ISSN: 2586-7342 © 2019 KFHCA. http://www.kjfhc.or.kr
doi: http://dx.doi.org/10.13106/kjfhc.2019.vol5.no4.19.

Researching of the Tesla's Bifilar Coils, as a Sources of Electrical Energy

L. CHERVINSKY [1], S. USENKO [2], M. SPODOBA [3]

1. First Author & Corresponding Author D.Sc., prof. National University of Life and Environmental Sciences of Ukraine.
E-mail: lchervinsky@gmail.com

2. PhD. National University of Life and Environmental Sciences of Ukraine.

3. Engineer. National University of Life and Environmental Sciences of Ukraine.

Received: February 13, 2019. Revised: April 07, 2019. Accepted: June 30, 2019.

Abstract

In recent years, the Internet was a lot of information on the use of Tesla coils bifilar [1] in conjunction with induction cooker, for "free" electricity during power resistive load, including different incandescent lamps. With the development of scientific and technological progress, the demand for electricity in each year is increasing, and at the same time, the need to increase the capacity of electricity production, which entails large investments and, consequently, increase of prices for consumers. As before today, the search for free electric energy is an up-to-date and still open topic. The purpose of research - simplification of information on the possibility of using bifilar coils as an electric current source in conjunction with induction cooker. Consequently, it can be concluded from the above that the use of Tesla coils in combination with induction cooker has very low k.k.d. and it is not possible to obtain excessive electric energy using the Tesla coil under the connection schemes considered.

Keywords: Bifilar Coils, Induction Cooker, Free Electricity, Resistive Load.

Major classification: Health Science.

1. Introduction.

In recent years, the Internet was a lot of information on the use of Tesla coils bifilar [1] in conjunction with induction cooker, for "free" electricity during power resistive load, including different incandescent lamps.

2. Basic research materials.

During the pilot study, the following equipment was used: Saturn ST-EC0187 induction cooker 220V, alternating current of 50Hz, $P_p = 2$кW, $I_n = 9,1$A. As a load, ICZC-220-250 lamps, KG-250 halogen lamps 250W and KG-2000, with a power of 2kW. For measurements, the digital oscilloscope DS6035 was used, ammeter E30, electromagnetic system, accuracy class 1.5, scale 0 to 10A, voltmeter E30, electromagnetic system, accuracy class 1.5, scale 0 to 250V, single-phase D5066 wattmeter, precision class 0.5 , scale from 0 to 6000Watts.

Two bifilar coils are made by a conductor SHVVP 2x2,5, having 16 turns and a diameter of 170 mm, and one is executed by a wire SHVVP 2x2,5, having 18 turns and a diameter of 190 mm.

3. Results of the research.

The results of the research are shown in the table. 1, 2 and 3.

As a result of the results given in Table 1, a schedule of power consumption with different loadings was constructed (Fig.1).

