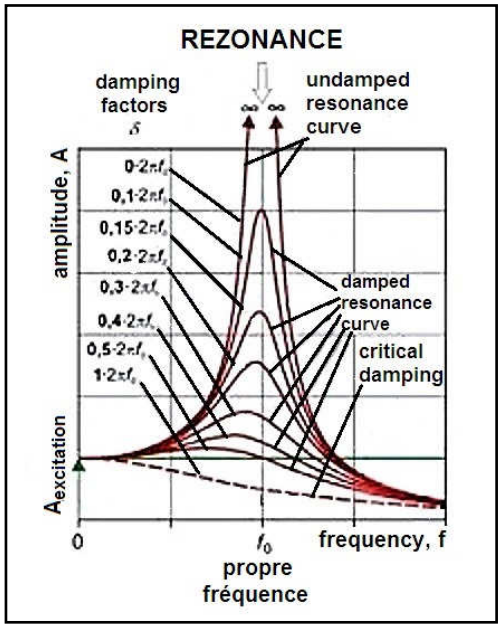
ÁKOS KUN

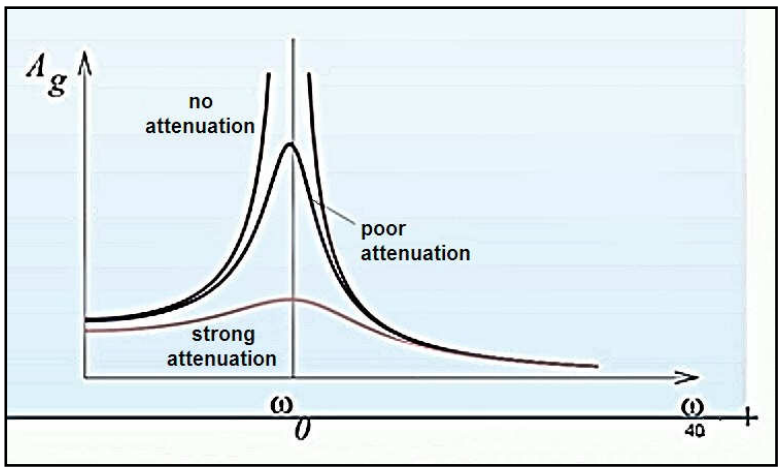
RESONANCE FREQUENCY EXCITATION

Motto:

You have to learn a lot to know
how little you know.

István Széchenyi





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Technical description

Resonance frequency excitation is a well-known phenomenon in physics. According to lexicons and textbooks, resonance is a forced vibration in which the frequency of the external forcing force is the same as the natural frequency of the vibrating system. In this case, very large amplitudes occur. The maximum position of the resonance curve is the same as the natural frequency. Every physical body has its own frequency, so it can be brought into resonance from the outside. Resonance can be induced by any physical phenomenon capable of vibration (e.g. movement, sound, light, electromagnetic wave). The best-known and most spectacular way of doing this is vibrating with sound waves. By vibrating with its own frequency, a high-rise building can be destroyed in a few minutes.

The most efficient way to induce resonance is through magnetic excitation. However, we do not yet know how to do this, because physicists deny the existence of the ether, and therefore do not try to put the activity of etherions in this direction at the service of practice. This physical phenomenon is only used by specialists and inventors working on the fringes of science, with very little efficiency. The reason for their meager results is that professional scientists classified them as quacks, charlatans, and impostors. Therefore, they do not receive financial support from anywhere for their work.

Resonance can also be induced with electrons in a manner known in electrical engineering. The use of oscillators goes back a hundred years, as old as radio. All broadcasting devices contain serial or parallel LC, RC and RLC circuits tuned to the resonance frequency. However, the use of electrons in metallic conductors stopped here. During the 200 years of electricity use, no one thought of feeding metallic conductors (e.g. filament, heating coil) at a resonant frequency. If they had done this, they would have quickly realized that at least an order of magnitude less energy is needed to achieve the desired light or heat effect. This would have required tens of power plants and power supplies, which would have been desirable mainly from an environmental point of view, but would also have had a beneficial effect on consumers' wallets. This unfortunate situation has greatly contributed to global warming, the threat of climate collapse, skyrocketing energy prices, and the resulting inflation.

Extraterrestrial civilizations watch our sufferings as a result of our negligence with compassion, but they do not interfere in our development. The intergalactic convention of the societies that have become the cosmic human type strictly prohibits the transfer of finished results and solutions to less developed worlds. Any species that violates this rule is punished by total extermination. This sentence is unappealable and unavoidable. However, targeting is not far from them. This happened to us in one case.

A few years ago, during a UFO abduction, a man from Szeged was taken by aliens. They talked about foreign technology and connections. It seemed to him that there was some kind of connection between the technologies used in different fields. They probably have a common operating mechanism, or a physical phenomenon that enables their operation that we do not know. Unfortunately, this principle was not revealed. All they said was, "It's an extremely obvious procedure that's so simple you'll never figure it out." This is not very encouraging for us. Our scientists don't deal with simple things. What is simple and easy to understand is not scientific enough. If they cannot fill their scientific theses with integral and differential equations, then they consider it beneath their dignity to deal with it. For this reason, for the time being we are only speculating as to what the obvious procedure might be. It could easily be the electrical and magnetic excitation at the resonance frequency.

At the beginning, we will try to prove the functionality of resonance frequency excitation with electrons. It was chance that led him to this possibility. My current place of residence is an almost hundred-year-old house, an emergency apartment with a kitchen and a room without comfort, in which the fittings are also in a rather bad condition. Because of this, pipe breaks are common and the building must constantly be repaired. The electrical network is also outdated. The light switches are also at least 50 years old. Because of this, their copper contacts were anodized. Where they are in contact, where they are not. The 230 volt mains voltage tries to break through this insulating layer, as a result of which the switch clicks audibly. After a few seconds, the relatively high voltage burns through the oxide layer and the lamp lights up, eliminating the contact error.

About 10 years ago, a strange thing happened. In the evening, I turned on the ceiling light in my room and there was a huge bang. All three circuit breakers in the apartment were tripped, and even the main switch of the electric clock in the hallway tripped. And a thick layer of soot was deposited in the glass casing of the burned-out light bulb. Being an electrical engineer, I found this phenomenon extremely strange. I already knew during my school studies that the filament of a light bulb wears out after a while, and approx. They burn out after 1000 hours. In the process, the tungsten spiral breaks and the glass envelope corrodes a little. During my 60 years of professional practice, I have encountered this phenomenon several times. I have already changed more than one broken light bulb because of this. Experts explain this phenomenon by the fact that the resistance of the filament continuously decreases during use. Because of this, after a while, such a large current flows through it that it burns the filament. The split filament dangles from the electrodes.[1]

Now, however, a new light bulb has broken in a rather strange way. In this case, there was no trace of the filament. Such a current passed through it that it vaporized and was deposited as a black layer on the inner surface of the bubble. This phenomenon raised my suspicion that excess energy was somehow generated here. This energy was so great that it fed back into the grid. This tripped all the overcurrent protection circuit breakers in the building. I thought for a long time about what caused this phenomenon. After a while I realized that it could be nothing but resonance. In the electrical switch with a contact fault, the mains voltage tried to break through the oxide layer of the contacts at a rate that was the same as the tungsten filament's own frequency. This created a resonance in the filament, which created an amount of free electrons that the tungsten filament could not withstand. It behaved as if thousands of volts had been applied to it. It vaporized explosively. At its own frequency, resonance can be induced even with a small amount of energy. In this case, the tungsten spiral of the light bulb or the heating element of various boiling and heating devices can be ignited.

In the case of resonance, the extra energy is created when the atoms brought into vibration shake off the electrons from their outer electron shells. In this way, approx. the number of free electrons increases by an order of magnitude. This free energy can be disconnected from the system, which reduces the electricity bill by a tenth. However, I could not test my idea because I had no money for instruments and parts. Half of my pension was not enough for that.[2] I tried to get support from millionaire individuals, banks, institutions, and large companies, but they didn't even respond. After

[1] As a side note, we can easily protect ourselves from damage caused by lightning strikes. Nowadays, it is not fashionable to turn off electrical appliances when they are not in use. When we leave home, all devices remain on standby. Therefore, if lightning strikes our electric clock or the nearby high-voltage transformer, all our devices will be destroyed, the power supply that remains on will burn out, and then all of its circuits. Then either the insurance company will pay our million-dollar damage or not. However, we can easily protect ourselves against overvoltages of tens of thousands of volts. This requires nothing more than a 20 ampere and 250 volt varistor that can be purchased for a few hundred forints. Solder its two legs to the output cable of the small circuit breaker under the electric clock. If a lightning strike hits our house, this round ceramic capacitor-sized component becomes a conductor, and the resulting short-circuit current trips the circuit breaker. In this way, the overvoltage does not enter our apartment. After that, the varistor will not fail. He continues to do his job. (Available in specialist shops selling electronic components.)

[2] I have been writing my books for 30 years, working 14 hours a day, during the week, at the end of the week, without rest. Besides, I couldn't get a job. Since there is no pension for writing books anywhere in the world, I have half as much pension as I would have if I had worked as an employee for my entire service life.

that, I turned to the politicians. However, the heads of the ministries also called me a quack and a charlatan and told me that they do not support fraudsters. Especially not with taxpayer money.[3]

By now, however, I managed to save enough from my meager ($400) monthly pension to buy a signal generator[4]. I have a cheap Russian-made multimeter left over from my practice 40 years ago. It is not suitable for many things, but it can be used to measure current and voltage. My soldering iron still worked. All that was needed was a 100 Watt light bulb that was at home.

To perform this experiment, a signal generator, or function generator, is essential. A wide variety of signal generators are available. However, most of them are quite expensive or their service is insufficient. However, there is an exception, the JOYit signal generator of the German company known for its versatile developments. This device is cheap and does a lot for its price. It is worth ordering, because it will also come in handy for our later developments.[5] However, for those unfamiliar with the use of function generators, the fact that there are no instructions for use is a problem.[6] In the two-page brochure, only the names of the control buttons were indicated. Therefore, before starting the experiment, read the information below:

After unpacking the device, insert the plug of the mains adapter into the socket marked DC 5 V on the back of the device. Push the other end into the outlet, then turn on the device with the blue Power button. The parameters of the two channels are clearly visible on the color TFT display. (The display has a transparent film that protects it from scratches. You can peel off this plastic film by the red corner. However, this is not worth doing now. Keep it on as long as possible. Only peel it off if it becomes cloudy from scratches or fogging switch.) There is a USB-B connector on the back of the device. Through this, you can connect to the computer with the supplied cable. It is not clear for what purpose, because Windows said that it could not find a driver for it. I wrote to the manufacturer to send the driver. As usual, they didn't reply to my letter either. The device probably sends various setting parameters to the computer, which are so complicated that only the developers of the device can navigate them. For lack of a better way, let's trust that the optimal values have been set for us.

Unfortunately, the set signal shape is not displayed by the device. What we see on the display is just a symbol. It shows what kind of signal it provides (sine, square, triangle, etc.) The change in the set signal can only be examined with an oscilloscope. For this, the manufacturer included a short cable with BNC plugs at both ends. Connect one end to the output of the signal generator and the other end to the input of the oscilloscope. It does not hurt to know that the maximum load capacity of the outputs is 150 mA. Output resistance: 50 Ω. This means that this device alone is not suitable for industrial use. In order to glow high-performance heating pads, an amplifier must be connected afterwards, which can provide a current of several amperes.

The frequency counter input can measure signals produced by external devices. Measuring range 0–100 MHz. Input resistance: 1 MΩ. The maximum voltage that can be connected is 20 V. Therefore, do not use it to measure the exact value of the mains voltage frequency, because the instrument will be destroyed. After connecting the measuring cable to the **Ext In** input, this function cannot be used immediately. Press the **Meas** (Measure mode) button. Use the **Func** button to change the **Function** instruction to **Counter**. Moving down, we see that the control is turned **OFF**. Switch the Control command to ON by pressing the arrow key. Press the OK button. Now we can start measuring. Once we're done, let's set the Function statement back to Measure. (This can be done with the arrow-shaped cursor buttons.) And set the Control instruction to OFF. Since we don't want to use

[3] For those who are interested, you can find my almost half a century of correspondence in this regard in the **Security Technology Product Line-Prospectus** folder of my library and in the Correspondence section of my book **Esoteric World**. Address: **Kun Electronic Library**. Web address: https://kunlibrary.net

[4] function generator, frequency generator

[5] The website of the manufacturing company can be found at this address: www.joy-it.net Their e-mail address: http://support.joy-it.net Their phone number:
+49 (0)2845 98469 The device can be ordered from iPhone Computer Kft. Price: HUF 54,300.

[6] The detailed technical description can be downloaded from the Internet. Web address: https://joy-it.net/en/products/JT-JDS6600

the function generator for that, but to generate high-frequency signals, don't touch the factory settings. To do this, let's set the outputs.

On the main menu of the display, the parameters of the two outputs can be seen one below the other. They can be activated with the CH1 and CH2 buttons. Since we only need one channel, press the **CH2** button twice. The red word **OFF** appears on the display. Then press the **CH1** button. For this, the blue **ON** text appears in the CH1 sector. After that, we can control the value of Frequency, Amplitude (output voltage), Offset, Duty and Phase (phase difference between CH1 and CH2). In order to make the settings without hindrance, activate the CH1 output. Press and hold the **CH1** button until you hear a beep.

By pressing the **SYS** (System Setup) button, the operating mode of the signal generator can be set. If we don't understand it, let's leave the factory settings. By pressing the **Mod** (Modulation Mode) button, we see the parameters we have set, listed. Let's not touch that. Do not set the parameters here. It is also not advisable to change the parameters displayed by pressing the **Meas** (Measure Mode) button. We only need the main menu.

First, select the symbol you want to use. Press the **FREQ** function button on the right edge of the display. Various symbols appear on the right side of the display. You don't have to select between them by pressing the function keys, because there are many more of them than what we see on the display. We use the rotary button for this purpose. With this Sine, Square, Pulse[7], Triangle, Partial sine, CMOS (square wave shifted to positive range), DC (direct voltage which can be shifted to positive and negative range in Offset mode up to 10 V, Half sine, Two-way rectified sine wave, Ramp (step wave up), Ramp (step wave down), Noise[8], Exponential curve-up, Exponential curve-down, Multi-Tone (tone wave), Sinc (sine wave with jump-like amplitudes)[9], Lorenz wave, Arbitrary 01-15 Arbitrary waves)[10].

The brochure says that the maximum frequency of the output signal in the case of a sine wave is 60 MHz. On the other hand, the frequency cannot be raised above 15 MHz here either. (This is the case with the cheaper **Lite** version.) However, this is not a problem for us, because the resonance range of the heating filaments is probably in the kHz range. After setting the waveform, set its frequency. Fortunately, you don't have to turn the dial for hours until you get from zero to 15 MHz. After a long press of the CH1 button, the range identification numbers are selected after the beep. (A red rectangle will be placed below them.) Using the right and left arrow keys, you can quickly set the exact frequency value from microhertz to megahertz.

