Replication of the Ide transformer device

Horst Eckardt[1], Bernhard Foltz[2]
A.I.A.S. and UPITEC
(www.aias.us, www.atomicprecision.com, www.upitec.org)

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Abstract

The transformer experiments of Osamu Ide had shown that there is a hitherto unknown effect when switched on and off by steep high frequency pulses. The connected power analyzer shows excess output at the secondary site. An independent device was constructed by the Munich group and tested with the original measuring equipment of Osamu Ide as well as an own high-frequency oscilloscope. Although the original equipment was limited in resolution, both methods gave satisfactory conformance. The replicated device behaves similar as the original device of Ide. In particular the overunity display of the current measurement could be reproduced by the device replicated by the Munich group.

Keywords: transformer; power measurement; Ohm's law; spacetime energy.

1 Introduction

When a voltage is applied to an inductor, it is known from classical electrodynamics that the current rises first linearly and then goes into saturation which is determined by the ohmic resistance. The inductance hinders the current from jumping to its final value immediately. In a series of papers, Osamu Ide has described experiments revealing an extra current in this process [1]- [3]. Actually there are two effects. When voltage is switched on in a pulse, the current oscillates strongly for less than a microsecond, then rises beyond the classical (linear) value in an exponentially decreasing way. All this happens in the range where a linear rise is expected classically for ideal inductors. In [4] the effect has been verified independently by the Munich group. In that paper, both effects were explained as interactions with the background or spacetime potential, which becomes effective in non-continuous processes, in this case the hard switch-on of the voltage/current. In [4] and [5] the effects could be explained well by the Einstein-Cartan-Evans theory [6], which provides an extensions of Maxwell-Heaviside theory on the electromagnetic sector.

The effect observed by Ide appears mainly as an effect of high-frequency voltage and current as will be worked out in this paper. Some inventors speak of a "cold current". In how far this current can be used for gaining useable

[1]email: mail@horst-eckardt.de
[2]email: mail@bernhard-foltz.de

energy from a device is not clear at the moment. Nonetheless, an explanation of cold current has been given by ECE theory some time ago [7] as an effect of curving and twisting spacetime which is not necessarily contained in state of the art knowledge of electrical engineering.

2 Circuit design

The circuit layout of the device replication is graphed in Fig. 1. The transformer (L1, L2) is driven with a rectangular voltage generated by a MOSFET which is triggered by a pulse generator. Actually two types of pulse generators were used, an analogue generator and a digital, microprocessor-controlled generator. A shunt resistor was used to measure the input current. At the secondary site, a load resistor R was applied, and additionally a shunt resistor for measuring the output current. The voltages were measured at positions U_{in} and U_{out}. The transformer consists of ferrite core material N87 of TDK and two coils (primary/secondary) of 0.8 mH each. A DC voltage of 35 V was applied by the power supply for the measurements with analoguous generator and 24 V for those with digital generator.

The power measuring device of Osamu Ide was a Yokogawa Power Analyzer PZ-4000 with three potential-free channels for voltage and current. The shunt resistors are contained in the power analyzer. We certified all channels (U and I) of the power analyzer by an analogue amperemeter and analogue/digital voltmeters in advance of the measurements. Alternatively, a digital oscilloscope PicoScope 5444B with 4 voltage channels was used. Also this measuring device was certified by a test circuit.

3 Results

3.1 Reproduction of overunity display

The input and output power values P_{in} and P_{out} have been measured for load resistors between 0.5 and 1.5 kΩ. The power values were in the range of some hundred Milliwatts to some Watts. It is important to apply the correct method for power measurement. It is not meaningful to multiply effective values of voltage U and current I. The input and output power were measured by time-integrating the curves of voltage and current over one period T:

$$P = \frac{1}{T} \int U(t) I(t) dt. \tag{1}$$

by the power analyzer as well as the oscilloscope. The coefficient of performance (COP) η is defined as

$$\eta = \frac{P_{out}}{P_{in}}. \tag{2}$$

The measurements reported here were performed for two frequencies and three duty cycles as listed in Table 1. The obtained results for the COP are graphed in Fig. 2 for both the analogue and digital pulse generator.

The measuring device displays overunity for nearly all resistances deployed. This corresponds directly to the curves of Fig. 4(a,b) of the original Ide device in [3]. In the replicated device (this work) the COP is even higher for both types of signal generation. The digital curve shows some better performance for smaller duty cycles (about 20%).

The results were obtained by the power analyzer PZ-4000 as well as the digital oscilloscope. This gave roughly the same results. Exact coincidence cannot be expected since the power analyzer has only a time resolution of 0.2 μs which is lower than the frequency of the oscillations at the switching flanks. We observed that both measuring equipments gave coinciding results in the inspected range.

name	freqency	duty cycle
analogous 1	454 kHz	46 %
analogous 2	313 kHz	31 %
digital 1	454 kHz	46 %
digital 2	313 kHz	31 %
digital 3	454 kHz	20 %
digital 4	313 kHz	20 %

Table 1: Points of operation investigated.

