Stephen Mark TPU working principle

As Stephen Mark's TPU, we have a transformer, with the asymmetry of the connection of the primary and secondary windings.

That allows more power to be allocated on the secondary winding than is expended on the primary winding.

The primary winding is supplied with alternating current and voltage, creating a rotating field of the transformer similar to the inductor field of an induction motor, but in a different configuration. The projection of this field on the orthogonal section of the toroidal secondary winding rotates like a clock hand, creating a constant voltage and current in this winding. I see what, the current in the primary winding is alternating, and in the secondary winding it is constant. Which determines the specifics of the transformer.

https://youtu.be/1HMO0dRxLMM

Since direct current does not create magnetic induction and EMF on the primary circuit, the transformer operates asymmetrically: the primary winding feeds the secondary and generates energy in it, the secondary winding, without interacting with the primary, does not interfere with it, since it does not create a counter-emf on the primary winding. Therefore, spending less power from the frequency generator, you can get more power on the secondary winding, which is partially directed to the load, partially again to the frequency generator.

How are winding configurations arranged?

Secondary winding. Let's start with the secondary winding. If I may say so, it is wound along a central line (forming a torus or any other figure). Since the EMF created by the transformer is directed along the center line of the torus and orthogonal to its cross section, it creates an EMF that is added up by the number of turns of the secondary winding.

Primary winding. The primary winding is designed to create a rotating field, the projection of which on the cross section of the torus during its rotation creates an EMF acting on the secondary circuit of the transformer. Just as in a electric motor a rotating field can be created by 2 windings located at 90 degrees, or 3 windings located at 60 (120) degrees to each other, the same thing happens in this transformer. Each of the windings is wound in sequential parts. Each part, if we take its plane, forms an elliptical section of the torus, directed at a certain inclination to the generatrix of the torus (inclination to the primary winding). The angle can be equal to 45 degrees or another. The whole point is that the vector of magnetic induction of the coil of the primary winding orthogonal to its plane has a projection from the center onto the plane of the section of the secondary winding. This projection is similar to a clock hand coming from the center. In fact, it is better to make the number of windings a multiple of 2 or 3, so that their projections of the magnetic induction vectors for each pair are equal, as it were, to two clock hands, coming from the center and diametrically opposite in direction.

When a coordinated sinusoidal voltage and current with a phase shift are supplied to the turns of the primary winding (a shift of 90 degrees by 2 windings, a shift of 120 (60) degrees by 3 windings - similar to an electric motor), a rotating magnetic field is formed in the primary winding, the induction vector of which has the aforementioned projections onto the secondary winding cross-section, similar to an hour hand running in one direction. Which creates a constant EMF of one direction in the secondary winding.

In the transformer, a core of magnetically soft material operating at high frequencies (permalloy, ferrite) can be used to enhance magnetic induction. Since the induction of the primary winding is rather weak, a high linear rotation speed of

the magnetic induction vector is required to create voltage on the secondary winding, which is achieved by the relatively high frequency of operation of the primary winding - 10-20 kilohertz and higher. Of course, you can use other frequencies. Therefore, the core must be adapted to these frequencies.

The frequency of the primary winding is created by the frequency generator starting from a capacitor, battery or supercapacitor, and supporting the operation from the selection of part of the secondary winding power on it. While the other part goes to the load.

All parts of this device can be calculated according to the usual formulas of electrical engineering. In the manufacture and design of the device, this calculation should precede the work on the creation of the generator Stephen Mark. That will create a device with the right parameters.

Stephen Mark TPU Generator Operation Principle

Above, we described the principle of operation of TPU Stephen Mark, if I may say so from a technical perspective. But it is also necessary to say about the principle of operation of this device from philosophical or general worldview positions.

From this point of view, this device functions just like all other superunit devices, that is, based on the work of non-conservative forces created in the device. Since the work of these forces in the cycle is not equal to zero, this field acts as a perpetual motion machine that creates monotonously cyclical energy in the device. But the energy expenditures for creating and maintaining a field of non-conservative forces are also important. If these costs in the cycle will be more than the cyclic work of the working field of non-conservative forces, then the device will work with an efficiency of <1. These are all devices of conventional technology, including electrical devices of orthodox technology.

