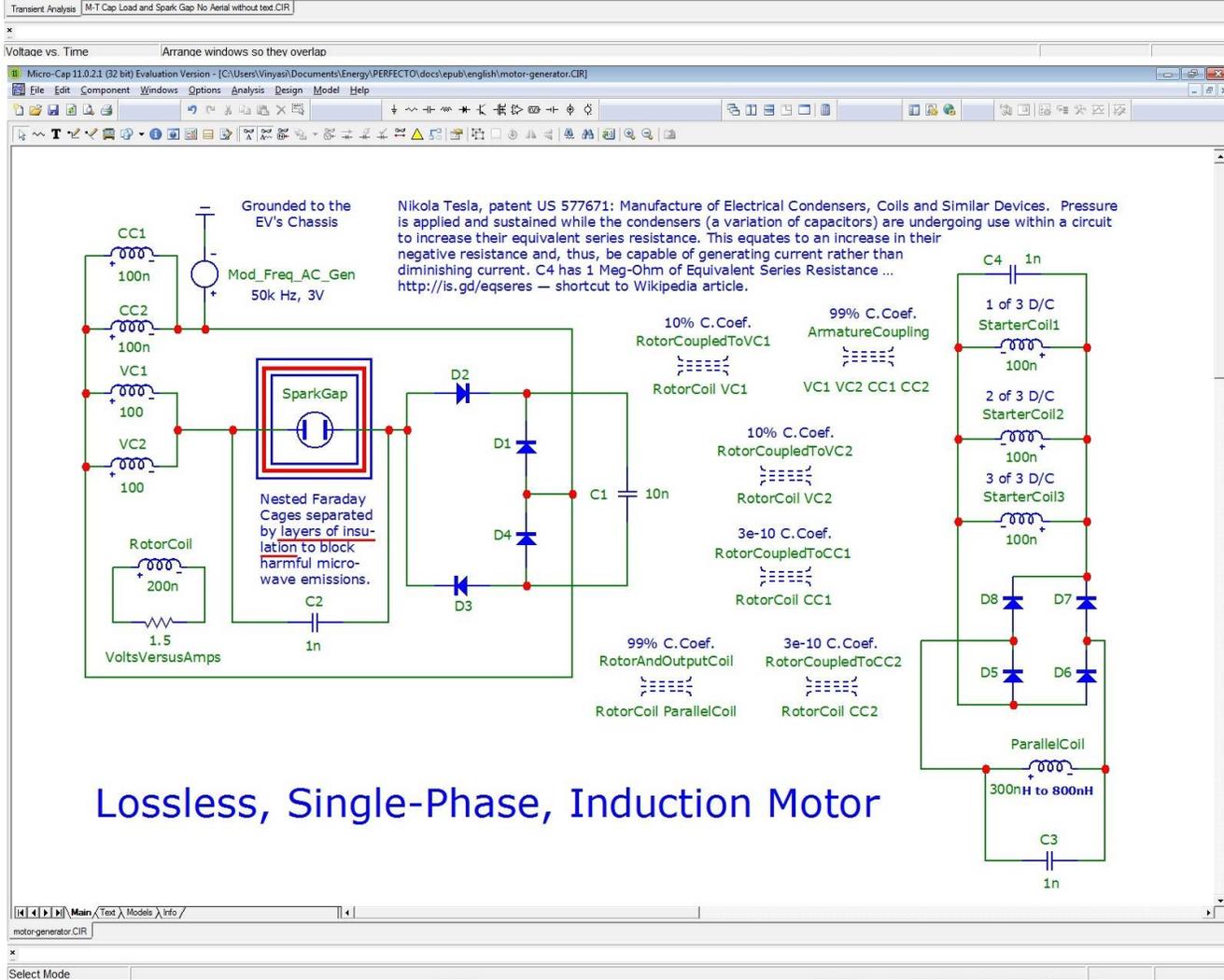
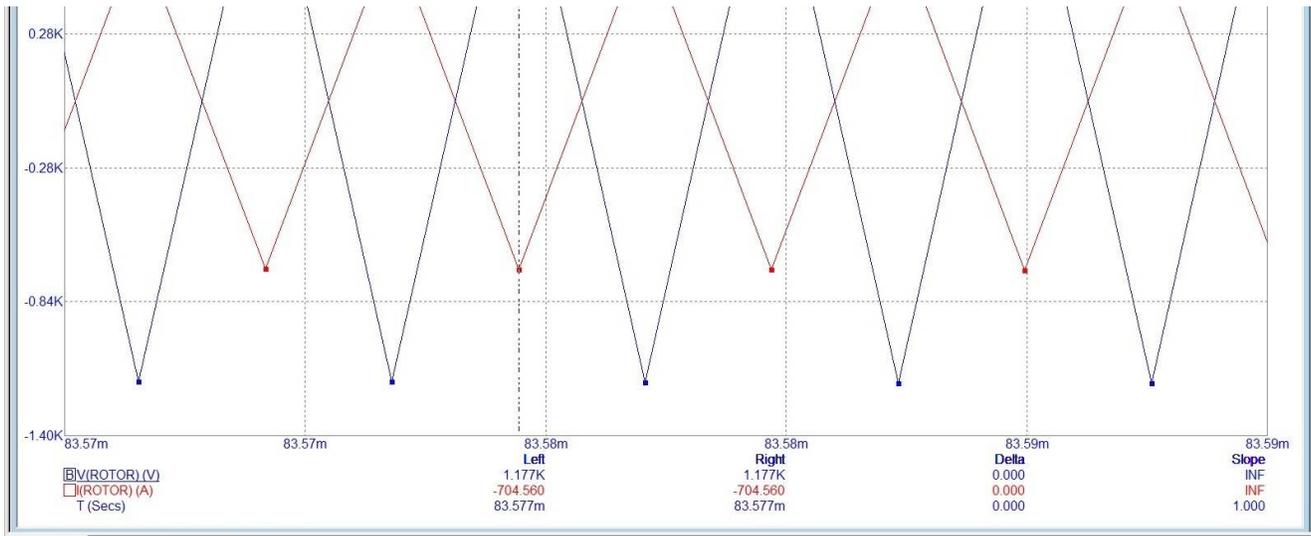
A lossless sector occurs on the left side of the schematics posted, below. The rectification sector on the right side of the schematics, manages to partially rectify losslessness to energize the three starter coils since one more condition is also met on the left, namely: the congregation of voltage among coils VC1 & VC2 versus the congregation of current among coils CC1 & CC2 due to the step down *transformational relationship* existing between these voltage coils and current coils having vastly different self-inductions of 100H and 100nH, respectively, along with a 99% coupling coefficient through their armature.