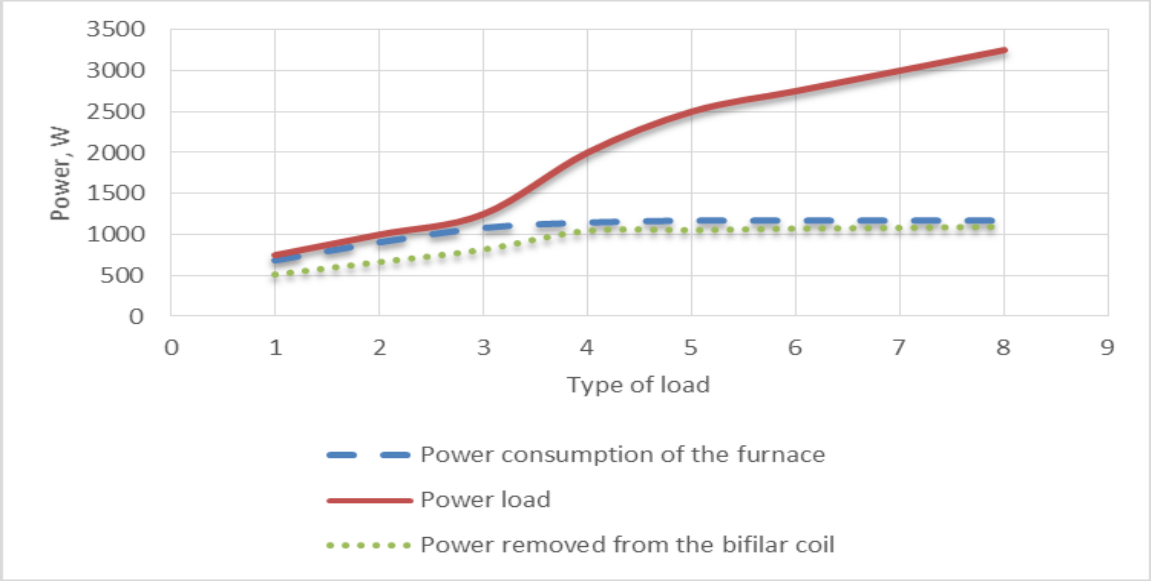

Figure 1. Power consumption graph when using a single bifilar coil

Table 1. Results of studies using one bifilar coil

Induction cooker			Bifilar coil						
I, A	U, V	P_{cooker}, W	I, A	U, V	P, W	T_{work}, c	P_{nom}, W	№	Type of load
3,1	220	682	3,1	163	505,3	3/1*	750	1	ICZC – 2 p, KG-250 – 1 p
4,1	220	902	4,05	163	660,15	const	1000	2	ICZC – 2 p, KG-250 – 2 p
4,9	220	1078	5	163	815	const	1250	3	ICZC – 2 p, KG-250 – 3 p
5,2	220	1144	7	150	1050	const	2000	4	KG-2000 – 1 p
5,3	220	1166	7,3	145	1058,5	const	2500	5	ICZC – 2 p, KG-2000 – 1 p
5,3	220	1166	7,7	140	1078	const	2750	6	ICZC – 2 p, KG-250 – 1 p, KG-2000 – 1 p
5,3	220	1166	8,3	131	1087,3	const	3000	7	ICZC – 2 p, KG-250 – 2 p, KG-2000 – 1 p
5,3	220	1166	8,8	125	1100	const	3250	8	ICZC – 2 p, KG-250 – 3 p KG-2000 – 1 p

*Note: 3/1 - 3 seconds work, 1 second - pause.

Having considered the schedule, we can conclude that the curve of actual power withdrawn from the bi-directional coil is significantly lower than the load power curve, the lamps used as loads did not work in nominal mode.

In this case, the curve of the power consumption of the induction cooker is located above the curve of the actual power withdrawn from the bifilar coil. This is due to the loss of electrical energy in the elements of the induction tile, and in the environment during the process of electromagnetic induction in the Tesla bifilar coil.

After analyzing the graph depicted in (Fig. 2), the same similarities, which were noticed at the same time, were noticed at the same time, when used with one bifilar coil (Fig.1). The power curve removed from two parallel

connected bifilar coils is below the power curve consumed by the induction cooker, and the load curve attached to the bifilar coils is substantially above the power curve removed from the coil.

That is, the combination of the electromagnetic fields of two bi-directional coils does not lead to an increase in the removed power from the leads of the bifilar coil.

According to the results given in Table 2, a power consumption schedule was constructed using two parallel connected bifilar coils (Fig. 2).