If these costs in the cycle are less than the cyclic work of the working field of non-conservative forces, then the device will work with an efficiency of> 1. These are all devices of alternative super-unit technology, including electrical devices.

In the operation of conventional transformers there is a secondary counter-emf created by the current of the secondary winding. If the transformer operates without load (the secondary winding current is absent, but there is an EMF on the secondary winding), then the energy costs of the primary winding are equal only to the energy costs for compensating the active and reactive resistances of the primary winding. Moreover, reactance can be reset by integrating a capacitance in the circuit, since inductive resistances are opposite to capacitive ones.

Introducing some way that eliminates the effect of the secondary winding on the primary, as in the above described example with Stephen Mark TPU, we make the primary winding work under conditions equivalent to the idling of the transformer. Whereas on the secondary winding, power can be allocated exceeding the power consumption of the primary winding energy if the corresponding parameters of the magnetic induction and the secondary winding itself are selected.

This is the basis for the way the Stephen Mark TPU device works.
AAbramovich, 23 December 2015 # 2

Below I publish several pictures that explain how to create a winding on Stephen Mark's transformer.

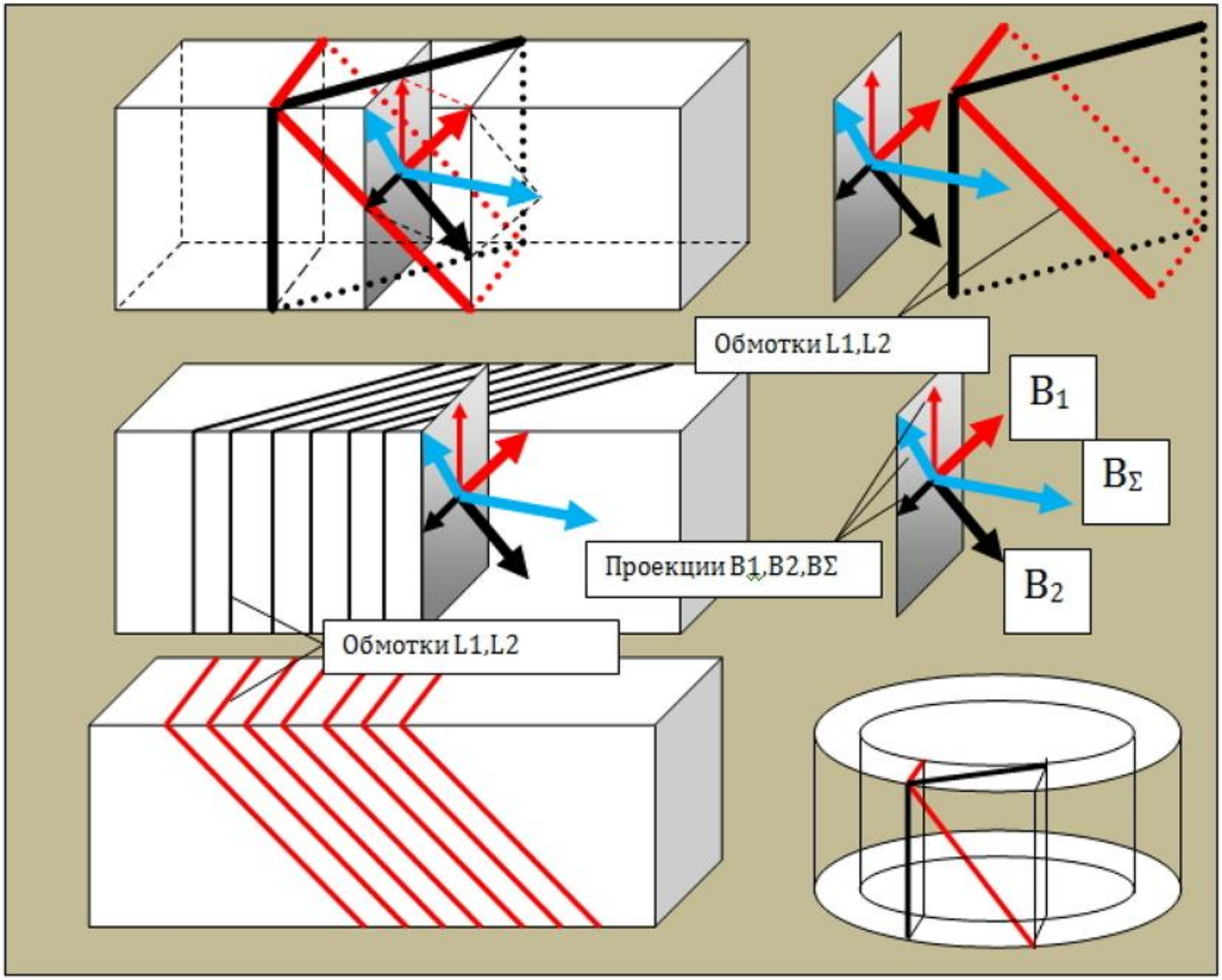

Fig. 1. Arrangement of 2 windings at 90 degrees on a ferrite core or core made of permalloy sheets.

The figure shows the magnetic induction vector of the windings and their projection on the cross-sectional area of the core. The secondary winding is not shown.
AAbramovich, 23 December 2015 # 3