This *transformational relationship* severely reduces cancellation of voltage against current due to their inverted wiring which also corrects their negative

power factor *without intrinsically eliminating it.*

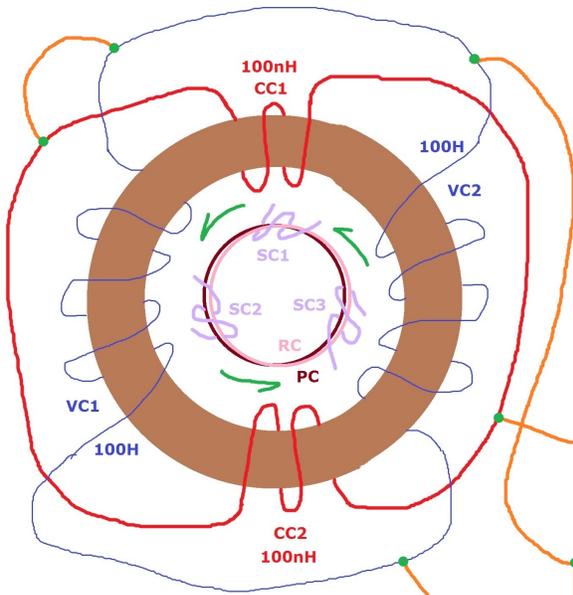
The schematic, preceded by the rotor's output, plus a close-up of rotor's output showing 180° displacement of current vs voltage sine waves. These sine waves are approximated as triangular waves since the simulator is attempting to "catch up" with their constantly increasing frequency (<https://i.stack.imgur.com/pg1w1.jpg>)...