3.2 Analysis of power measurements

As described above, the power is computed by multiplying $P_{in} = U_{in} I_{in}$ and $P_{out} = U_{out} I_{out}$ for all time steps. This is not the only possible method doing this. Using Ohm's law, there are three methods, involving voltage U and current I:

$$P_1 = \frac{1}{T} \int UI \, dt, \tag{3}$$

$$P_2 = \frac{1}{T} \int \frac{U^2}{R} dt, \tag{4}$$

$$P_3 = \frac{1}{T} \int I^2 R \, dt. \tag{5}$$

We evaluated all three methods for the case "digital 4" by the oscilloscope and obtained very differing results, as listed in Table 2 for a particularly drastic example. Although all three COPs are overunity, they are very different and P_3 is astronomically high. This discrepancy means that the load resistor can not be treated as an ohmic resistor. This is plausible because we are dealing with high-frequency currents. The voltages and currents of primary and secondary side are graphed in Figs. 3 and 4, the corresponding output power values P_1, P_2, P_3 in Fig. 5. Obviously, voltage and current are not in proportion to each other, indicating a high-frequency behaviour. Osamu Ide explains this behavior with the presence of a "cold current".

To investigate if this is one possible reason for the widely differing behaviour, we rectified the secondary current path. Then the DC resistance should be unique. Measuring the output power again with the three methods (3-5) gave roughly the same value, but no overunity. Currently it is unclear how the "cold current" can be used directly to be fed back to the input to drive a self-running machine.

	Power [W]	COP η
P_{in} [W]	0.338	
P_1 [W]	0.868	2.57
P_2 [W]	16.3	48.2
P_3 [W]	3700	10 947

Table 2: Computed power values for case "digital 4".

4 Summary

The transformer device of Osamu Ide has been successfully replicated. The measurements of Osamu Ide have been verified. In addition, both an analogous and digital pulse generator were used. It was shown that a digital pulse generator behaves similar as the analogous generator used by Ide. The overunity display of the measuring instruments could be confirmed. The mystery of "cold current" persists. Long-term target is building a self-powering machine.

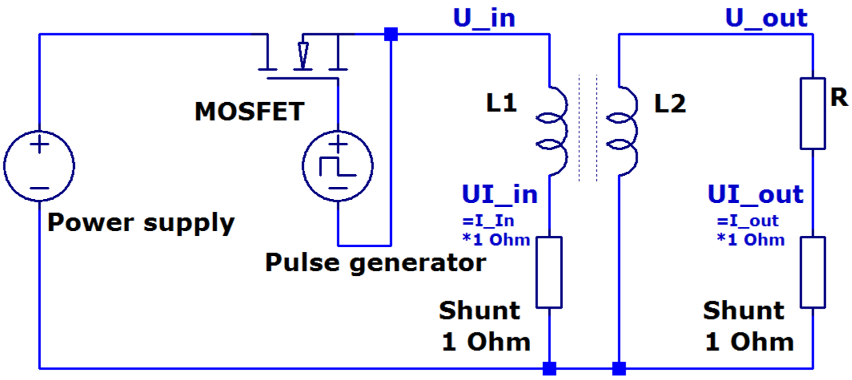

Figure 1: Curcuit for the transformer tests.

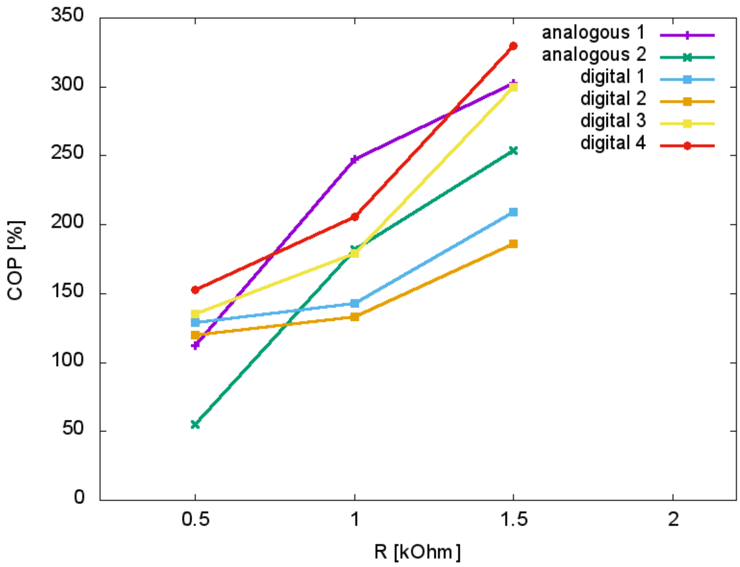

Figure 2: COP of the replicated transformer with digital and analogue pulse generator (for details see Table 1).