Continued Stephen Mark TPU Schemes

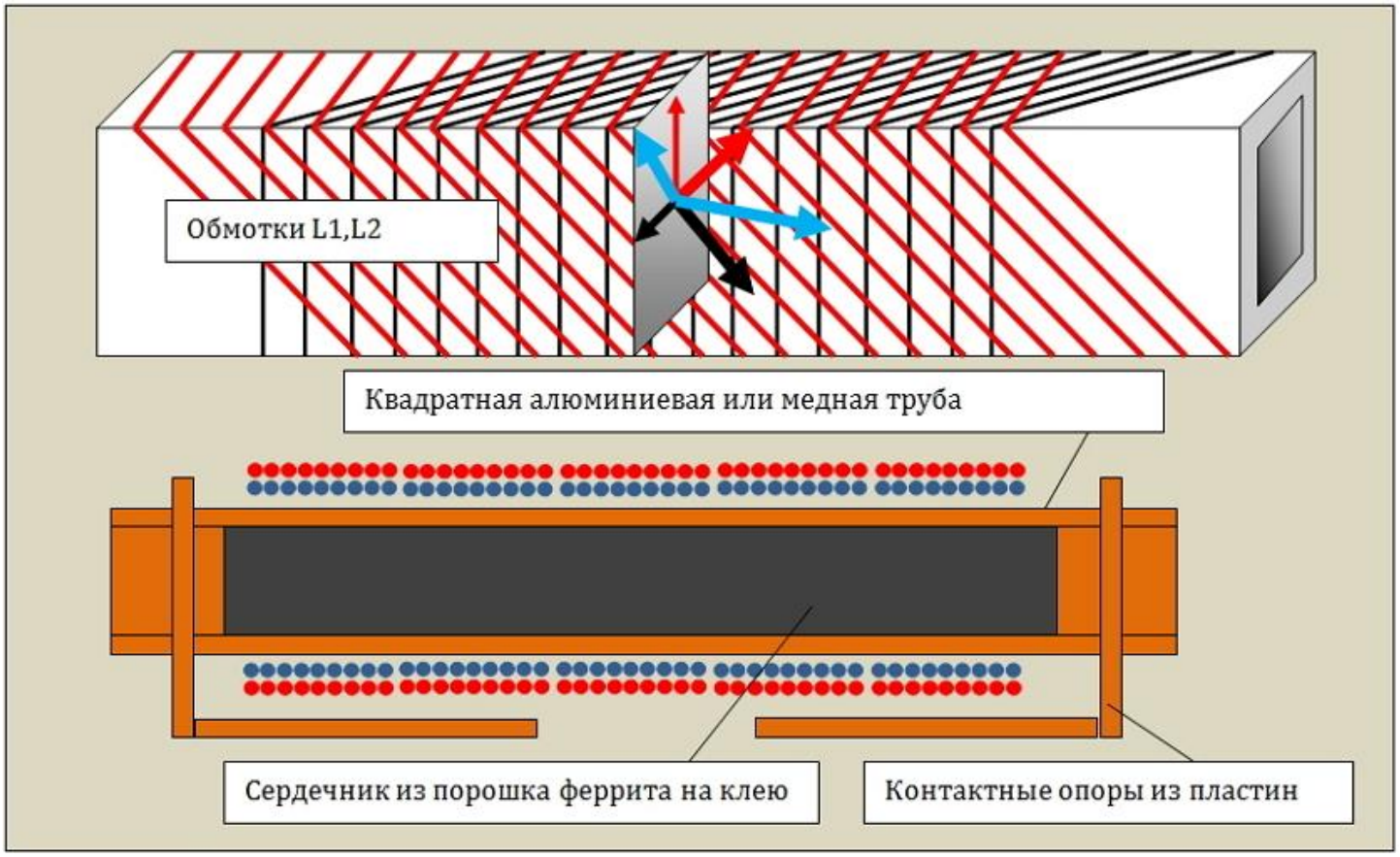

Fig. 1. Aluminum or copper square pipe with windings (many layers) and supports - contacts.
AAbramovich, 23 December 2015 #four