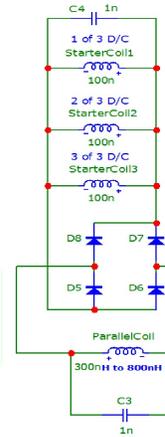


Arrangement of motor windings in and around its armature...

ARMATURE OF A SINGLE-PHASE INDUCTION MOTOR



If the Voltage Coils are wound CW, then the Current Coils and the Starter Coils are wound CCW as shown in this diagram.



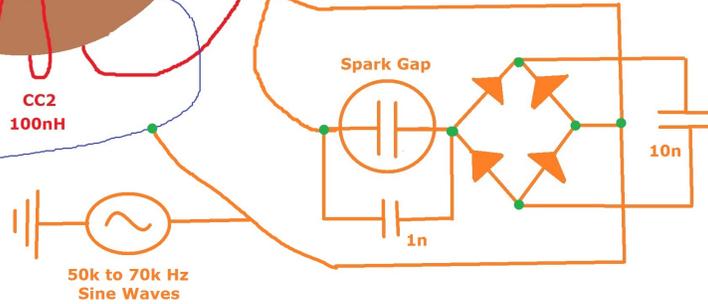
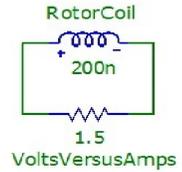
Starter Coil(1, 2, 3) = SC1, SC2, SC3