The first character stands for microhertz, the others for millihertz. The hertz range can be set with three characters after the decimal point, the kilohertz range with the next three characters, and the megahertz range with the last two characters. The way to do this is very simple. By turning the rotary knob to the right, we increase the numerical value from 0 to 9. Scrolling backwards decreases the numerical value. In this way, all frequency values can be set with an accuracy of hundredths of a hertz. However, we first need to find the value of the heating coil's own frequency, so we need to scan the frequency ranges. First, the hertz and then the kilohertz ranges must be scanned slowly, because it takes some time for the glow to develop.

Annealing also requires voltage. Hopefully as little as possible, because if a lot is needed, the power consumption will also be high. Press the **Ampl** button and gradually start increasing the voltage as described above. Don't make too big jumps, because if the resonance starts, the heating coil is enough. Do not bother with the **OFFS** (Offset button), because we do not want to add DC voltage to the waveform. Leave the factory-set value of 0.00V. We also leave the value of **Duty** at the factory-set value of 50.0%. In this mode, we can change the filling factor of the waveform . At a value of

[7] A spike-like square signal, followed by a pause until the next pulse. However, the width of the pulse can be changed with the duty factor. At 90% occupancy, the break already becomes a spike. This is called pulse width modulation.
[8] It might be ethereal noise, which we can use after reconstructing the Tesla converter.
[9] Also called cardinal sine. Used in low-pass filters.
[10] On more expensive devices, these empty spaces have special waveforms. There is also a type where we can create 150 special waveforms ourselves. We are only interested in the soliton wave. It is questionable whether this waveform can be created with them.

50.0%, the signal will be 50% within one period, and the pause will be 50%. As the duty value increases, the signal shape will become wider and narrower, and the subsequent pause will become narrower. If it is reduced, the signal generator will switch to pulse mode. In our case this is not the best mode, because during the long pause time the electrons recombine in the metallic conductor, which reduces the excitation efficiency.

Well, then let's start experimenting. In the absence of a laboratory, I assembled the circuit on the kitchen table. First, connect one of the measuring cables to the **CH1** output. Since the function generator is set to a frequency of 10 kHz and an amplitude of 5 V after switching on, set them to **0** with the **Freq** and **AMP** buttons, as well as the arrow-shaped **scroll buttons** and the **control button**. I started the test by exciting different tungsten filament bulbs. I laid out a dozen lamps on the table, from the 2.5 V flashlight bulb to the 230 V 100 W lamp. I couldn't even flash any of them. Among the waveforms, even the DC voltage mode was not able to ignite them. So my initial enthusiasm quickly died down. I failed miserably on my first attempt.

In order to find out the cause of the error, I started measuring the voltage, current and resistance. It soon became clear that it would have been a miracle if any of the lights had lit up. I measured zero voltage and zero current on the electrodes of the light bulbs. For this, I measured the resistance of the filaments. One flashlight bulb had a resistance of 1 Ω, the other 2 Ω. Well, here's the problem. The output resistance of this signal generator is 50 Ω. connecting the 1 or 2 Ohm resistor lowered it so much that it shorted out. The only reason the generator didn't fail was because its developers equipped it with output short-circuit protection. A short-circuited power connector cannot output either voltage or current. In the case of the 60 W light bulb, the short circuit has already disappeared, because its internal resistance was 60 Ω. However, the 20 V amplitude provided by the generator could not make it flash. The voltage of 10 V in the positive and negative range of the sine wave was insufficient for this. The 150 mA load capacity of the generator was not enough to operate the 230 V light bulb.

It was clear that an amplifier had to be used. This is an excellent signal generator, but it can only be used for control, not for work. In my childhood, I made a lot of DIY transistor radios and amplifiers, but they were all audio frequency. Class A, B and AB amplifiers are mainly used to amplify musical tracks. Their frequency range is between 20 Hz and 20 kHz. Here, however, you need a signal amplifier from 1 Hz to at least 1 MHz. I looked around on the Internet and could not find amplifiers with acceptable parameters. Finally, I came across the American ACCEL Instruments TS250 type amplifier. The Waveform Amplifier for Function Generator produces a voltage of 65 V with a current of 6.5 A. Its output resistance is 1 Ω. Well, this is what I need, I thought to myself. However, my enthusiasm was cooled by the price of the amplifier. They asked $2,150, converted to HUF 774,000. (Since it is manufactured in a country outside the European Union, this is subject to an additional 20% customs duty.) I have never had this much money. Seeing my hopeless financial situation, I thought about giving it all up.

However, the signs encouraged me not to stop developing because there is a resonance induced by the electron flow. During my measurements, I cycled through the frequency range of the generator several times from 0.01 Hz to 15 MHz. Between 0.01 Hz and 10 Hz, the pointer of my analog instrument wobbled back and forth. Then at 3kHz I experienced something strange. At an amplitude value of 20 V of the generator, the pointer suddenly precipitated. I don't know how many V it showed, because it also cut out in the 1200 V measurement range. This phenomenon probably occurred because this Deprez meter has a resonance frequency of 3 kHz. The only reason the flywheel didn't burn out was because the 150 mA output current of the generator wasn't enough.

Due to my sad financial situation, I was forced into a situation. Once again, it turned out that I could only rely on myself. I have to develop this amp, I have no choice. The advantage of this is that I can define its parameters, and producing it at home with my own hands will cost a hundred times more than the Americans charge for it. If it's not fit for purpose, I don't need to beg anyone to change it. Publishing it is not a problem either, because everyone does what they want with their own property. I was last involved in the development of amplifiers and power supplies in 1970.

Some of them were also published in the Rádiótechnika magazine. By reviewing these, I tried to update my previous knowledge, but it was clear from the beginning that a different type of amplifier was needed. A preamplifier is not needed, because this role is performed by the output of the signal generator. This requires high voltage and high current transistors. The idea arose that a much simpler triac amplifier should be built, but the thyristor and its alternating current version, the triac, are not signal trackers. It turns on and off on the control pulse. It is not suitable for amplifying different signal shapes.

Since efficiency is very important for this mode of operation, use a switching power supply as the power source. If you want to use a ready-made power supply, it won't be difficult, because today all power supplies are switch mode. However, you won't like the price. It's the same with amplifiers. They are overpriced to say the least. It's not worth buying a low-voltage and low-current path, because we won't be able to use it for much later. If we spend money on it, buy 60 V and at least 6 A. There was a suitable one. The **TDK-Lambda Z60-10-IS420 60V 10A 600W** power supply would be excellent, but it had a small flaw. The price was HUF 944,915. Seeing such hair-raising prices, I decided to take a look at the second-hand market. On the Vatera.hu forum, apart from a few used things, I found a lot of new things at a surprisingly low price.

One of them is the **RD6006 0-60 V 0-6 A** adjustable laboratory power supply from Joy-it. Its price is only HUF 43,990. It is the same as the TDK-Lambda power supply, which costs twenty times as much. Remotely controllable, programmable, value entry via its keyboard, 9 memory slots, adjustable overcurrent and overvoltage protection, battery charging, cooperation with a computer. [11] If you find its load capacity to be low, choose the **RD 6012** type. It can already deliver 12 A. Its price is HUF 59,900. If this is not enough, you can also order **24 A** in the Chinese AliExpress and American Amazon.com web stores. They have the **RD 6024** very cheap, but you have to wait 2 weeks for delivery, which can be 3 weeks. Nevertheless, it is worth ordering from them, because the 24 A (RD 6024) in the AliExpress online store costs less than the 6 A (RD6006) in domestic online stores. I ended up ordering from them. I paid HUF 35,700 ($100) for it. (Today you don't have to pay customs and VAT, because AliExpress has established a branch office in Luxembourg. So it is already considered a European company)

Its box takes up little space, is flat, and has a design.[12] Of course, this is not what you need to put into the Resonance Frequency Exciter, but a mounted slime plate, which is devoid of any comfort functions. We can build this already. If you don't want to bother with it, take a look around the Chinese **AliExpress online store**. Web: https://best.aliexpress.com Here you can order high-performance switch-mode power supplies mounted on a chipboard at fantastic prices. Enter: **power supply-circuit board** in the search field of the opening page. PCB-mounted power supplies of various voltages and currents cost only 14-25 dollars.[13] These half-palm-sized panels already have the switch-mode mains transformer on them. They have 4 screw clips. The mains voltage (230/110 V) must be connected to two. The other two are the stabilized DC output. The 200 - 300 W they deliver is sufficient for exciting smaller radiators.

If this power turns out to be insufficient, choose a 600 W switching current power supply, fixed. with voltage output. It costs $38. This assembled printed circuit board can no longer provide only Single, but also Dual power supply with GND point.[14] With this, we can already power a 500 W

[11] Manual can be downloaded from this address: https://asset.conrad.com/media10/add/160267/c1/-/en/002207502ML00/hasznalati-utmutato-2207502-szabalyozhato-labortapegyseg-0-60-v-0-6-a-taviranyithato-programozhato-vekony-kivitel-joy-it-rd6006.pdf

[12] https://www.aliexpress.com/item/1005005734184999.html?spm=a2g0o.detail.0.0.6794hpGthpGtZA&gps-d=pcDetailTopMoreOtherSeller&scm=1007.40000.327270.0&scm_id=1007.40000.327270.0&scmurl=1007.40000.327270.0&pvid=e27517ca-05c2-432a-bdeb-975455466732&_t=gps-id:pcDetailTopMoreOtherSeller,scm-url:1007.40000.327270.0,pvid:e27517ca-05c2-432a-bdeb-975455466732,tpp_buckets:668%232846%238110%231995&pdp_npi=4%40dis%21HUF%2160559.22%2134986.64%21%21%211187.31%21%21%402101c71a16947805963991266e81c1%2112000034155830594%21rec%21HU%21%21ABS

[13] https://www.aliexpress.com/item/1005005916514057.html?spm=a2g0o.productlist.seoads.1.634a2b57b0M8Fo&p4p_pvid=202309240601004756034829692000043313 79_1&s=p

[14] https://www.aliexpress.com/item/1005005110665683.html?spm=a2g0o.detail.0.0.7474eKcNeKcNUF&gps-id=pcDetailTopMoreOtherSeller&scm=1007.40050.354490.0&scm_id=1007.40050.354490.0&scm-url=1007.40050.354490.0&pvid=d4c4299f-4b38-45e9-89e1-60a5d44523f6&_t=gps-id:pcDetailTopMoreOtherSeller,scm-url:1007.40050.354490.0,pvid:

switching amplifier. (For this, a dual voltage power supply unit must be selected.) A great advantage of this power supply unit is that it also supplies a 12 V auxiliary voltage. This can be used well for our function generator used in the form of a slime-plate. If the signal generator manufacturers manage to save the square generator onto a disc the size of half a palm, then we no longer need to build a separate power supply for this.

You don't even need a complete amplifier. It is enough to have a mounted chipboard, which we will install in a plastic box together with the power supply. I also found this on the Vatera.hu internet marketplace. A dealer in Budapest sells high-quality switch-mode amplifiers in a series of a few dozen, cheaply. I chose the **IRS2092S Mono power stage 500 W** type. This is a mounted circuit board. It doesn't have a power supply, it doesn't have any treatment organs, it's not boxed. It only has the amplifier. The input, output, power cable must be soldered on or screwed into terminal blocks. The price is HUF 6,500 ($18 instead of $2,150). At this price, it's not worth getting started and tinkering at home. The parts would cost more than the assembled panel.

Then came the second failure. After a thorough visual inspection of the amplifier, it turned out that it must be powered by a balanced power supply. Symmetrical (dual) power supplies have three terminals, +, – and GND (Ground). For this, it is not necessary to dig a large copper plate into the ground and bring it into the device via an insulated copper cable. You don't even need to connect it to the plumbing pipes. GND is nothing but the 0 point of the power supply.) Compared to this, the power supply creates the + and – voltages. However, the RD 6024 type power supply unit I bought does not produce a symmetrical supply voltage. This is a two-pole (Single) power supply. When ordering, I was misled by the fact that it has 3 banana pods. Looking more closely, I noticed that there is a barely visible pictogram between the middle sleeve with green insulating ring and the sleeve with red insulating ring +. After obtaining the manual of the power supply unit, it turned out that the green banana sleeve is used for charging batteries. The battery must be connected between the red and green connectors, and then set the charging current with the current regulator. (This is usually 10% of the maximum current.) Then you don't have to worry about it anymore, because the charger switches off automatically when the battery is charging and the charging current drops to 10 mA. So this is a good quality, versatile power supply, but that's not what we need.

After paying the tuition fee, I now began to carefully examine the various power supply types. I found the ideal lab power supply in the AliExpress online store. The output voltage of the Chinese-made **KUAIQU 120V 3A DC Power Supply Adjustable Digit Display Mini Laboratory Power Supply** type three-pole symmetrical (Dual) power supply can be regulated between 0 and 120 V and can deliver 360 W of power. Its price was HUF 28,539. Studying the amplifiers mounted on the printed circuit board, it turned out that the 500 W power supply I bought in the AliExpress online store costs only HUF 2,500. The Budapest dealer also bought it from here, and then sells it with a 100% profit margin. Lesson learned: it doesn't matter who we order from. Let's order from online stores. China's AliExpress is the cheapest. The selection is huge. After a long search, we find the cheapest offer. Before ordering, take a look at the right side of the product description page and check the delivery conditions. Order only if delivery is free. For small items, the shipping cost may be five times the price of the item. (If the price is unrealistically low, the loss is compensated with a horrible shipping cost. There is also a bit of fraud involved. You don't have to pay VAT and customs duties after the shipping cost. This is beneficial for the merchant, beneficial for the buyer, but not good for the state.) It may also happen that the delivery time is 2 months.

In September 2023, AliExpress redirected its European customers to their warehouse in the Netherlands. So now our orders are not sent to the Chinese parent company, but to their European subsidiary. This is not a problem because we get the same goods for the same price as the Chinese delivered. The problem is that the delivery is not from China, but from AliExpress's warehouse in the port of Rotterdam. Therefore, by default, the service is not in English, but in Dutch. Don't des-

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pair because of this. On the header of the AliExpress website, click on the small arrow on the right side of the **flag** icon. In the drop-down local menu, set the item **Hungary** as the delivery country. Select **English** in the **Language** selection bar. (Hungarian is not available.) Set the item **HUF (Hungarian forint)** in the Currency selection bar. Now we can easily order. (no need to enroll in a Dutch language course.)

If the English language is also a problem for us, please order using the Google Chrome browser. Here, the Google translation program is built into the browser. After completing the above settings, a message board will appear in the upper right corner of the AliExpress website, offering to translate the website into Hungarian. Activate the **English - always be translated command**, then click on the **Hungarian** instruction. The exact, precise translation of the web page takes place in an instant, and now we can order in Hungarian. Finally, close the message board with the **X** button. However, let's make sure that we continue to communicate with the store in English, because neither the Chinese nor the Dutch will learn Hungarian for our sake. It is advisable to open the notifications from the Netherlands in the Chrome browser, because the letters in our mailbox are also translated. If the message board does not appear, click on the **Translate Page** icon in the upper right corner of the browser. Then the missing message board appears, which translates from English to Hungarian.