Continuation of Stephen Mark's TPU schemes.

2-phase and 3-phase transformer Stephen Mark.

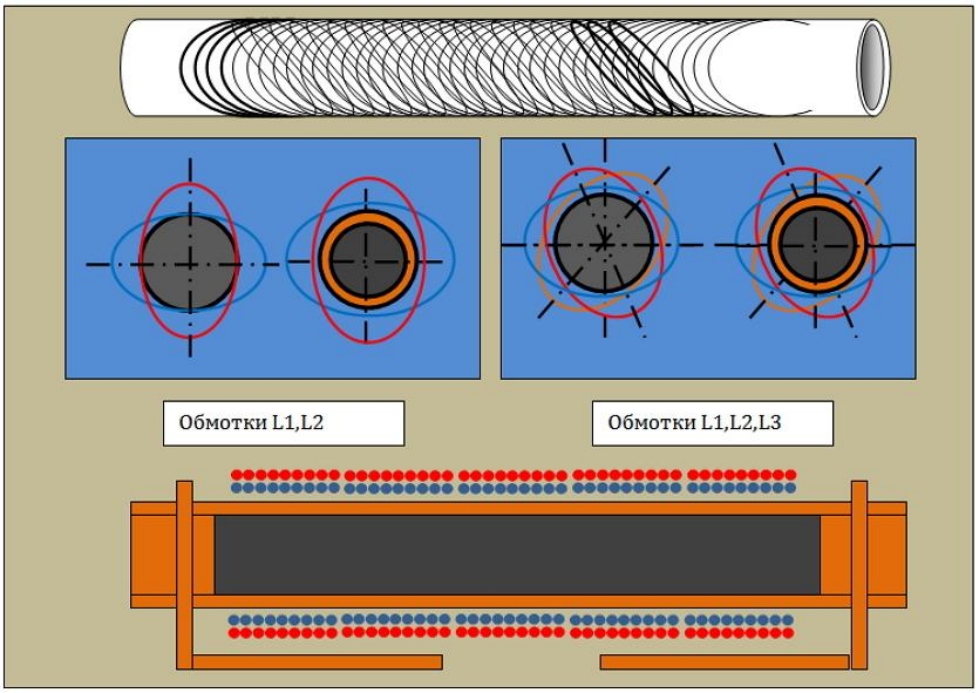

Fig. 2. Aluminum or copper round pipe with windings (many layers) and supports - contacts.