ParallelCoil = PC

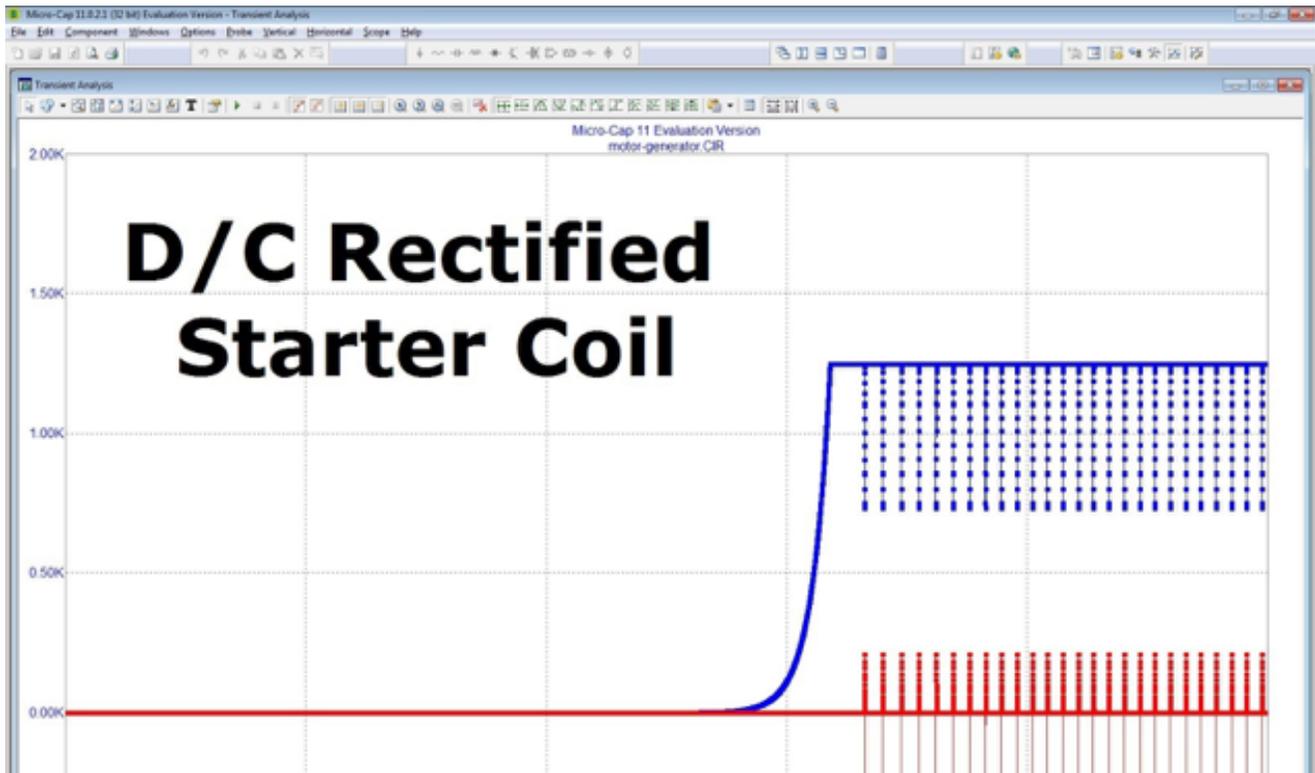
VoltageCoil(1, 2) = VC1, VC2

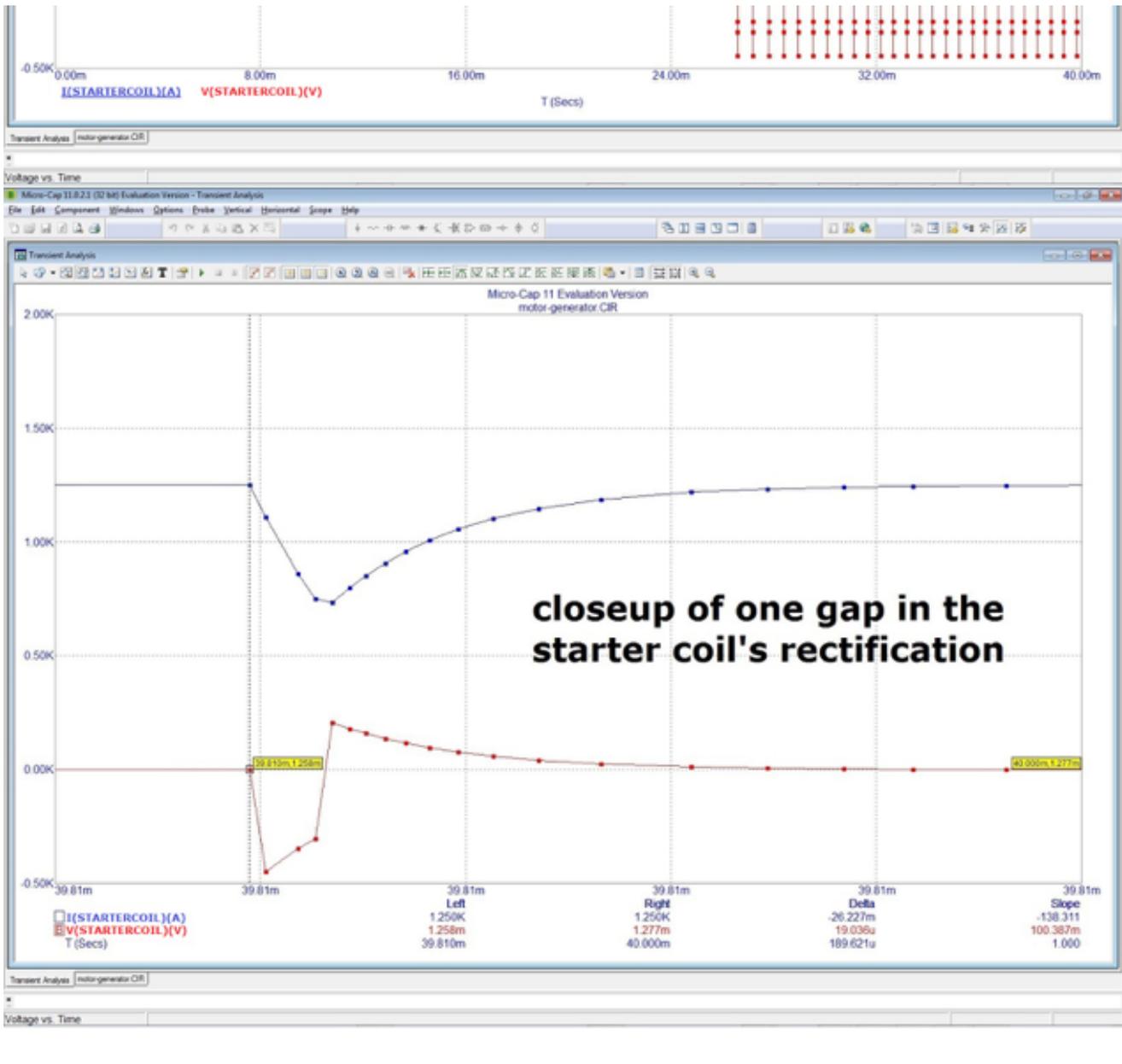
CurrentCoil(1, 2) = CC1, CC2

200n
RotorCoil = RC



Oscilloscope tracings of partially rectified starter coils...





Like Reply



Thread Starter
Vinyasi Qx

Joined May 8, 2017 19
 Jun 30, 2019

#7

BR-549 said: 

"When does a motor become a generator? Or, when does an inductive load become a source?"

Is that your question?

Hmmm. Yes and no. Since it gets more complicated than that, I lead with that opening question and then segue into the following series of questions. **Self-amplification of negative power factor** is the actual question which was already asked on stack exchange (and I link to it for reference), but within a very specific context not at all pertaining to mine.

[Like](#) [Reply](#)



BR-549

Joined Sep 22, 2013 4,938

Jun 30, 2019

#8

Well, you seem to have found your answer. I guess.

I am terrible with those sorta questions.

But I am full of those sorta answers.

[Like](#) [Reply](#)



Thread Starter

Vinyasi Qx

Joined May 8, 2017 19

Jun 30, 2019

#9

BR-549 said: 

Well, you seem to have found your answer. I guess.

I am terrible with those sorta questions.

But I am full of those sorta answers.

Full is good in the sense that only when we've had enough can we grow to better appreciate what we already have.

[Like](#) [Reply](#)



Papabravo

Joined Feb 24, 2006 17,611

Jun 30, 2019

#10

I think I'm going to let this thread speak for itself and not comment further.

cmartinez

[Like](#) [Reply](#)