If we come across a high-quality product that we like, which is sold at a discount (50-90% discount), add it to our shopping cart. If we hesitate and come back to it later, we will be surprised to find that the price has been raised. If we try to order the next day, the price will increase further. However, the price in the shopping cart does not change. If we find a cheaper or better one later, we can delete it from the shopping cart at any time. (Click on the Trash icon.)

Seeing the selection of hundreds of pieces, I also realized that it is easy to get lost in this abundance. 50 years ago, I wrote my thesis on switching power supplies. At that time, this topic was still completely unknown. I found only one source work on it, a book by a Russian electrical engineer. This profession has developed a lot since then, and I was left behind. I realized that the only way to succeed in this field is to refresh my knowledge. This was not difficult, because everything you need for further training can be found on the Internet. I learned that there are two main types of switching power supplies today. One is single-stroke, the other is counter-stroke.

In the case of a single-stage switching power supply, the supply voltage after the Graetz rectifier reaches the primary winding of the high-frequency transformer in only one direction. This makes this power supply simpler and cheaper to produce. However, its efficiency is worse, so it consumes more current and dissipates more. For this reason, you need a larger transformer and heatsink. A virtual earth point is created with a resistance divider after the Graetz rectifier in the case of the counter-pulse switching power supply. This is carried on to the power supply unit and even led out to its output. (This will be the GND connection.) The advantage of this solution is that compared to the ground point, a positive and a negative half-period are generated, which are alternately connected to the primary coil of the high-frequency transformer. This will improve its efficiency. It requires a smaller transformer and heatsink. Due to the creation of a virtual ground point, its design is more complicated, but it produces less noise and the distortion of the output voltage is reduced.

It behaves like transistorized Class B amplifiers. Their no-load current is low. At rest, almost no current flows through them. The difference is that for transistor B-class power supplies, the ground point is formed in such a way that the secondary winding of the mains transformer is tapped in the middle, and this becomes the ground point. The final transistor amplifying the positive and negative half-cycles is galvanically connected to this ground point. However, switching-mode power supplies do not have an input transformer, so a virtual earth point is created there. A large current should flow through this ground point in the same way as the galvanic ground point of B-class amplifiers. However, only a few milliamperes can flow through the hundreds of kiloohm voltage dividers. This problem was solved by connecting two high-capacity (approx. 1000 microfarads) electrolytic capacitors in parallel with the voltage divider. Although capacitors do not conduct direct current, they conduct alternating current with high efficiency. Switch-mode power supplies work with alternating

current due to intermittent operation. (Not with sinusoidal, but square-shaped pulses, but that doesn't matter. At a frequency of kHz, both waveforms turn into needle pulses. There is not much difference between them in terms of excitation.)

This is the reason why manufacturers do not indicate that their output is ± voltage on their ground power supplies. For the 60 V power supply, e.g. it doesn't say ±30V. In the case of real symmetrical (Dual) power supplies, both the + and - sides can be loaded. Here, however, if a direct current consumer e.g. we put a resistor and a light bulb on the + or – output and on the GND terminal, no current flows through it. GND only conducts AC current. A big advantage of creating a virtual ground point is that high-capacity capacitors reduce noise and interference. Regardless of this, switching-mode power supplies still generate high-frequency noise. Noise applied to the output voltage mainly disturbs analog devices. Shielding is useless against it, so they also cause interference. However, manufacturers do everything to eliminate this. If you look inside a computer's power supply, you will see a lot of resistors, capacitors, and inductance. Most of these are interference filters, surge arresters, and output filter coils.[15] All this does not help if there is no LC filter consisting of inductances and capacitors at the input of our analog radio. (In order to make more profit, it was saved.) In this case, after turning on our computer, the radio starts beeping, becomes noisy, and distorts. This can also cause problems with the resonant excitation of our heater, both for us and our neighbors.

What was said about switching power supplies is also true for switching amplifiers. (These are called D-class amplifiers. The designation "D" stands for digital, but these are not digital, but switch-mode amplifiers.) For this reason, the primary coil of the high-frequency transformer is excited in a back-to-back configuration. Therefore, high-power switching amplifiers can only be powered with a three-pole (with GND connection) power supply. If we connect a two-pole (single) power supply to it, it will not work. If you keep it on for a long time, it will get ruined. Professional manufacturers try to avoid this danger by writing ±60V on both the positive and negative poles. This is how they try to draw attention to the fact that a symmetrical, earthed (dual) power supply must be used here. In this case, the ± mark indicates that the voltage between the + pole and GND and the – pole and GND is 60 V. And 120V can be measured between the + and – poles.[16]

However, most of the misunderstandings that cause confusion are still to come. There are also switching mode power supplies that are actually DC/DC converters. **Step up** and **step down** converters. These produce a higher voltage from a low voltage and a lower voltage from a high voltage. Also known as **buck** and **boost** converters. These are mainly used for batteries. For powering devices that require a stabilized power supply. With boost-type power supplies, we can even double the input voltage. This is achieved by pulse width modulation (PWM). Voltage stabilization is also performed by the PWM circuit. If the load increases, the width of the square pulse on the primary winding of the high-frequency transformer increases. When the load decreases, it decreases the pulse width.

However, don't expect a miracle. If you double the output voltage, the output current is halved. It is also not possible to extract more power from this power supply than what is input. The problem with these converters is that their version mounted on a PCB looks eerily similar to real switching power supplies also mounted on a PCB. Since these are also called Power Supply, they will appear in the results list together with the real power supplies. Therefore, it is easy to order them. To avoid this danger, read the name of the power supply carefully. If it contains the words "step up" or "step down" or "buck" or "boost", we don't need that.

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[15] http://users.atw.hu/acdrian/Elektronika/kapcsolouzemu/Kapcsolouzemu.html Here we can see what a decently built switching power supply looks like.

[16] For those who want to build a switching audio stereo amplifier, the TPA3255 Digital Power Amplifier Audio Board Class D 2.0 Sound Amplifiers Stereo Home Audio Amp 600Wx2 available in the AliExpress online store can be recommended. Under the huge cooling fins, MOSFET transistors ensure excellent sound quality and high-performance amplification. The Texas factory achieves top-quality sound with its patented high-speed, error-correcting circuit. Another big advantage is the high energy efficiency and extremely low idle loss (less than 2.5 W). It costs $59.

All of this had to be discussed in such detail in order to be able to make the right choice. It is not possible to change the order in the AliExpress online store. If it were possible, customers would change the color and shape of the clothes they ordered every day, and this is not possible in such a large store. It would take an army of people to fulfill impulsive requests. It's not easy to cancel an order either. They won't talk to us for a long time. They will say on the Chat channel that they cannot find our order number, while our ordered products are already appearing on the screen. The only viable way to cancel is to open the post-shipment notification. AliExpress regularly sends us information about where the product is. On this e-mail, click on the **Check Order** instruction and enter your e-mail address and password in the window that opens. The ordered product becomes visible in the next window. Click on the **Returns/refunds** instruction on the right. A message board appears stating that the order can only be canceled after 10 days.

After the waiting time has expired, try again and cancel your order in the next window that opens. (We activate the Returns/refunds items in each section.) After that, we get our money back after a few weeks. (If it still doesn't come after 2 month, go to our bank and they will get it back.) If we changed our mind at the last moment, we can only do one thing: Don't accept the goods, send them back. If we take over, more annoyances await. The return must be requested, and the online store will only take back the goods in the original factory packaging. In addition, we have to pay the shipping cost. In the case of a return shipment, we can wait a long time for our money, because the return shipment and checking its condition will take weeks. Don't wait for the end of this. Let's order the correctly selected product again, don't waste our time. And we will get our money back at some point. Until then, let's work with our already well-selected device for the second time.

If we're really into development, we'll also need an oscilloscope. This will not be cheap, because the average price of oscilloscopes is several hundred thousand forints. However, a cheaper one is also suitable for this development. If the delivery is not urgent, order this from the AliExpress online store as well. The **Hantek DSO2C10 digital oscilloscope** is their cheapest, at HUF 67,216. It knows a lot for its price. Everyone who bought it praises it. It may be more beneficial for us to purchase the **Hantek DSO2D15 digital oscilloscope**. Its limit frequency is 150 MHz, but that is not why we will need it. This type, which costs HUF 92,122, contains[17] a function generator with a limit frequency of 25 MHz.

In terms of its cutoff frequency, the function generator is more serious than most signal generators, and it is also cheaper. In addition, we can make a wave of any shape and use it. If our development comes to fruition and the business we founded in the meantime takes off, we can also buy a Rohde & Schwarz oscilloscope. The RTE-COM4 desktop oscilloscope costs HUF 20,740,427. (Don't worry about the shipping cost, it will be free.) While I was waiting for the delivery of the new power supply, I worked on the theory of resonant frequency excitation.

We have already thought that while the efficiency of linear power supplies with a plated iron core is 40%, the efficiency of switching power supplies with a ferrite transformer core can exceed 90%. (The efficiency of transformers with a plated iron core is not bad, it can reach 95%. The majority of the loss of rather large linear power supplies is caused by the series stabilizing transistor.) For switching power supplies, voltage stabilization can be solved much more simply, with a pulse width regulator integrated circuit without loss . The most exciting question is what can be attributed to the mass reduction of more than one order of magnitude. While a traditional transformer with a 500 W plated iron core is so big and heavy that we can barely lift it, in the 450 W switching mode power supply of computers, only two approx. There is an annular ferrite iron core with a diameter of 3 cm. Is the magnetic conductivity of iron-containing ceramic ferrite that good? Not at all. The magnetic conductivity (permeability) of the plated iron core rolled from soft iron is much higher. (More than twice as much.)

[17] https://hu-m.banggood.com/Hantek-DSO2D15-Dual-Channel-+-AFG-Digital-Storage-Oscilloscope-150MHz-1GSa-ors-Signal-Generator-Oscilloscope-2-In-1-p-1974123.html If you do not have a PayPal account, order from the A-Z OLCSÓSÁG.hu web store. It's not more expensive than them and they deliver it sooner. Web: https://azolcsosag.hu/cart

So what causes the excess energy in switching power supplies? The answer to this can be found in all professional descriptions: high-frequency excitation. This is where the science of the experts stops. If we ask them why the frequent pulses cause an excess of current, they cannot answer. The explanation is not to be found in physics, but in subotronics. (Subotronics is the interaction of subatomic energy particles and electrons.) The extra energy is created by etheric particles. In the case of excitation with fast rise and fall pulses, the suddenly occurring excitation voltage tears off electrons from the outermost electron shell of the metal atoms. These electrons create the electric current. The greater the excitation pulse, i.e. the higher the frequency of the excitation current, the greater the electric current will be.

The ether intervenes in this process by filling the place of electrons torn from the outermost electron shell. The universe does not tolerate a vacuum, so it tries to fill it as soon as possible. Therefore, instead of the free electrons rushing to and fro, etheric particles (etheric ions) penetrate the metallic conductor. In the process, they often collide with atoms, and since the speed of etherions is 12 orders of magnitude higher than that of electrons, they cause a greater vibration in the atoms than the excitation pulses. This causes them to lose even more electrons. With low-frequency excitation (50 Hz supply), this phenomenon does not manifest itself perceptibly, because there is time for the electrons to rearrange themselves. However, with high-frequency excitation, this phenomenon manifests itself cumulatively. The frequency increase is limited only by the saturation of the iron core. This is 150 Hz for a plated iron core, while max. for a ferrite core. 1 MHz.

Subotronics offers the opportunity to further increase the efficiency of switching power supplies. Their efficiency can be increased well above 100%. One way to do this is through soliton excitation. A soliton is a pulse whose slope is greater than its rise time. It most closely resembles a sine wave skewed to the right. This wave can move enormous energy. So far, it has only manifested itself in nature, in the form of tsunamis. They travel hundreds of kilometers in the ocean before breaking on shallow shores and releasing their destructive energy. The tidal wave that forms on larger rivers is also a consequence of the tsunami. The secret of their steady progress is the ether. The soliton wave runs up slowly and its height suddenly decreases. After the wave height decreases like a shock, ethereal particles flow into the space thus formed. Ethereal particles quickly pushing into the wave valley push the water wave through the force of inertia, which causes it to move forward. This thrust is so great that it does not let the wave die for a long time.

Due to the limited number of free electrons in metallic conductors, the soliton wave cannot cause a destructive effect. However, it further increases the number of free electrons. Due to its recoil characteristics, it crumples the ethereal particles under it, which cannot leave the metallic conductor after the pulse has run its course and died. They remain in the material when the next excitation pulse starts and further increase the density of the etheric particles. This creates even more free electrons. However, the greatest increase can be achieved with resonant frequency excitation. If the designers were to measure the natural frequency of the toroidal transformer and set the frequency of the excitation pulses to that frequency, the atoms would start dancing madly. With this excitation method, the efficiency can even increase by an order of magnitude. We will now use this physical phenomenon for resonant frequency feeding.

Since I didn't have a dual power supply, I continued the development with a single power supply, probably an A-class switching amplifier. These amplifiers do not contain ferrite transformers. The pulses required for switching operation are generated by an integrated circuit. For this reason, they are very cheap, but they are only capable of low performance. I ordered a 60 W copy out of curiosity. The delivery time here was also very long. However, on December 18, Cainiao unexpectedly delivered the tiny amplifier promised by AliExpress much later. This matchbox-sized mini amplifier did not require a ± voltage with a GND terminal, so I was able to test it with the previously purchased single power supply. I connected a 24V power supply to the **XH-M311 mini amplifier** and controlled it from the headphone output of the desktop radio. Despite the purchase price of 3 euros, the manufacturer max. It promised an output power of 60 W, which it probably knew, because it thoroughly destroyed my 70 W speaker.

Well, then let's start the development that has been postponed for months. I removed the radio cable from the input of the amplifier and connected it to the output of the signal generator. I set the signal to 100 Hz. I turned on the power supply and waited for the hum of the sine wave. However, the amplifier did not even squeak. No matter what I did, I couldn't get him to speak. I then removed it from the signal generator and connected it to the headphone output of the radio. He didn't speak here either. Ruined. After a fiery investigation, it turned out that it was caused by a broken overdrive. I used the signal generator in factory settings. After switching on, the Yoy-it function generator adjusts to a sine wave with a frequency of 1 kHz and an amplitude of 5 V. I changed the frequency to 100 Hz, but I forgot about the amplitude. Since the input voltage of switching amplifiers is max. It can be 1.5 V, the triple overvoltage immediately destroyed the TPA3118 integrated audio amplifier.