The figure shows 2 transformer circuits, with 2 windings at 90 degrees and 3 windings at 60 (120) degrees, respectively, for a two-phase and three-phase transformer. Presumably, the windings are wound in layers along the entire length of the pipe.

AAbramovich, 23 December 2015 #five

Stephen Mark Core TPU Calculation

You can easily roughly calculate the TPU of Stephen Mark.

Suppose that the radius R of a copper or aluminum pipe (secondary winding) is 1 cm (0.01 meters). Then, at the frequency f of the primary winding, we obtain the field rotation speed v = 2πRf. We take the value of the vector of Magnetic induction equal to B = 0.1 Tesla. Then the electric field is

E = B x v = 0.1 · 2 · 3.14 · 0.01 · f = 6.28 · 0.001 · f.

Take f = 10000 Hz

E = B x v = 0.1 · 2 · 3.14 · 0.01 · f = 6.28 · 0.001 · 10000 = 62.8 V / m

With a pipe length of 30 cm, the voltage will be approximately U = 20 V.

If the cross-section of the pipe for copper is 1 cm square. , then given the current throughput of 1 mm. sq. copper in 10 A, we get the permissible current on the pipe bus I = 1000 A. In view of what, with a voltage of U = 20 V, the power of the device will be equal to N = IU = 1000 A · 20 V = 20 kW.

As can be seen from the calculation, both voltage and current are by no means small, which allows you to convert this power into alternating current on a typical inverter.

The frequency f = 10000 Hz allows the core to be used both from permalloy and from ferrite.

AAbramovich, 23 December 2015 # 6

And if the windings are made without projection onto the collector? Those. we wind like ordinary coils and due to the eddy currents and the compressibility of the electron gas we create something like a quasiparticle, a soliton. By switching the coils, we rotate the field, we move the induced charge ..

Only high speeds are needed, if you use littsendrat, about 800 pF / m we get at 1000V, a charge of 0.8 μC. With a collector length of 1 Meter, we need more than a million meters per second to get a current of about 1A. That is, frequencies for megahertz. The device will apparently have the properties of a current generator.

Winding with a slope, i.e. with a projection, is an intermediate option between a conventional device and an over unit. That is, we make some losses.

Uncle_Vova, October 1, 2016 # 7

An electromagnetic wave runs between the collectors (rings) along the guide system of the waveguide just at the GHz frequency, because the wavelength lies in the centimeter wavelength range.

The system itself is a traveling-wave resonator.

The amplitude of the wave in the ring can exceed the amplitude of the exciting wave, as well as a conventional resonator, and such a scheme is useful for simulating high power levels in a traveling wave [136, 182, 246]. . “Microwave Technology” Volume 2, Page 271.

The processes occurring in the material of the copper ring have a lower frequency, because the velocity of the longitudinal wave in copper is approximately 4000 m / s, so collector copper works at kHz.

All energy in motion is between the rings in the form of E.M. waves, but is transferred in the form of bias

currents and conduction currents (skin effect). and the main role is played by bias currents since microwave frequency.

The windings across the collector are made by Stephen Mark as a Tesla transformer - here's a second resonator that amplifies the energy in the system.

The quality factor of the system as a whole is very high, so the quality of the system parts is very important, so if your hands are not inserted at the wrong end, do not even take it.

With what I agree that the vibration of the device is associated with transverse multidirectional currents, which strongly “shake” the collector in the pulse, and the gyroscopic effect is observed due to the high speed of rotation of the EM field along the ring.

Last Edit: November 3, 2017
Senc, 3 November 2017 #eight

The design of the TRU is symmetrical with respect to the central axis, so it is advisable to use a 2-cycle generation scheme, and without any frills which are full in the Internet, because Stephen Mark can’t place them in small TRUs.

Senc, 3 November 2017 #9

not on one of the videos where TPU is shown, oblique windings are not visible and where TPU is sawed, it is not visible not permalloy not ferrite

Kostya R, April 15, 2019
#ten