Berzerker

Joined Jul 29, 2018 621

Jun 30, 2019

#11

And I'm Crazy

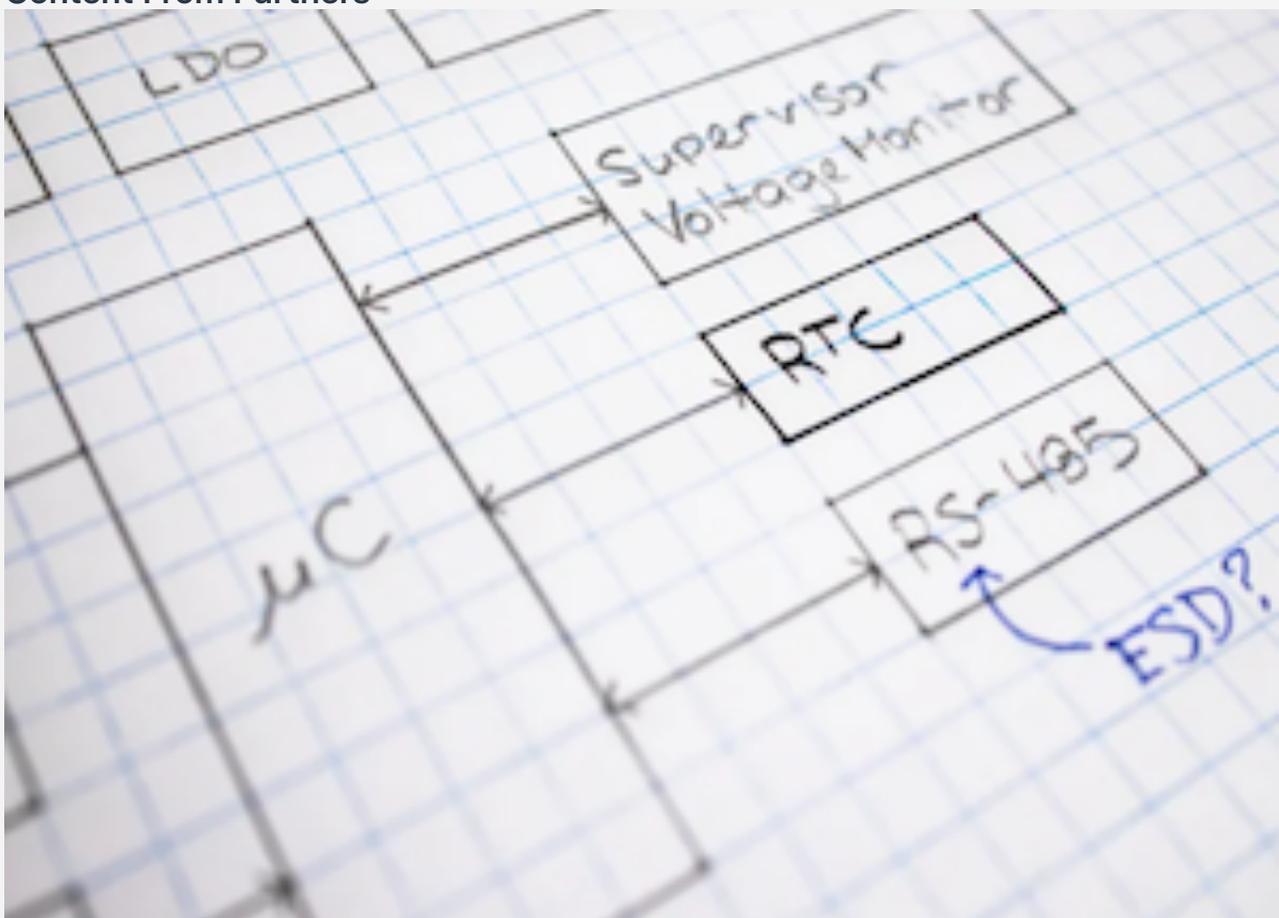
Puts this one under drunk posting but notes very good typing skills while drinking.... this could be a plus on resume.

Brzrkr

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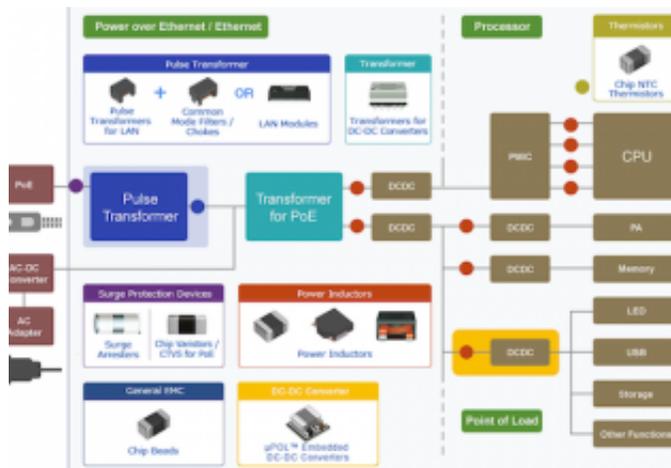
I cannot understand why oscillations happens at gain less than 1?

circuit using 555 timer that gives oscillations of frequency 'f' only after 't' seconds of power on or reset.

Unusual op amp weakness leading to RF oscillations

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