During my instrumental measurements, I experienced something strange. I measured a negative voltage at the end of the BNC cable of the signal generator. According to the international marking system, the red crocodile clip should be the positive pole, and the black clip should be the negative pole. With the BNC cable, this is just the opposite. The metal body that plays the role of shielding is the positive. The spike in the middle is the negative one. Fortunately, the resulting reversed polarity did not destroy the amplifier, because the signal generator and the amplifier were independent devices. Reverse polarity would only cause problems if the grounding points of the two devices were connected. (In order to avoid excitement, this is often necessary.) Fortunately, the damage is only HUF 1,300, which does not lead to material deterioration. Having learned from this, I will take care of my amplifiers that require ± voltage and GND terminals. However, the dual power supply required for this is waiting for you. AliExpress postponed the promised 3-week delivery time to 2 months.

Ordering the dual power supply was not easy. The dual certification does not provide reliable support for choosing the right power supply for us either. The manufacturers also call those power supplies dual, in which they put two power supplies. Therefore, before ordering, let's take a look at its enlarged terminal block. If on e.g. you can see that it is +12 V and COM, and on the two terminals next to it, it is +5 V and COM, so these are two power supplies in one box. Manufacturers striving for precision label this type as: Dual Output Switching Power Supply. On the real dual power supply, there is not a COM or ground pictogram next to the voltage terminal, but the GND terminal, and + and – are visible on the voltage terminals (e.g. –60V, then GND, then +60V). If you want to be absolutely sure, check out the BREEZE HI-FI Audio Store offer.[18] Here, the sigle and dual power supply types can be found in one place, so we can easily choose which one we need. The power supplies they produce are mounted printed circuit (board) types. However, for development, it is advisable to purchase a boxed power supply, because it can be used later. The selection is not too big and very different.

There are also devices that contain single and dual power supplies in a common housing. The

[18] https://www.aliexpress.com/item/1005005110665683.html?spm=a2g0o.detail.0.0.7474eKcNeKcNUF&gps-id=pcDetailTopMoreOtherSeller&scm=1007.40050.354490.0&scm_id=1007.40050.354490.0&scm-url=1007.40050.354490.0&pvid=d4c4299f-4b38-45e9-89e1-6&gatewayAdapt=glo2nld

symmetrical power supply does not have a floating GND. Its central terminal is galvanic GND. This is indicated by the fact that it is not marked GND, but marked **COM**. ±25 V means that there is a measurable voltage of 25 V between + and COM and between – and COM. A voltage of 50 V can be measured between the + and – terminals. Its output power is not very high, only 120 W. (Like all Western products, the price of this KEYSIGHT power supply unit is also quite high. Online stores sell it for almost 2000 euros. If we can't afford this price, take a look at the AliExpress online store.)

This power supply is perfectly replaced by the Chinese **SPS3010-2KD Variable Dual-Channel Power Supply Lab 3-Way** device. The version that can be regulated from 0 to 120V has a load capacity of 3 A, i.e. its load capacity is not 120, but 360 W. Nevertheless, it costs a tenth as much as the previous E3631A type power supply. Price HUF 80,241 (approx. 220 euros). These are two single power supplies in one house. By short-circuiting the internal + and – terminals, it can be converted into a symmetrical power supply. The shorted poles form the COM pole. In this mode, the voltage between the two extreme terminals is double, in this case max. 240 V can be measured. If the + poles and the – poles are connected, the max. 120 V, but the load capacity doubles, it will be 6 A (720W). An interesting feature of this power supply is that the power supply automatically performs the connection in series and the parallel mode with the **SER** and **PAR** push buttons.

This is a great lab power supply, but not dual. If this is what we need, choose the **Blaubucht DC Power Supply PS 1203** type[19] also in the AliExpress online store. The price of this is only 57,000 HUF (160 euros). Its voltage can also be regulated between 0 and 120 V. Its load capacity is 3 A (360W).[20] The manufacturer does not connect the GND and COM points to the grounding point ⏚ of the power supply. There are several reasons for this. One is the touch protection reason. Grounding the metal housing and connecting the mains cable to the green-yellow wire is an official contact protection regulation. So that if the device short-circuits, the operator will not be electrocuted. The grounding

[19] https://www.aliexpress.com/item/1005003504628376.html?spm=a2g0o.detail.0.0.699ewiLMwiLMQI&gps-id=pcDetailTopMoreOtherSeller&scm=1007.40000.327270.0&scm_id=1007.40000.327270.0&scm-url=1007.40000.327270.0&pvid=4cecf634-3c86-48e7-8240-d&gatewayAdapt=glo2nld

[20] Although AliExpress has listed this device as a dual power supply, it may not be. Before ordering, ask the manufacturer at these addresses:
https://hu-m.banggood.com/NICE-POWER-PS-1203-120V-3A-DC-Power-Supply-Adjustable-Laboratory-Power-Supply-Switching-Voltage-Regulator-Current-Stabilizer-LED-4-Bit-Display-p-1823790.html
and
https://hu-m.banggood.com/NICE-POWER-PS-1203-120V-3A-DC-Power-Supply-Adjustable-Laboratory-Power-Supply-Switching-Voltage-Regulator-Current-Stabilizer-LED-4-Bit-Display-p-1823790.html#popupproductDetail

cable is not routed into the ground at the electric meter, because it would be very expensive to install it per household. The electricity supplier takes it further to the electricity pole at the end of the street, where a copper rod is driven into the ground and screwed to it. In cities, in the case of underground cable power supply, the grounding is done at the high-voltage transformers. However, the ground is not a perfect current conductor, so ground loops can form in sensitive circuits.

The fact that we are dealing with a real dual power supply can be determined by measuring the voltage. A virtual GND with a floating ground point can only conduct alternating current, not direct current. The reason for this is that the common point of two electrolytic capacitors connected in series forms the floating GND point. (If we measure with a Deprez voltmeter with a small input resistance on the terminals + and GND, or – and GND, it actually drains one or the other capacitor, so we measure 0 voltage. If we use a digital voltmeter, we can measure some fluctuating voltage, because it has an internal its resistance is 20 MΩ. This cannot reduce the voltage on the resistor divider and it cannot discharge the buffer capacitors either, therefore, before measuring, connect a few hundred ohm resistors between the + and GND terminals, then the – and GND terminals.) For fairly high-frequency switching power supplies , and amplifiers, on the other hand, the electrolytic capacitors open and play the role of the ground point. In this way, the + potential swings the loudspeaker membrane in one direction, while the – potential swings in the other direction. In the same way as B and AB type amplifiers, which have a galvanic GND pole, i.e. a symmetrical power supply is required for their operation. However, the tension is doubled here as well. 120 V can be measured between the + and - terminals of the ±60V power supply.

Therefore, the metal housing of the power supply and the load circuit are connected only if this reduces hum and excitation. The GND point is also not connected to the ground wire. Contrary to its name, GND (Ground) is not a ground point, but an internal common point of a circuit.) However, the connection of COM connectors is very effective in terms of preventing excitation. If the ESD or interference does not disappear in this way, an L-C noise filter must be used at the input of the supply voltage. This is already included several times in the power supplies. The most effective way to find out the series inductance and parallel capacitor placed after the power connectors of the load circuit is by trial and error. (Due to the high frequency, only ferrite-core inductance can be used here as well.) There are hundreds of such ferrite-core coils in the AliExpress online store, very cheaply. (Take one in which the ferrite core can be screwed in and out. That way, you don't have to try so many types.)

After the final version is made, we have to measure the inductance of the coil. Stores offer inductors in µH and mH classes. AliExpress also offers the cheapest solution for measuring inductance. The **Proster BM4070 Digital LCR TESTER** has a professional design. It measures inductance, capacity and resistance in a wide measurement range. Price: HUF 9,610, which is much cheaper than similar Western-made measuring instruments.[21] (For high-voltage capacitors, wait until the charge stored in them is discharged.)

On the power supply unit of the **HONGPOE D-120** type module, it is clearly visible that the manufacturer does not connect the COM point to the grounding point of the power supply unit. This is a + and – symmetrical power supply, which supplies 48 V between the V1 and V2 terminals. We can easily make a dual power supply from this power supply. For this, nothing else needs to be done than to connect the two COM terminals. (These two terminals are actually nothing but the left power supply unit – and the + terminal of the right power supply unit. To facilitate its connection, the manufacturer includes a short-circuiting shoe embedded in plastic, which just needs to be pus-

[21] https://www.aliexpress.com/item/1005005986591535.html?spm=a2g0o.detail.1000014.9.80b0udWhudWhVR&gps-id=pcDetailBottomMoreOtherSeller&scm=1007.40050.354490.0&scm_id=1007.40050.354490.0&scm-url=1007.40050.354490.0&pvid=0f7392fa-ff1a-4213-b6d4-eb9be9bd19c3&_t=gps-id:pcDetailBottomMoreOtherSeller,scm-url:1007.40050.354490.0,pvid:0f7392fa-ff1a-4213-b6d4-eb9be9bd19c3,tpp_buckets:668%232846%238108%231977&pdp_npi=4%40dis%21HUF%2118482.75%219610.79%21%21%21373.74%21194.34%21%402103205217051598833075636e8780%212120000351895577795%21rec%21HU%212803401475%21&utparam-url=scene%3ApcDetailBottomMoreOtherSeller%7Cquery_from%3A

hed onto the two terminals.)

Interchanging the phase (L) and neutral (N) wires when operating the module power supplies can cause malfunctions and electric shocks. (In power supplies, the current flows from the phase wire and returns to the neutral wire.) If the two wires are interchanged, the current flows backwards, which makes the power supply inoperable, and touching the phase to the common points of the circuit can also cause a fatal electric shock. At our mains sockets, L, or the phase wire, is brown, N, or the neutral wire, is blue, and FG, or the protective earth wire, is green and white striped. For foreign mains sockets, L, or the phase wire, is red, N, or the neutral wire, is black, and FG, or the protective earth wire, is white.

Since it is not stipulated in household sockets that the phase and neutral wires go to the right or left armature, when connecting the resonant frequency generator to the network, reverse polarity can easily occur. To avoid this, use a phase pencil to check which wire is the phase, and push the mains plug of the resonant frequency generator into the socket so that the connector of the plug marked with "L" is connected to the phase of the socket. (A phase pencil can be purchased inexpensively at any electrical specialist store.) After commissioning, the operator must be warned not to reverse the socket plug, and during the installation of the radiator in another room, call a specialist to check that the socket used there is connected in the correct polarity.[22]

If you want to study the spiritual world of real dual power supplies, order the two simple circuits in the attachment folder. We can measure the pre-assembled unit at several points with a voltage meter or oscilloscope. If we decide that we need this, we can DIY ourselves a real dual power supply with adjustable output voltage from the kit version. Pre-assembled and kit power supplies can be ordered inexpensively from the AliExpress online store. Measuring these makes it clear to us what the difference is between dual power supplies, dual output (two single power supplies built in a common housing), dual power supplies with a galvanic GND connector (made by connecting two single power supplies in series) and symmetrical power supplies[23] (with a galvanic GND connector power supply unit).

(Do not connect the points marked with the ⏚ symbol to the metal frame of the device or to the protective grounding connector of the mains plug, because this can cause an earth loop, which can trigger excitation. This is the internal earth point of the circuit and not a contact protection earth point. In case of excitation, connect it to the internal earth point of the load circuit .) Since the efficiency of the plated transformer is 95%, we can safely use it to generate the input alternating voltage of small dual power supplies. The input AC voltage should be 4V higher than the output DC

[22] L= Live wire (Phase wire)
N = Neutral wire (Zero wire)
FG = Frame Ground wire (Solid earth wire)
In some countries, different coloring may occur. If you see this, find information on the Internet or consult an electrical specialist. Note: correct polarity connection is only required for switching power supplies. With old, linear (plate iron core) power supplies, it doesn't matter how you push the mains plug into the outlet.

[23] Even today, this is made from discrete semiconductor elements (transistors), because this requires a transformer with a secondary coil tapped in the middle. Since the switching power supply does not have a mains transformer, there is nothing to tap. The result of this forced situation is the dual power supply with a floating earth point.

voltage. (It should not be much larger, because this turns into heat, which the small heat sinks can no longer dissipate into the environment.)

As development became more and more complex, I realized that I couldn't get by without an oscilloscope. That's why I ordered the aforementioned Hantek DSO2D15 digital oscilloscope on loan from a relative. After unpacking it, it turned out that Hantek no longer provides a CD for its oscilloscopes. Therefore, the user manual and the software required to install it on the computer must be downloaded from its website. Click on the http://www.hantek.com/DownLoad?key=yhsc&sid=3&word= web address to enter the company's download page. There, in the **Please select product category** list, click on **Digital Storage Oscilloscope**, while in the **Please select product model** list, click on **DSO2000 Series**. There, you can download the user manual by clicking on the **DSO2000 Manual** item. (This can be found in the attached folder of Resonance Frequency Excitation, in English and Hungarian.) We need the software to be installed on the computer.

To do this, set the **Digital Storage Oscilloscope** item in the **Please select product category** list and click on the **Arbitrary Waveform Editor** instruction on the right side of the drop-down list. Unpack the downloaded **DDS_ARB.zip** folder and click on the **Wave editor_Setup.exe** file to install the program on your computer. (We will delete the launcher icon placed on the desktop, because we do not need this program very often.) Open the **Start** menu and click on the **WaveEditor** folder. Activate the **WaveEditor** icon in the drop-down folder. The **Arbitrary Function Generator - Wave Editor Ver1.0.0.1** editing window opens. Here you can create any waveform, which you can then download to the Arbitrary 1, or 2, or 3, or 4 waveform items of your oscilloscope.

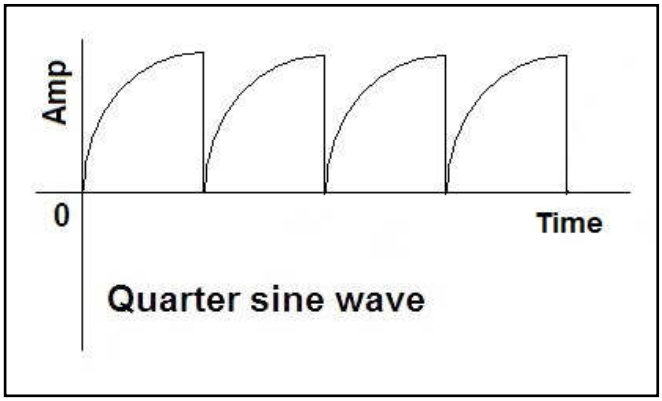
In the menu bar, we can see the main waveforms, which can also be found in the function generator of our oscilloscope. Therefore, there is no need to download them. These serve as a starting point here. We can redraw them to the shape we want. To do this, click on the **Draw straight lines in waveform** pencil icon. You can transform the main waveforms by pressing the **left** mouse button. If you messed it up, click on the **Default Setup** icon at the end of the menu bar and start the waveform conversion from the beginning. If there is only minor distortion, it does not need to be deleted. Click on the beginning of the section to be redrawn with the left mouse button and redraw the curve correctly. By clicking on the **Draw smooth lines in waveform** pencil icon and pressing the **left** mouse button, you can draw any waveform. It is not necessary to redraw all the cycles. It is enough to make one cycle. Set the **Cycles** selection bar to **1** item.