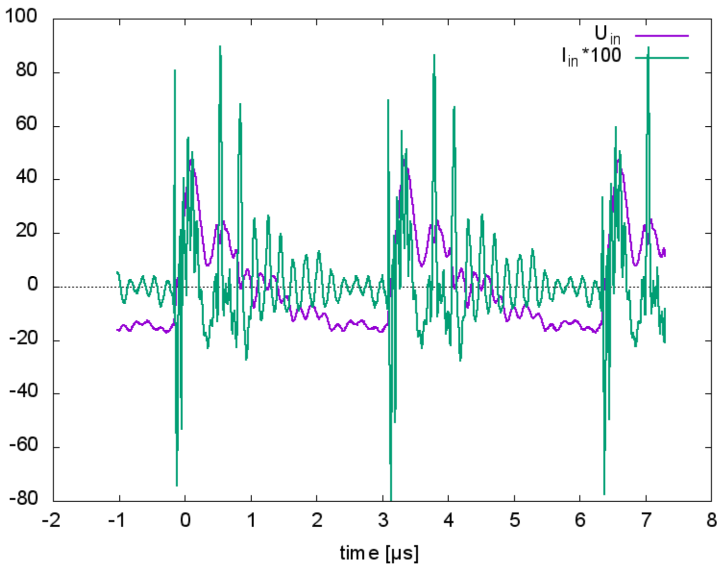

Figure 3: Time dependence of input voltages and currents from oscilloscope (scaled).

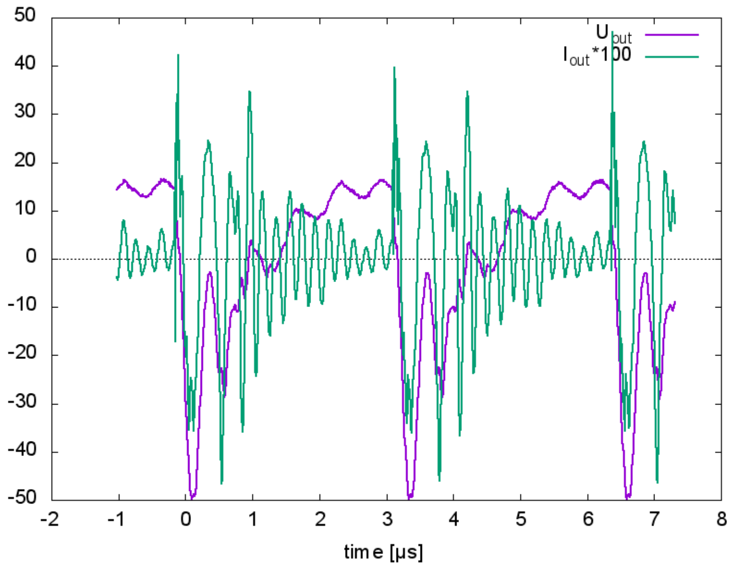

Figure 4: Time dependence of output voltages and currents from oscilloscope (scaled).

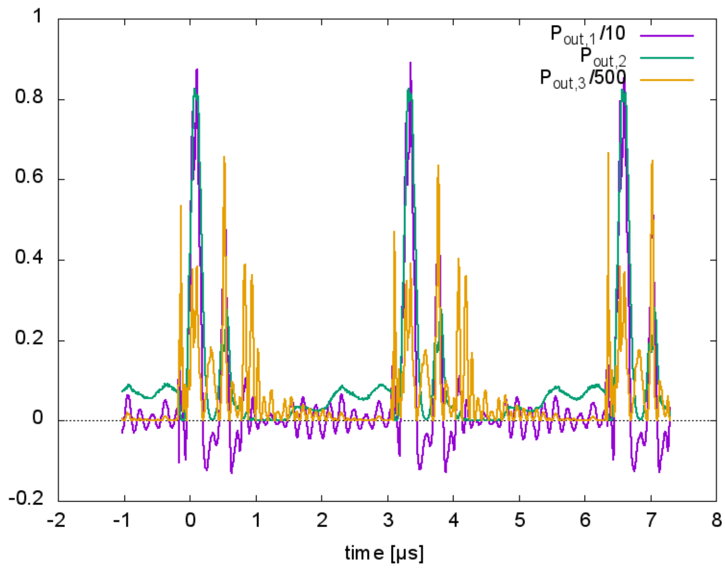

Figure 5: Time dependence of power definitions P_1, P_2, P_3 (scaled).

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