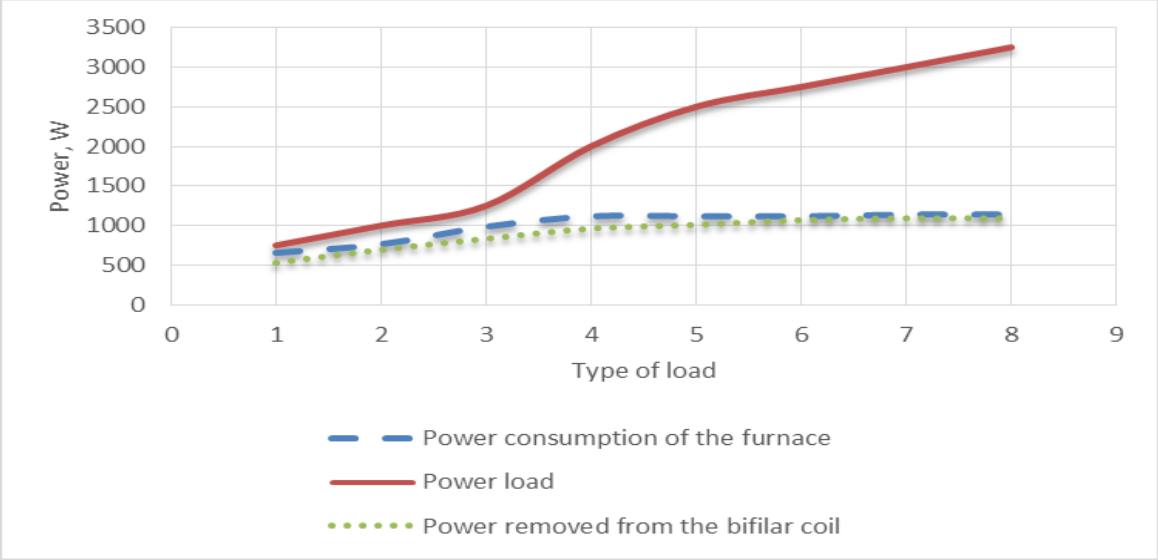

Figure 2. Power consumption graph with parallel connection of two bifilar coils

Table 2. Results of experimental research using two parallel connected bifilar coils

Induction cooker			Bifilar coil						
I, A	U, V	P_{cooker}, W	I, A	U, V	P, W	T_{work}, c	P_{nom}, W	№	Type of load
3	220	660	3	175	525	3/1*	750	1	ICZC – 2 p, KG-250 – 1 p
3,5	220	770	4	173	692	const	1000	2	ICZC – 2 p, KG-250 – 2 p
4,5	220	990	4,8	173	830,4	const	1250	3	ICZC – 2 p, KG-250 – 3 p
5,1	220	1122	6,4	150	960	const	2000	4	KG-2000 – 1 p
5,1	220	1122	7,3	138	1007,4	const	2500	5	ICZC – 2 p, KG-2000 – 1 p
5,1	220	1122	7,8	137	1068,6	const	2750	6	ICZC – 2 p, KG-250 – 1 p, KG-2000 – 1 p
5,2	220	1144	8,2	133	1090,6	const	3000	7	ICZC – 2 p, KG-250 – 2 p, KG-2000 – 1 p
5,2	220	1144	8,8	124	1091,2	const	3250	8	ICZC – 2 p, KG-250 – 3 p KG-2000 – 1 p

* Note: 3/1 - 3 seconds work, 1 second - pause.

According to the results presented in Table 3, a power consumption schedule was constructed using three parallel connected bifilar coils (Fig. 3).

Table 3. Results of experimental research using three parallel connected bifilar coil

Induction cooker			Bifilar coil						
I, A	U, V	P_{cooker}, W	I, A	U, V	P, W	T_{work}, c	P_{nom}, W	№	Type of load
3	220	660	2,9	179	519,1	3/1*	750	1	ICZC – 2 p, KG-250 – 1 p
3,5	220	770	3,6	175	630	const	1000	2	ICZC – 2 p, KG-250 – 2 p
4,2	220	924	4,5	173	778,5	const	1250	3	ICZC – 2 p, KG-250 – 3 p
5,2	220	1144	5,8	160	928	const	2000	4	KG-2000 – 1 p
5,25	218	1144	7,2	140	1008	const	2500	5	ICZC – 2 p, KG-2000 – 1 p
5,3	216	1144	7,6	135	1026	const	2750	6	ICZC – 2 p, KG-250 – 1 p, KG-2000 – 1 p
5,2	220	1144	8,1	133	1077,3	const	3000	7	ICZC – 2 p, KG-250 – 2 p, KG-2000 – 1 p
5,2	220	1144	8,7	124	1078,8	const	3250	8	ICZC – 2 p, KG-250 – 3 p KG-2000 – 1 p

* Note: 3/1 - 3 seconds work, 1 second - pause.