Once we're done with it, you can go to the oscilloscope. There, this waveform will be multiplied. Open the **File** menu and activate the **Export as ARB** instruction. After that, find your pendrive in the **Windows Explorer** window, select it, and save the **ARB File** on it. After that, connect our pen drive to the oscilloscope and copy the waveform from this device. Press the **WAWE GEN** button. His blue light comes on. Press the **F1** menu button twice, then select the **Arb1** item by scrolling the **MENU** button. Press the **MENU** rotary button. Press the **F5** menu key in the **Arb1** menu. The **Recall** field lights up and the contents of our flash drive appear on the monitor. Use the **MENU** knob to find the folder where we saved our waveform. Press the **MENU** rotary button again and turn it to the **ARB FILE** item. Press the **MENU** rotary button again. Finally, we pull the pendive from the oscilloscope, and we can use the function we drew via the **GEN OUT** BNC connector. (If you have accidentally pressed the F6 menu key, it is difficult to return from this mode. Neither the F1-5 keys nor the F0 key will help. Press the **F6** key again.)

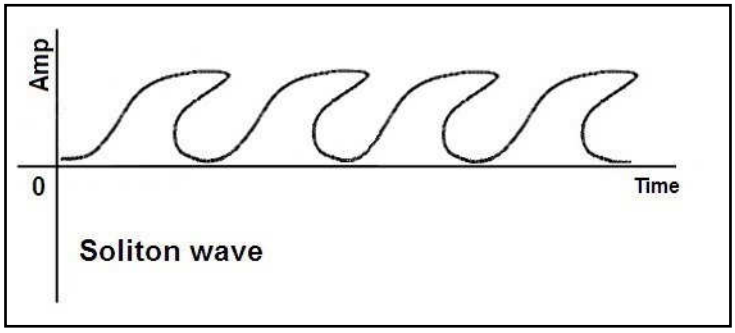
There are two ways to transfer the prepared ARB File to the oscilloscope. One is to install the **DSO2000** Software on the computer. This program establishes the communication between the oscilloscope and the computer. (It is located in the same place as the Arbitrary Waveform Editor, only not in the right, but in the left list.) Downloading it is not easy, because downloading this 200 MB program can take up to a quarter of an hour. Starting it and installing it in the Windows Programs and Services folder does not cause any problems. Its launch is all the more so. After installation, the **DigitalScope** program and the **WaveEditor** program icon will appear on the desktop. (The DSO2000 Software also comes with the desired waveform editor, so you don't need to download it separately.) However, not everyone knows how to start it. Who still uses the spy-free and easy-to-use Windows 7

operating system, when you click on the DigitalScope launcher icon, you will receive the following answer: **The program did not start because VISA32.dll is missing from the computer.** You get the same response when you click on the WaveEditor launcher icon.

Therefore, they have no other option but to download and use the independent **Arbitrary Waveform Editor** program. Their activities will not be unimpeded here either. After painstakingly creating the desired waveform, it is difficult for them to save it. The **Download waveform data to device** icon at the beginning of the menu bar serves this purpose. When you click on it, the **Waveform data Download** table appears, but it only allows selection of loading to Arb1-2-3-4 positions. It only allows charging to **USB** memory, but only apparently. By clicking the **Download** button, the **Wave editor** table appears with this message: **Download Error1!** Its cable transmission is hindered by the fact that this modern oscilloscope cannot be installed on the old Windows 7 operating system. After connecting the USB cable, Windows will tell you that it cannot find a driver for this device. Although the **DSO2D15** device appears in the Device Manager, it does not operate due to the lack of a driver.



This leaves nothing to do but to save with the **Export as ARB** command in the **File menu**. In this way, they can already save it to our pen drive. This method of downloading the new waveform and loading it into the oscilloscope avoids the use of a large amount of complicated software, but it still does not lead to results. The problem occurs at the very beginning of the operation. After connecting our pendrive, the oscilloscope says: **Please insert the udisc**. Unplug the USB cable from the computer. Thus, there is only one way to interact with the peripheral, via the USB storage device. After that, we can easily complete the upload as described above. Let's not be too happy about this either, because we will fail before the goal. After finding the **ARB File** and sending it to the **Arb1** location by pressing the MENU button, the oscilloscope says: **Recall Failed**. (The oscilloscope does not communicate with previous USB 2.0 flash drives. USB 3.0 flash drives can already be opened and it looks for the folder in which the **.arb** file is located. However, it refuses to load.)



In this matter, I wrote a letter to the Hantek service department, asking for their help. As usual, they didn't reply to my letter either. They do not deal with complaints from private individuals. If I had a company, my letters would have more momentum. However, starting a company costs a lot, and I don't have the money for that. Nevertheless, I did not give up the fight. Two weeks later, I wrote to the company again. Since this is a malfunction and the warranty has not yet expired, the company would be obliged to fix the program. Now their customer service has already responded to my letter. They wrote: "Our engineers are currently analyzing the issue and will let you know as soon as there is any news." We didn't have to wait long for the answer either. The main problem was that the Quarter sine wave I was editing was not multiplying. After a period or two, there was a pause, and then the wave repeated itself. Then another pause, and so on. To my question, the developers replied that I should go to the waveform editor and click on 4096 in the menu bar. The proposal seemed good, because with 4096 repetitions the constructed wave would have become continuous. The problem was, however, that as soon as I started drawing the wave, all the shortcut icons in the menu bar went dark, so I couldn't duplicate the wave.

I informed the developers that I was unsuccessful, but they did not respond to this letter. Their knife broke into the solution of this problem. They are not alone in this. The Arbitrary editor of the

German A Joy-it function generator does not work either. This device can no longer be installed on the computer. Windows 7 says „No driver found. Contact your device manufacturer for installation instructions.” I did it. They didn't reply to my letter either. After that, I looked around on the Internet. I was looking for Arbitrary function generators. Among them, the Juntek PSG9080 signal generator seemed the most promising. With this, it would probably be possible to edit any wave without hindrance. However, I can't try it because I don't have the money either. Regardless of all that, Hantek's DSO2D15 device is a very good oscilloscope. Easy to use and cheap. It also holds its own as a function generator. Factory-programmed waves can be used without hindrance. An Arbitrary function generator must be used to edit arbitrary waves.

However, editing the soliton wave will cause problems. No editing program can draw a wave that bends backwards. This is a serious problem, because Quoter sine wave and Soliton wave will play a very important role in subotronics. These waves are able to produce the most excess energy, or as esotericists say: free energy in electrical devices. Tesla used it too. He took the quarter sine wave from the commutator of a DC motor. With this, he also excited the Tesla coil, which produces millions of Volts. He had a lot of trouble with it, it was difficult to adjust, because the speed of DC motors depends to a large extent on the fluctuation of the supply voltage. He could not make a frequency generator, because a hundred years ago there were no semiconductors or even electron tubes.

During development, our work must be documented. If we want to publish our results, we need illustrative pictures. The measurement results shown by the instruments can be documented by taking photographs. The most convincing evidence is the figure shown by the oscilloscope. You don't need a camera for this, because all modern oscilloscopes can save the image on the monitor. To do this, pull out the USB cable from the computer, then insert your flash drive into the USB connector on the front panel. There are several ways to save a screenshot. Let's choose the simplest one. Press the **SAVE TO USB** button on the front panel. The screenshot is saved to the pendrive in PNG format. Click on it and it will appear in the Paint program. There's nothing to do with it, because you don't need to crop it around, you don't need to reduce it, because it's the size of the oscilloscope monitor. The only problem with it is the **.png** extension. The image in PNG format invented by Microsoft is no better than the commonly used JPEG format, it only takes up ten times as much space. Therefore, before closing the Paint editor, save the image in **.jpg** format.

After receiving the power supply with GND terminal and the 1000 W amplifier, as well as the oscilloscope, I was finally able to continue the development, which filled me with some concern. I was afraid that I would have to overcome more obstacles than before. I wasn't wrong. The very first step would have been a huge failure. As a result, all my circuits, components, and measuring instruments could have been destroyed. Since I don't have the money to buy new ones, this would have meant the end of the development. This danger came to light when I bought the high-performance speaker cheaply at a second-hand market. I thought I'd try it out before experimenting to see if the highly praised switching power supplies really sound that good. I personally took over the speaker from an old specialist who is now liquidating his laboratory. (According to him, none of his family members are interested in electronics, so after his death all his belongings will be thrown in the trash.)

During our professional chat, he mentioned that he designed many devices to order. Amplifiers for old rock bands and microwave devices. During the development of one of them, his device and all the gauges burned down. He doesn't know why, but I immediately realized that it was due to resonance. It hit the resonance frequency of the developed device, which created extra electrons, which increased the terminal voltage. This then fed back into the grid, cutting out all the intermediate circuits in the process. I was overcome with panic that this would happen to me too, since I would not cause the resonance randomly, but serially. What can be done about it? After much thought, I realized that what should be done is what is used in surge protection distributors. A small fusible fuse must be connected in series with the mains current, and a 250 V high-current varistor must be connected in parallel to its output.

If lightning strikes our electric meter or the high-voltage transformer installed in our residential area, the 16,000-volt primary voltage is transferred to the secondary side and burns out all devices kept in standby mode in all the apartments in the neighborhood. This will affect us financially very sensitively, because after seeing the extreme weather, the insurers announced that they would only pay in cases where the devices were operated from surge protection sockets.[24] In this case, the 16,000 volts causes the 250 V varistor to open and cause a short circuit in the outlet. This causes the 16-amp fuse to blow, and the high voltage does not come out of the socket or the distributor.[25] I have to do the same. A high-current varistor must be connected to the output of the amplifier, and before I connect it to the light bulb or the heating coil, a fusible fuse must be connected in series with it.[26]

This procedure is not a problem, but it worries me whether the amplifier can tolerate resonance frequency excitation. Producing resonance is probably not a problem, but how does an amplifier fed with ±40 or ±60 V react to this? The light bulb will only burn with full light if as many free electrons are generated in it as with mains power supply. In this case, a voltage of 230 V is generated on the two weapons. This will feed back into the amp, creating feedback that will destroy it. The only way to protect against this is to put an 80 V or 150 V varistor on its output, but this will prevent the 230 V light bulb from turning on. The low-voltage varistors stop the excitation process at the third. Connecting a diode in series with the output of the amplifier is also not a solution. The excitation takes place with a signal with a positive and negative range, and in this case the diode cuts off half the period. This can be prevented by using a two-pulse rectified sine or square wave for excitation.

So there are many questions that make this development more and more exciting. On December 28, the 1000 W dual power supply finally arrived. So I was finally able to test my 500 and 1000 W amplifiers. After measuring it, it turned out that the **Tokban 1000W Switching Power Board Dual ±60V** is not a real dual, but two single power supplies connected in series.[27] Manufacturers don't like floating GND power supplies, because if the negative range of the signal is smaller or larger than the positive, the floating ground point moves up and down, which causes distortion in the amplifier connected to it. This cannot happen in two power supplies connected in series, because both have their own voltage stabilizer. With this power supply, I measured a stable 60 V between the

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[24] Few people know about this, and because of this, they later lament how much damage has been done to them. By the way, they don't know that in the event of a burglary, the insurance company will only pay if the front door is protected by two security locks. However, currently commonly used plastic doors and windows have only one lock, and no one considers it necessary to install another lock. They also forget that these modern doors and windows close airtight, which has the unpleasant consequence that, due to the lack of ventilation, their apartment gets foggy and the walls start to mold.

[25] It doesn't hurt to get such a distributor for our own laboratory either, because our house can also be struck by lightning at any time. Its purchase requires caution, because online stores offer us tens of thousands of HUF copies. There are also good ones among cheap distributors. Let's also consider the length of the cable. Most models come with a 1.5 meter long cable, which is not enough for anything. The short-circuit protection distributor can no longer be extended with another distributor, because then the overvoltage protection will not be activated. That's why we order it with a long cable. The Gembird SPG5-C-15 5DIN 4.5 m black distributor with surge protection switch best meets these requirements. It has a professional design and is installed with a 4.5 meter long cable. Price: HUF 4100. Order: pcland web store. Web address: https://pcland.hu/gembird-spg5-c-15-tulfeszultsegvedo-kapcsoloval-5din-45m-black-54695?utm_source=arukereso&utm_medium=cpp&utm_campaign=direct_link In their shop at 20 Forgách Street, Budapest, XIII. can be picked up in person at no cost. Telephone: +36-1-999-7656

[26] The varistor must always be connected to the device to be protected and the fusible fuse placed behind it. If it is placed in front of it, the overvoltage will burn out the varistor, and then destroy the amplifier and power supply. The fusible fuse will only blow out when our amplifier or power supply becomes short-circuited.

[27] Cím: https://www.aliexpress.com/item/1005004926511161.html?spm=a2g0o.detail.1000014.53.8df7lHuRlHuR5X&gps-id=pcDetailBottomMoreOtherSeller&scm=1007.40000.326746.0&scm_id=1007.40000.326746.0&scm-url=1007.40000.326746.0&pvid=a8d7a807-4426-4731-8e86-215f6a251f7c&_t=gps-id:pcDetailBottomMoreOtherSeller,scm-url:1007.40000.326746.0,pvid:a8d7a807-4426-4731-8e86-215f6a251f7c,tpp_buckets:668%232846%238108%23193&pdp_npi=4%40dis%21HUF%2127173.78%2117662.78%21%21%21547.19%21%21%402103244b17013495453093680ee3a5%211200003 1046368265%21rec%21HU%212803401475%21 (For higher performance, we order it in the ±80 V version.) If we want to make a 1000 W stereo amplifier, we need the 2000 W or 3000 W version. The ±80 V versions are priced at HUF 34,000 and HUF 52,000.

+ and GND and – and GND projections. The instrument showed a voltage of 120 V between the + and – poles.

This power supply is protected against overheating, overcurrent and short circuit, so it is difficult to destroy it. Amplifiers also love it because it is not a square-wave switching device, but an LLC resonant power supply that uses a sine wave. In addition, it also provides an auxiliary voltage of ±12 V, from which a preamplifier can be powered. The 24 V measured between the + and – poles is suitable for operating a cooling fan. All in all, this HUF 21,000 power supply is too good for me. [28] It doesn't matter to the heating coil whether it vibrates with an ordinary square wave or a high-frequency sine wave. The heating element does not require an LLC resonant power supply.

First, I connected the **500W IRS2092S HIFI Digital Power Amplifier Board** to it. It sounded good, but not loud enough. I thought I was looking for a stronger station on the radio. I also found a local URH transmitter that was radiating with a field strength that destroyed my 500W amplifier. It overdriven the input, causing the output stage to short out. The fan stopped and the top of one of the buffer capacitors bulged and started smoking. I bought this amplifier for double the price from a dealer in Budapest. In this case, the loss was HUF 5,500. The price of HUF 2,600 requested by Ali-Express did not include the input surge protection. This power supply was also destroyed by over-control.

After that, I took out my 1000 W audio amplifier. The **1000W IRS2092S HIFI Digital Power Amplifier Board** already looked like a serious amplifier.[29] It is precisely designed, and they put a relay in it, which protects the speaker from knocking when the power is turned on. (Since it's a 1000W amp, the knocker can cause the speaker diaphragm to fly out.) It also protects against the crackle that occurs when the power supply is turned off by immediately disconnecting the speaker from the amp. (The buffer capacitors in the power supply and the amplifier operate the amplifier for a few tenths of a second. In the meantime, the crackle associated with switching off could reach the speaker, which would no longer be useful for it at such a high power.) In order to do this, you need to monitor the mains voltage. Therefore, the mains voltage appearing after the Power switch of the power supply must be connected to the red terminals of the amplifier. Since we do not use this device as an audio amplifier, we also leave this terminal open.

When I tried it, this relay seemed to protect against input overvoltage because I managed to over-drive this amp as well. But it didn't fail. The relay tripped audibly and protected the output stage from a short circuit caused by over-control. In addition, this amplifier is made using imported Japanese MOS transistors and fully digital chips. As a result of its careful development, it has very little distortion. Instead of electrolytic capacitors that dry out after a few years, it contains almost eternal tantalum capacitors. Its manufacturer recommends it specifically for HiFi fans. If you buy 2 of it, you can make a stereo amplifier that can tune a studio or a concert hall.

The developers also praise this 1000 W mono amplifier. Imported MOS transistors and Japanese digital chips result in perfect frequency transfer, low distortion and stable performance. Years of product development and imported high-frequency capacitors ensure soft sound and strong bass. Overall it sounds great. All this is reflected in its price. I paid HUF 13,200 for it. Seeing these, it occurred to me again that I need this? A radiator does not need such perfect parameters. The heating coil is not interested in the frequency response of the amplifier, nor in its soft sound. However, in terms of longevity, the use of tantalum capacitors is not useless.[30] I was very careful when assemb-

[28] 1 euro is currently 380 HUF, and 1 dollar is 350 HUF.

[29] Cím: https://www.aliexpress.com/item/1005005964608765.html?spm=a2g0o.detail.0.0.5c08y0Kqy0Kql6&gps-id=pcDetailTopMoreOtherSeller&scm=1007.40050.354490.0&scm_id=1007.40050.354490.0&scm-url=1007.40050.354490.0&pvid=ed31c025-67da-458b-ba06-132e115b752f&_t=gps-id:pcDetailTopMoreOtherSeller,scm-url:1007.40050.354490.0,pvid:ed31c025-67da-458b-ba06-132e115b752f,tpp_buckets:668%232846%238108%231977&pdp_npi=4%40dis%21HUF%2123677.33%2114206.29%21%21%21468.87%21%21%402103010c16951537175173158e30e4%21120000350805018 41%21rec%21HU%212803401475%21S

[30] The vast majority of computers fail because the cheap electrolytic capacitors dry up in them. They could be easily repaired by replacing them with tantalum capacitors, but no one deals with this. Repairs are not fashionable these days. If a device is broken, they throw it away and buy a new one instead. And the mountains of garbage made up of discarded electronic devices already reach the sky.

ling the circuit. I protected not only the amplifier with a varistor and a fusible fuse, but also the output of the power supply and the function generator.

In addition to the too good parameters, the separate power supply and amplifier would also increase the production cost of the resonant frequency generator. This thought had already occurred to me before, so I ordered a 1000 W amplifier integrated with a power supply from the AliExpress online store. It only cost HUF 21,170, which is what I paid for a 1000 W dual power supply in Tok. The fairly large assembled panel (board) arrived at the beginning of January 2024. Several spacers and screws were added so that the panel does not touch the table, and any metal waste on it does not cause a short circuit on the printed circuit.

It also has special services. One of them, a ±15V symmetrical (dual) power supply. Its power is not very high, but it is enough to power a class AB preamplifier. This is necessary when using microphones or turntables with dynamic pickups. The 0.1 V signal of currently commonly used condenser microphones and record players used for listening to vinyl and vinyl records cannot drive an amplifier. This requires a preamplifier. We no longer have to construct the power supply required for this, because we will receive it ready.

Trying it out was easy because you didn't have to worry about connecting power cables. This type has no special parameters, but it sounded good. Its only flaw is that its heatsink-mounted fan is quite noisy. The reason for this is that it is not a ball bearing, but a cheap slide bearing. However, this can easily be helped. The power cable must be unplugged from the 24 V balance socket. By the way, there is also a version without a fan. The **AIYIMA 1000W Mono Amplifier Audio Board** can be ordered at this web address at the cheapest price.[31]

Unfortunately, the 1000 W amplifier integrated with the power supply did not bring me closer to my goal either. In order to achieve resonant frequency excitation, I connected the continuously tunable Joy-it signal generator to their input. A humming sound with different timbres was produced for all waveforms. They didn't break because I didn't increase the amplitude above 1.5 V here. The problem was not this, but the low output voltage of the amplifier and the high internal resistance of the load.

First, I connected a 230 V and 7 W light bulb of a sewing machine to the speaker output. Then I swept the main waves from 100 Hz to 1 MHz. After that, I tried the 230 V and 25 W lamp of the electric stove. I didn't even see a faint glow of embers. This was followed by 60 W and 100 W incandescent lamps. There was no flash here either. Then I measured the internal resistance of the lamps. The sewing machine had 500 Ω, the stove 226 Ω, and the 60 W and 100 W light bulbs 60 Ω and 35 Ω, respectively. However, audio amplifiers are not designed for such impedances. The brochure says that 1000 W is delivered when a 4 Ω speaker is connected. With an 8 Ω speaker, their output power drops to 500 W. It follows that the fairly high internal resistance of light bulbs barely gets a few watts of power. And this can't even dimly flash their filament. This is another fiasco. I've been suffering with this development for half a year, but I haven't gotten anywhere with it.

There is only one way out of this untenable situation. The load circuit must be disconnected from the supply circuit. One way to do this is with an optocoupler. But we do not manufacture multi-kilowatt optocouplers anywhere. Even if they were to produce it, it would be prohibitively expensive. The other solution is the transformer. Since high-frequency excitation is used here, only a ferrite transformer can be considered. In order to minimize the scattered magnetic field, it is advisable to use a toroidal ferrite core (ring). I visited the local parts store, where they told me that they do not sell ferrite cores or enameled copper wire. Since such transformers are used in all computer power supplies, I had an idea. I went into one of the computer repair shops and asked if they had broken

[31] https://www.aliexpress.com/item/1005004821442332.html?spm=a2g0o.productlist.main.1.12c42f1cfpoMcu&algo_pvid=84515de0-92cd-4c20-a707-939df2a56f7c&algo_exp_id=84515de0-92cd-4c20-a707-939df2a56f7c-0&pdp_npi=4%40dis%21HUF%2129041.81%2120908.97%21%21%2181.81%21%21%402103249617047143318017473e9c0d%2112000030615017549%21sea%21HU%212803401475%21&curPageLogUid=WqF1OJMrhCUH&utparam-url=scene%3Asearch%7Cquery_from%3A

computer power supplies. They said they don't have it, but they have a bad uninterruptible power supply. That's good for me too. Since it was considered E-waste, it was given away for free.

I took it apart at home and found 2 larger and several smaller interference filter ferrite rings inside. The bigger ones would be good for a transformer, but there is nothing to wind them with. I looked around the Chinese online store. They sell a lot of varieties, but more recently they give a delivery time of two months. I can't wait until the beginning of March. Browsing the Internet, I found the American TEMU online store, which is now selling its enamel cords at half price.[32] You don't have to pay any shipping costs either. I ordered 9 varieties, from 0.1 mm to 1.2 mm in diameter. In addition, they agreed on a delivery deadline of only 2 weeks. (They deliver to Europe not by cargo ship, but by plane.)

However, the method of winding caused many headaches. Since no one has ever made such a device, unlike plate transformers, there are no sizing rules or formulas for this. The optimal number of turns and wire diameter can only be determined by trial and error. Only the starting parameter is certain. The resistance of the primary coil should be 4 Ω. The wire diameter must be chosen so that the coil fits on one side of the ferrite ring. However, I could not determine the speed of the secondary winding with such certainty. To what voltage should I transform the energy of the primary coil? Does resonant frequency excitation start at 230 V or lower? It is feared that the ferrite rings with an outer diameter of 26 mm will be too small for this.

Transformer isolation will hopefully relieve my biggest fear of voltage feedback. If that happens, it will burn all my instruments and parts. In the past, cathode ray tube color TVs used 45,000 V to excite the picture tube. It didn't connect back either. It did not destroy the image and sound processing integrated circuits. The primary winding was made up of a few threaded iron-member enameled copper wires on the flyback transformer. The secondary coil was wound from hair-thin wire and embedded in resin to prevent it from falling apart. Then he was locked in a metal cage so he wouldn't get a fatal electric shock.

On January 12, I received a letter from TEMU that my order had been handed over to Magyar Posta for delivery. On the 13th, it was sent to the post office where I live, from where the postman delivered it to my house. On January 15, the small 60 W amplifiers also arrived. Due to their fragility, I immediately ordered 2 of them. I reordered them because I'm wondering if they can make at least one light bulb resonate. I was also intrigued by the fact that while the 500 and 1000 W amplifiers have a transfer frequency between 20 Hz and 20 kHz, this integrated amplifier has an upper cutoff frequency of 88 kHz. If the spiral of the radiators vibrates above 20 kHz, then this amplifier can still come in handy. I was no less interested in the fact that the output impedance of this amplifier is not between 4 and 8, but between 2 and 6 Ω, unlike the amplifiers with hundreds of watts. This means that half as much copper wire is needed for the primary winding, or the diameter of the wire can be doubled, which increases the excitation of the ferrite ring. I tried one on the same day and cut it right out. I didn't remember well how much power it requires and I connected it to 42V instead of 24V. Then the integrated amplifier started to smoke and the top burst. It's ruined too. When testing the other amplifier, I was very careful about all the details, which is why it still works.

The next day I was able to start winding the two ferrite rings, which was very difficult. Due to their small size, I could only use thin copper wire for them, which increased the risk of breakage. The 4 Ω primary coil required 8 meters of 0.2 mm diameter wire. Winding this up was quite a tedious activity. For each pass, the 8 meters of wire had to be pulled through the ring. On the first run, it became clear that this was not only tiring, but impossible. The 8-meter thin wire got tangled in several places. That's why I made a mini reel. I cut a 4 cm long piece from the end of the hurka stick (a wooden stick with a diameter of about 3 mm). I tightly wrapped 0.5 cm wide insulating tape with a thickness of 3 mm on the two ends, so that the outer threads do not slip off it, and I wound the enameled copper wire measured per meter on the spindle formed in this way. After that, it was

[32] Web address: https://www.temu.com/

no longer necessary to thread several meters of wire through the ferrite ring.[33] Only this small spool had to be pushed through the middle of the ring when winding each thread. (In transformer plants, the winding is done by target machines in a much simpler way.)

After the completion of the primary coil, the formation of the secondary coil on the other side caused a serious problem. How many turns should I wind on it and of what thickness of wire? In the absence of literature, there is no other option but to try. High power may be required to initiate resonant frequency excitation. However, this requires a thicker wire. However, this does not fit on the small 26 mm diameter ferrite rings. Dealers do not always specify the quality and maximum magnetization frequency of the toroid cores. Therefore, I ordered 6 types of ferrite rings with an outer diameter of 50-60 mm from AliExpress. Among them there was a cheaper one pressed from iron powder and a high-frequency version made of MnZn alloy. (The plated iron core cannot be used here, because it saturates at 150 Hz.) Switching transformers require a high-frequency ferrite iron core. The limit frequency of ferrite iron cores is max. 1 MHz. This suits us, because we expect to operate the resonant frequency generator at a few hundred kHz. In order to minimize the stray magnetic field, a toroidal iron core must be used. They can be ordered in the largest selection and at the cheapest price in the AliExpress online store.

They sell two main types. One is the low permeability iron ferrite toroid ring. (It is also called iron dust core.) The advantage is that it is cheap. The disadvantage is that its limit frequency is max. 20 kHz, which is not enough for us. It is mainly used in noise filter circuits to prevent radio frequency excitations. It is sold as an Inductor. The other is the manganese-zinc ferrite toroid ring. Its advantage is its high cut-off frequency of at least 300 kHz. (This is also used as a transformer in switching power supplies.) The disadvantage is that it costs five times as much as a ferrite ring pressed from iron powder and ceramic powder using the powder metallurgy method. (The price can be several thousand HUF, depending on the size.)

Since the TEMU warehouse sweeper sale does not last forever, it is also worth purchasing the enameled copper wire from the AliExpress web store. They are distributed in diameters from 0.1 to 5 mm, in rolls of 50 grams. It can be ordered here for the cheapest price.[34] In the case of serial production, consider the use of polyurethane-insulated copper wire. This thick insulation prevents short circuits and is easier to wind. Humid air and a wet environment will not harm it either.[35] AliExpress confirmed a delivery time of 2 months for these products as well. At this pace, this development never ends.

After completing the primer roll, I was in a big dilemma. How do I make the secondary coil? What causes the resonance frequency in metallic conductors? High current or high voltage? Since thick wire is easier to wind, I used the copper wire with a diameter of 1.2 mm first. Initially, I put enough threads on it to cover the opposite side of the ferrite ring. It only held 10 runs. Then I connected the primary coil to the output of the amplifier speaker supplemented with the power supply. The transformer load did not destroy it. I set the excitation frequency to 100 Hz and measured the secondary coil. The result was very depressing. The meter showed 0.1V. Even the 2.5 V

[33] The individual threads do not have to be wound next to each other, but make sure to wind them evenly. If the copper wire bulges at the end, when unwinding from the thinner end, the twisted threads will fall onto the coiled wire, which will cause the whole thing to tangle.