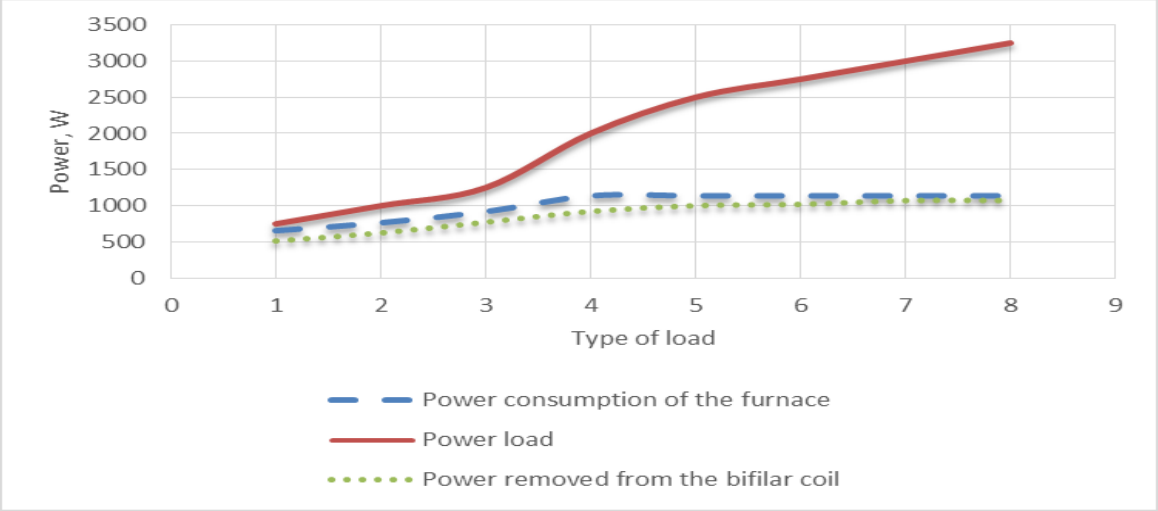

Figure 3. Power consumption graph with parallel connection of three bifilar coils

The graph is depicted in (Figure 3) similar to the above schemes, using one and two parallel Tesla coils, the positions of the power consumption curves are plotted in the same manner as in the case of one and two coils. As in previous experiments, there are energy losses in the elements of the induction tile, in the process of electromagnetic induction by the Tesla coils.

4. Conclusions.

After analyzing the data of the experimental research and constructing the graphs of the power consumption, the following was found:

With any connected, bifilar coils, in combination with the induction plate, do not induce energy at the nominal load power of the coils connected to the coils, <750 W;

From 750 to 1000 W, independent of the connection at the output of the bifilar coils, the electric energy, the duration of which is 3 seconds, is induced, after which a pause of 1 sec takes place;

When the nominal load is increased by more than 1000 W, the energy is induced on the leads of the bifilar coils and does not disappear until the load is lifted;

The frequency of current removed from the bi-directional coils is 30.303 kHz;

When counter-switching of bifilar coils, the output energy is not induced, this is due to the process of compensating electromagnetic fields of coils;

It was established that when feeding high frequency current of active loading (incandescent lamps) k.k.d. the transformation of electric energy decreases inversely proportional to the frequency of the current.

Consequently, it can be concluded from the above that the use of Tesla coils in combination with induction cooker has very low k.k.d. and it is not possible to obtain excessive electric energy using the Tesla coil under the connection schemes considered.

References

Chervinsky, L. S. (2013). *Mathematical model of electromagnetic processes in tesla transformers*. Chervinsky

Tesla, N. (1994). Coil for electro magnets. Patent US 512340. Jen. 9, 1894.

Vasilenko, L.S V., & Komarov, V. (2015). EARTH Bioresources and life quality. Kiyv. *NUBiP.5*, 205-210.