[34] https://www.aliexpress.com/item/1005006345160960.html?spm=a2g0o.productlist.main.27.778b2853FQug9L&algo_pvid=5ba9f30a-bb2e-43a2-a2d9-aa7497b35a17&aem_p4p_detail=20240120140035377736898373760000 3145134&algo_exp_id=5ba9f30a-bb2e-43a2-a2d9-aa7497b35a17-13&pdp_npi=4%40dis%21HUF%211540.38%21816.26%21%21%2130.76%2116.30%21%40210324f117057880350077926ed27c%21120000036834765606%21sea%21HU%212803401475%21&curPageLogUid=4wiAVamYuz7M&utparam-url=scene%3Asearch%7Cquery_from%3A&search_p4p_id=20240120140035377736898373760000 3145134_14

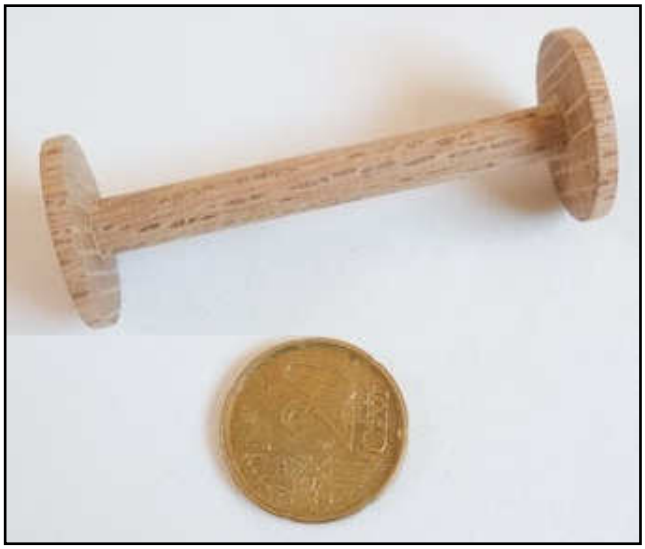
[35] https://www.aliexpress.com/item/33023568022.html?spm=a2g0o.detail.0.0.1c05nqEsnqEsAw&gps-id=pcDetailTopMoreOtherSeller&scm=1007.40000.327270.0&scm_id=1007.40000.327270.0&scm-url=1007.40000.327270.0&pvid=696f6e74-3adb-47e1-9cfb-cea64687e8fd&_t=gps-id:pcDetailTopMoreOtherSeller,scm-url:1007.40000.327270.0,pvid:696f6e74-3adb-47e1-9cfb-cea64687e8fd,tpp_buckets:668%232846%238108%231977&pdp_npi=4%40dis%21HUF%212243.02%212131.94%21%21%216.26%215.95%21%402101fb131705579597840 1092ec888%2110000013692354818%21rec%21HU%212803401475%21&utparam-url=scene%3ApcDetailTopMoreOtherSeller%7Cquery_from%3A

flashlight bulb could not light this small voltage. I didn't continue winding. Another set of wires would have fit on top of the previous one, but why? I won't go anywhere with 0.2 V either. It is clear that a high voltage is required for resonant frequency excitation.

The same situation as with the electric motor invented by Newman. According to the current teaching of physics, different electrical charges accumulating on the poles of the electrical energy source create the voltage, which causes an electron flow in the connected load. The voltage at the two ends of the wire creates the electric field, and the current flowing in the wire creates the magnetic field. Voltage and current determine the field strength. This is not true. It is not the current that creates the field, but the voltage. The current that occurs during the excitation is only a forced accompaniment of the magnetic excitation. It becomes an essential companion only in the case of mains excitation voltage. Due to the fixed value of the mains voltage (220V, 380V), they can only produce a stronger motor by winding it with thicker wire, i.e. more current flows through the motor.

This forced situation was eliminated by the American inventor. He tried to reduce the current flowing through the excitation coil by winding his motor with hair-thin copper wire and exciting it with high voltage. So there was hardly any current flowing through it. His consumption was very low. Nevertheless, it was no weaker than conventional electric motors of a similar size. Since his invention was considered a device for producing free energy, the scientific community was outraged. The inventor was sidelined and his invention was never used.

This situation is familiar. They have been doing this to me for decades. However, this did not take away my enthusiasm for work. I won't give up the fight now either, then what will happen will happen. The way out was clear. For more turns and a larger coil, a larger toroidal ferrite iron core is required. However, AliExpress promised delivery by February. What should I do until then? I thought about removing the line outgoing transformer, or flyback transformer, from my old, broken cathode ray tube monitor. The secondary voltage of the series transformer of color televisions and monitors is 45,000 V. I replace the primary coil with a 4 Ω resistor, then I continue to try with this. Low excitation voltage will certainly not be a problem here. Overexcitation will probably cause the light bulbs to be destroyed one after the other.



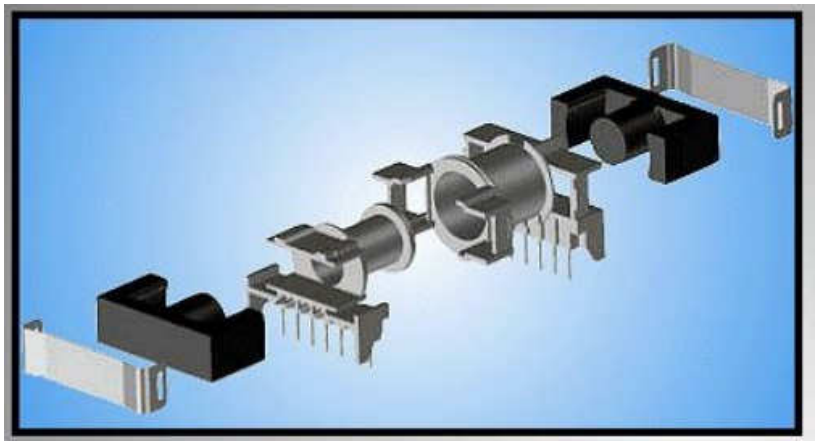
However, this did not happen, because AliExpress unexpectedly delivered the large HUF 2,300 ferrite ring from the Choice store the next day. This toroid iron core with an outer diameter of 50 mm and a thickness of 20 mm is of high quality, but it is iron powder ferrite, which saturates above 20 kHz. Since I don't know what the resonance frequency of the heating coils is, this may also be suitable for this purpose. Due to the larger size, I wound the primary coil with a diameter of 0.3 mm, while the secondary coil with a diameter of 0.2 mm. Since the 30 mm inner diameter gave more freedom of winding, I now cut the spool from a 4 mm diameter wooden bar. (Do-it-yourself stores sell sticks of different diameters. Cut off a 6-centimeter piece from it.)

The ideal solution for larger ferrite rings is to use a plastic spindle. We can find it in several sizes in online stores. The attached picture shows a spindle turned from wood. Order address[36]. For smaller ferrite rings, try this wooden spindle with a diameter of 12 mm and a length of 50 mm.[37] The other solution is to turn the two ends of the former wooden spindle with the manufacturer to a dia-

[36] https://www.etsy.com/listing/787884782/vintage-yarn-reel-vintage-bobbin-sewing?ga_order=most_relevant&ga_search_type=all&ga_view_type=gallery&ga_search_query=small+plastic+spools&ref=sr_gallery-1-34&organic_search_click=1&variation1=1412930583

[37] https://www.etsy.com/listing/1462329451/12-x-2-inches-wooden-spools?ga_order=most_relevant&ga_search_type=all&ga_view_type=gallery&ga_search_query=small+plastic+spools&ref=sr_gallery-2-35&sts=1&organic_search_click=1

meter of 12 mm. If that doesn't work, let's find a machine shop where they can turn it for us in minutes. The plastic spool can be ordered in the eBay webshop. Address: https://www.ebay.com/itm/134699552428 Insert a wooden rod (e.g. the stem of a brush) into the inner cavity for easier winding. This will make it easier to hold the reel.



To avoid this difficult and time-consuming winding method, we can also use a ferrite iron core of form E. As you can see in the attached picture, here the inner core is rod-shaped. In this way, a drum-shaped coil body can be inserted into the transformer. This reel body can be wound quickly and precisely. Place it in a manual winding device, and several meters of copper wire can be unhindered from the drum placed underneath. For this type of transformer, the primary coil body must be slid into the secondary coil body. In this arrangement, the breakdown between the primary and secondary windings is excluded.[38]

If we stick to the toroid-shaped iron core for the sake of the lower scattered magnetic field, then after the transformer is finished, fix both ends of the primary and secondary windings to the ferrite core with a drop of epoxy resin so that they do not slip apart. For lack of a better option, we also fix the fixing of the transformer to the textile vinyl base plate with epoxy resin. Put a drop of glue on the top and bottom of the ring, as well as on both sides, and press it to the base plate. In order to prevent crossing between the primary and secondary coils, stick a strip cut from a 2 mm thick textile vinyl sheet between them. The insulating plate glued to the center of the transformer should be at least as wide as the thickness of the transformer. (The two-component epoxy resin can also be ordered at the cheapest price in the AliExpress online store. The best-known two-component adhesive resin here is Epokitt. It is available in all DIY stores, in a 210-gram package. Drying time is 2 days.)

There are also industrial mounting solutions, but they are made of magnetizable iron sheet and are quite expensive. One is a funnel-shaped plate that sinks into the center of the ferrite ring. It can be attached to the motherboard with a screw inserted into the hole in the middle. However, this steel plate draws magnetic energy from the transformer, which weakens its efficiency. The best solution would be for this plate to be made of thermoset vinyl and the edge would also hang over the side of the transformer. This cap would not only secure, but also make the transformer vibration-proof. If a bakelite cap is used, the insulating strip between the two coils must be formed in the cap by injection molding. (In case of a large voltage difference, the insulation between the two windings is essential.)

In the case of production in smaller series, buy enameled copper wire by the kilo, not by the meter, because it is cheaper that way. At the **Zotec.hu** Hungarian online store, the double varnished winding wire with a diameter of 0.2 mm costs HUF 8,550 in a 1 kilogram package. The spool has 3,553 meters of wire and has a polyester-Imid-based lacquer insulation and a polyamide-Imid outer coating. It is characterized by good mechanical loadability and can be used in an extremely wide temperature range. It is heat-resistant up to 200 °C, which is very beneficial for us, because the resonant frequency generator will be placed near or behind the radiator. In the case of assembly-line production, the Chinese supply the cheapest in large quantities. The enameled copper wires produced by the Shenke company are also provided with a two-layer coating. They are insulated with polyurethane and nylon. Their base material is soft copper, so they can be easily wound. Their heat resistance is also 200 °C. Website: http://hu.shenke-gr.com/enameled-wire/enameled-copper-wire.htm (If it does not start, you must copy it into the address bar of the browser.) Request for a quote:

[38] https://www.hqelektronika.hu/hu/ferrit-etd-vasmag-3f3-fer-etd29-3f3

info@zhejiangshenke.com Tel: +8615168788857

First, I tried the MKH106 small toroidal transformer coated with blue epoxy resin. His winding progressed very slowly. Even with the small spindle, I had difficulty winding the 0.1 mm diameter wire onto the 26 mm outer diameter ferrite ring. The hair-thin wire tangled four times and was excruciating to untangle. I wound all the wires delivered by TEMU, 50 meters. It was the result. With this, the amplifier was already working. First, I tried the 230 V and 7 W light bulb of the sewing machine. I set the amplitude of the function generator to only 0.5 V. Then I started to excite it with a sine wave while measuring the voltage connected to the lamp. There was a spike at 3kHz. This was probably the resonant frequency of the filament. However, the small toroidal transformer could not provide enough power to light the lamp.

I went up. To my surprise, at 12 kHz the lamp started to light up. At 17 kHz it was already at full brightness. Further increasing the frequency at 20 kHz suddenly died out. It wasn't the filament that burned out, but the overvoltage protective relay of the amplifier turned off the output stage. This protected my 1000 W amplifier integrated with the power supply from destruction. The voltage meter showed that the voltage applied to the lamp exceeded 400 V. (According to the brochure, the amplifier switches off at 500 V. Then the small red LED also goes out.) Fortunately, the 7 W light bulb was not destroyed either, it could withstand this short-term overexcitation.

After that, in order to protect the amplifier, I connected a 300 V varistor to the secondary output of the transformer, and then I put a 250 mA fuse. There was also a pitfall here. It turned out that the varistors do not open at the voltage value indicated by the manufacturers and create a short circuit in the circuit, but at twice this value. I don't know what the reason is. Having experienced this, I put a 150 V varistor in the circuit, which came into operation at 300 V. The size of the varistor doesn't matter either. High current must be used. The larger and thicker the varistor, the greater the probability that it will not be destroyed in the event of a short circuit and can be used longer. Only the fusible link needs to be replaced.

This mode of operation gave me a rather bad feeling. No resonance frequency anywhere, the lamp was on because the excitation frequency was so high above 12 kHz that it reached the power of the 50 Hz mains current. (The number of pulses increased and the pause time between them decreased.) Once the amplifier started working, I thought I would measure how efficiently the different waveforms supplied by the function generator excite the amplifier, as well as the toroidal transformer and the light bulb. I considered excitation with a sine wave as 100%. Compared to this, the saw wave (Triangle) was barely behind. The light was lit in the same way for the ascending and descending ladder (Pos-Ladder and Neg-Ladder) waves. The rising logarithmic wave (Exp-Rise) was not far behind them. However, the decaying logarithmic wave produced only 50% brightness. (The reason for this is that the free electrons in the descending branch have enough time to recombine.) For similar reasons, the rectified sine wave (half sine wave) did not excel. Only the Sinc, i.e., the impulse wave that stands out from the noise, is the past. However, a Lorenz wave similar to it caused a surprise. With it, the lamp shone just as brightly as with a sine wave.

The two-stroke rectified sine wave also behaved surprisingly. Not with the brightness it produced, because it was only 80% of the light produced by the sine wave. At this wave, the excitation frequency is halved. The lamp started to excite already at 8 kHz. It will probably do the same for the Quater sine wave, if it can be edited as an Arbitrary wave. The Multi-Tone, i.e. the wave of the audio amplifiers, on the other hand, had little effect on the lamp, even though it is similar to the Lorenz wave, only the peaks occur less often. The square wave proved to be the most effective. It excited the bulb about 20% stronger than the sine wave. (It is no coincidence that this wave is used in switching power supplies.) The CMOS wave was similarly intense. (This is nothing but a square wave raised above the t-time axis.) The worst is the noise wave. This was very disappointing to me. I thought it was mimicking ethereal noise. The lamp barely flickered from him. On closer inspection, however, this wave has a very broad frequency spectrum. Its amplitude is also constantly changing. The low-frequency and small-amplitude wave parts fall out of this type of excitation, and the rest can do almost nothing.

Finally, let's see if the efficiency of the best performing square wave changes by changing the Duty, i.e. the filling. In the default setting, Duty is 50-50%, i.e. the width of the pulse is the same as that of the pause signal. If it is increased or decreased, the brightness of the lamp will continuously decrease. And it turns off at 99% and 1%. It shines brightest with 50-50% filling. I would like to know the effect of the Quoter sine wave used by Tesla, which is a combination of a sine wave and a square wave. However, its frequency is twice those. The most exciting, however, would be the Soliton wave, if one of the signal generator manufacturers would be willing to include it among the main waves, or allow editing it as an Arbitrary wave.

Trying the ferrite transformer with an outer diameter of 50 mm did not reassure me either. It behaved essentially the same as the smaller ferrite ring. However, compared to its size, I expected more performance from it. Its sluggishness is presumably due to the fact that it is iron powder ferrite, the cutoff frequency of which is close to the frequencies I am examining. This will only become clear when the 65 mm diameter MnZn alloy ferrite ring arrives, which I don't know how I'm going to wind it yet, because I've run out of all the thin, enameled red copper wires.

The 50 mm ferrite transformer also responded to the different waves in the same way as the 26 mm version. Since this transformer was twice the size of the previous one, I thought it could flash a higher power light bulb. First I tried the 25 W lamp of the electric stove. It was only half as bright as the sewing machine light. For this, I started increasing the amplitude of the function generator up to the recommended 1.5 V. It was already burning brightly here. This was followed by the 60 W and then the 100 W incandescent lamp. They only burned with half a light. Then I further increased the amplitude of the signal emitted by the signal generator to 3 V. The amplifier was also able to withstand this.

However, the primary winding of the toroidal transformer overheated and started smoking. What should I do now? I can only reduce the current of the primary coil by increasing the number of turns of the secondary coil. However, it wouldn't fit more wires than that. For this, I switched off the transformer and galvanically connected the output of the amplifier speaker to the 100 W light bulb. The lamp was at full brightness at 16kHz and the amp didn't fail. After that, I connected 5 100 W light bulbs in parallel. They also burned with full light. The amplifier was able to withstand a load of 500 W. Thus, it became obvious that there is no need for a toroidal transformer, the switching mode excitation works without it.

After testing the light bulbs, I thought I should test how different electronic devices react to high-frequency power. They behaved very interestingly. The 3 W LED lamp with 10 kHz excitation already lit up with a terminal voltage of 120 V as well as with a voltage of 50 Hz - 230 V. LEDs love high frequency excitation. However, the nearby radio did not like it. He was terribly excited by it. Even when excited with 1 kHz, the 1 W turn signal LED lit up as if connected to mains voltage. When the frequency was increased to 2-3 kHz, it burned as brightly as the previous LED lamp consuming 3 W, and then burned out with a bang.

This was followed by the power supply for the news equipment. I connected the amplifier to the network cable of a table radio operating from a linear power supply. First I tried the sine wave set to 50 Hz. He didn't even blink. I started increasing the frequency. At 15kHz it suddenly sounded. At that time, there was 230 V on the terminals of his plug. However, it was impossible to listen because it was so loud that it drowned out the sound of all the broadcast stations. This was a big surprise. According to the literature, plate transformers saturate above 150 Hz. So how did this power supply come to life at 15kHz?

I also tested how switching power supplies react to high-frequency power. I used a power supply saved from my previous computer for this purpose. I connected another voltage meter to its 5 V output. After turning it on, the display of the voltage meter connected to the 5 V output jumped back and forth between 1 and 4 V. I also started testing with a 50 Hz sine wave. By increasing the frequency, I reached 230 V supply voltage at 16 kHz, which was measured by the other voltage meter. The voltage meter on the 5 V output continued to jump here as well. It seems that the switching mode power supply cannot handle the high frequency power supply. This completely confuses him. For-

tunately, this examination did him no harm. Plugged it back into the mains and it worked perfectly again.

The electric motor test promised to be the most exciting. What does a commutator motor do when a high frequency is applied to it? Nothing. When scanning from 1kHz up, the voltage on its terminals increased steadily, but it did not respond to it. At 350 V, the amplifier was then switched off by the overvoltage protection relay. Electric motors are wound at 50 Hz. They are paralyzed at a different frequency. The same is the case with asynchronous motors. I tried to start the removed engine of a broken refrigerator in this way. It didn't budge either. The current induced by the supply voltage flowed through the coils, but the rotor could not follow the speed required by the high frequency. If this current had remained on it for a long time, its windings would have burned out.

After that, I was curious about what low-power amplifiers are capable of. Of the 3 60 W amplifiers, 1 remained, which I did not destroy. I tested its functionality as a preamplifier. He sounded good now. After that, I disconnected the speaker from it and connected the primary coil of the large ferrite transformer. I connected the 7W light bulb of the sewing machine to the secondary coil. I reduced the amplitude of the function generator to 0.5 V. I even put a 50 kΩ resistor on the input of the amplifier so that it doesn't overdrive it. Then I turned on the power. This amplifier was also destroyed in an instant. Its integrated circuit has become short-circuited. It could not handle the toroidal transformer load.

Since I definitely wanted to find out whether amplifiers with a single power supply are suitable for resonant frequency excitation, I previously ordered a similarly small 100 W amplifier. This also required a simple 24 V power supply. It worked great as an audio amplifier. It thoroughly rocked my 70W speaker. Despite its small size, it also has a volume control trimmer potentiometer, which was not necessary, because it did not break even at full volume. Then I connected the large ferrite transformer to this as well. It didn't ruin it either. I started increasing the frequency. Between 100 Hz and 22 kHz, I measured a voltage of only 5-6 V on the terminals of the light bulb. Well, that won't light up the 230 V lamp. I eliminated the ferrite transformer for this. I was convinced it was going to go broke. He could handle that too. It even responded to an increase in frequency. At 25 kHz, the voltage meter already showed 40 V. However, this was still not enough to glow the 230 V lamp. Low power amplifiers are therefore completely unsuitable for this purpose. Regardless, this is an excellent stereo amplifier. If we buy 2 pieces of it, it is perfectly suitable for tuning our room. Only the price is better than its performance. It costs only 4 euros.[39] With a cheap 24 V power supply, you can make a stereo amplifier out of it, for which Western manufacturers charge ten times as much.

However, my goal was not this, but to find the resonance frequency of the metallic conductor and reduce its current consumption. However, I have not yet achieved this. Checking the current consumption of the amplifier chain revealed that the individual components (function generator, switching power supply, amplifier) consume a lot of current. This would make the tenfold reduction in consumption that I announced impossible even if I had managed to find the resonance frequency of the lamps. After thinking carefully, what is the need for all this? Why is it necessary to excite the filament with expensive, complicated and delicate circuits? You should choose the solution that the bad light switch in my room did 10 years ago. The mains power must be interrupted. Since the mains current is quite strong, no amplifier is needed. If you chop at the right frequency, you don't even need a signal generator for excitation.

Since the mechanical chopper used by Tesla is not stable enough and requires frequent maintenance, it must be done with a switching power supply. You don't have to do anything else with it, except to remove the high-capacity buffer capacitors from its output, which smooth out the pulsating direct current. We need this pulsating square wave. This can also be connected to the load without a toroidal transformer. The mains voltage is so strong that it doesn't matter what the load's internal resistance is. The sewing machine's lamp with an internal resistance of 500 Ω glows in the same way as the 5 Ω internal resistance of a 10 kW fireplace. We should entrust a company developing switching power supplies to develop such a power supply for us. As an additional service, it

[39] https://www.aliexpress.com/item/1005006245051568.html?gatewayAdapt=glo2nld

would only be necessary for the frequency of current interruption to be adjustable between 100 Hz and 100 kHz with a potentiometer. There is no need for voltage regulation, because the resonance frequency does not appear suddenly, but builds up relatively slowly, so the temperature of the radiator can be controlled by underexcitation.

It would also be advisable to entrust this task to experts, because resonance frequency excitation is very disturbing to analog devices. The radio 2 meters away beeps and hisses. And a radio placed near the generator will be so noisy that no station can be heard on it. Scanning its scale, you can hear nothing but hissing and squealing. However, those with decades of experience in the development of switching power supplies are able to filter out these noises with complicated filter circuits. If we were up to it, it would take years for us to reach professionally where the greats of this field are standing. In any case, it is not worth developing something that has already been done by others. Parallel developments usually turn out to be nothing more than a waste of time and money.

A more perfect solution than the switching power supply is what the paraphenomen make. The world-famous British magician Dynamo is able to light a traditional tungsten filament light bulb without any aids. In the video http://www.figarobuveszbolt.hu/katalogs/closeup/ckorte it is clearly seen that Yin energy-emitting thumb and middle finger touch one of the poles of the light bulb, in this case the screw thread.[40] The index finger emitting Yang energy rests on the glass cover of the light bulb, and the ring finger also emitting Yang energy hangs in the air. We should ask the English paraphenomenon to help us develop. We just want to know what kind of energy flows from your fingers. To do this, you should do nothing more than touch the two crocodile clips of the oscilloscope with two fingers. First, insert a USB 3.0 or 3.1 pen drive into the USB connector on the front panel. Then press the **Measure** button on the front panel. After that, all the parameters of the detected wave will be visible on the screen. Not only its amplitude and frequency, but all its characteristics. After the desired wave appears on the screen, press the **SAVE TO USB** button. The screenshot is saved to the pen drive in PNG format. Click on it and it will appear in the Paint program. (All digital oscilloscopes are capable of taking pictures of the screen.)

If concentrated Yin or Yang energy flows from your fingers, it can only be a longitudinal wave. It is questionable whether our devices operating on the electromagnetic principle can detect purely magnetic waves. If not, we have one more reason to reconstruct the Tesla converter. The Tesla converter is the simplest, cheapest and most efficient amplifier. It produces a purely magnetic wave. This longitudinal wave makes it possible to artificially induce all esoteric phenomena. Raymond Rife's frequency generator operated with a concentrated longitudinal wave, which destroyed all microbes. A 5-minute magnetic irradiation was sufficient to cure cancer patients. Concentrated magnetic waves are also needed to make rain and control the weather. The chronovisor is based on the detection of longitudinal waves and the device enabling remote observation is also based on longitudinal waves.

Communication with extraterrestrial civilizations hundreds or thousands of light years away also requires longitudinal signal transmission. The principle of operation of anti-gravity engines is also based on magnetic waves. Electromagnetic waves only cause us harm. (Electrosmog, cancer, brain tumor, insomnia, depression.) Their main disadvantage is that they stick us to the level of technology of 100 years ago. The outdated technology that comes with it cannot solve the ever-increasing problems of our world. This requires a paradigm shift. If we do not use the escape route offered by the ether, our world will inevitably perish. Condensing etherions and gravitons can do wonders.

They don't harm our health either. Gravity is an essential part of our physical existence. Without it, we wouldn't stay on the globe, we would fly off into outer space. Like gravitons, etherions also permeate every atom of our body. So much so that we are also made of ether. They are incorporated into the etheric body we bring with us. All living beings and inanimate objects have an etheric body. The etheric body determines where and how much etherion must be concentrated in order to form

[40] The lung meridian is located on the thumb, and the blood vessel lord meridian is located on the middle finger. Both meridians are Yin in nature, meaning that gravitational energy flows from these fingers. However, the fingers of paraphenomena emit at least one order of magnitude more energy than the average person, which is already capable of heating a light bulb.

the physical body. Since we are made of ether ions, the ether does not harm us, but gives us life. Together with gravitons, they fill our body with energy. Our meridian system, which collects etheric and gravitational (Yang and Yin) energy, takes care of replenishing used energy and maintaining our health. If the energy balance of our meridian system is upset due to some external harmful influence or our unhealthy lifestyle, then we get sick.

Returning to the previous topic, if it is possible to raise the excitation energy to several kilowatts, it is worth choosing the **Brilagi – Electric convector heater 750/1250/2000W** type among the radiators. It does not have temperature control electronics, so there is no need to separate the heating coil. (The temperature is regulated by a mechanical thermostat, (bimetal) switch. The price is only HUF 12,990.[41] Those who feel nostalgic for old, wood-burning fireplaces can find an ample version in the attachment folder. These are not much more expensive than the featureless heat radiating modules. In order to avoid the risk of fire, it is worth paying attention also for oil radiators. The temperature of these milk-sealed radiators does not exceed the temperature of central heating radiators. Therefore, it can also be installed on the wall, under the window. It will not set fire to the curtain above it.

Its output can reach up to 3 kW and it is not more expensive than thermal fireplaces. Exciting them is not a problem because they also have a bimetallic temperature controller. With this method, millions of savings can be achieved in the industry, in the monthly electricity bill. In this way, inflation resulting from the rise in energy prices can be eliminated. Bakers would certainly be happy if they could reduce the power consumption of their multi-tray electric oven to a fraction of what it used to be. It would be worth testing whether the electric arc furnaces of steelworks can be excited in this way. If so, there are some horrible savings to be made here. However, for industrial use, a much higher power supply unit must be used. These devices must also be handled with care. Do not touch them, because the 320 V peak voltage of the mains can cause a fatal electric shock. We can only touch them with the rubber gloves used by electricians![42] This device is not cheap, but it is much cheaper than the solar panels[43] installed on the roof or the heat pump system created under the building. The cost of the investment pays off in a few months, and then we can heat it almost for free for years.

After the successful development and the acquisition of a power supply with the appropriate performance, all that remains is to assemble the device. The individual units are installed in a magnetically shielded iron sheet box, not a plastic one. Fasten it to a 4-5 mm thick textile vinyl sheet, and if the developer did not do this, put it in the box bent from at least 1 mm thick galvanized iron sheet. (In this way, we also comply with the contact protection regulations.) If the power supply gets hot, ventilation holes must be drilled on the top and bottom of the iron box. If it still gets hot, a fan must be installed. For this purpose, it is advisable to use fans with a diameter of 80-120 mm used in computers. (It can be purchased cheaply in specialist stores selling electronic components. Use a ball bearing, because the plain bearing will wear out after a while and will rattle.)[44] Do not

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[41] https://www.lampak.hu/brilagi-elektromos-konvektoros-futotest-750-1250-2000w-termosztat/?gclid=CjwKCAjwmbqoBhAgEiwACIjzEBzkNq9vilk1xIXdbfK_FDicWcF38hgl8DEIeLXS_Cgt1cDAossalxoCBAgQAvD_BwE

[42] In the Functional description of the Tesla converter, we can find the address of the online store where it can be purchased. It can also be ordered much cheaper from the AliExpress online store. Price: HUF 4,800 (5 pairs). Available in M and L sizes. Web address: https://www.aliexpress.com/item/1005005511246874.html?spm=a2g0o.productlist.main.25.66ca553bowUf5E&algo_pvid=a718886f-a954-4f16-8550-8f53a8a8b902&algo_exp_id=a718886f-a954-4f16-8550-8f53a8a8b902-12&pdp_npi=4%40dis%21HUF%2114675.56%214799.6%21%21%21281.03%21%21%40210321c31696104737290145 8e91c3%2112000033701631091%21sea%21HU%212803401475%21&curPageLogUid=mSR4d8OsX4Cb

[43] A solar panel installed on the roof together with the energy storage battery min. It costs HUF 6 million. The state supports this with HUF 5 million, for which the Hungarian government allocated HUF 75 billion. There is money for this, but not for the production of free energy. The design of a geothermal heat pump is even more expensive. The payback cost of this is min. 10 years.

[44] A 12V DC voltage is required for its power supply. The power supply provides us with this as an auxiliary voltage. If not, you can find a battery charger that supplies 12 V in mobile phone dismantlers. (These are mostly massive transformer chargers, which is why they can withstand a maximum load of 160 mA.)

connect the metal box to the GND point of the circuits, but install a grounding clip on it. If, despite the Faraday cage shielding, interference noise occurs in our broadcasting devices, the iron box must be grounded. (The water pipe is also suitable for this, but only if it does not contain a plastic pipe section.)

In the case of fireplaces, it is worth installing the generator behind the stove so that it does not spoil the view. Fasten it to the wall. (Make two keyhole-shaped cutouts on the back and hang it on wooden screws drilled into the wall. This way, you can easily hang it up and move it to another room together with the heater. It is advisable to hide the outlet and the network cable behind the heater. Due to the high temperature, heat- resistant silicone cables up to 200°C must be used in the production of the device. This is also offered by AliExpress at the cheapest price. The resistance of the flexible cables they offer, made of hair-thin, tinned copper wire, is very low, which restrains the excitation of the components.[45] This generator's its development involved many pitfalls, but its application is now easy. If this method works, then we will be freed from this effort, because the manufacturers will install this switch-mode power supply in all electric heaters, electric stoves and water heating boilers.

It is incomprehensible why physicists have not figured out this method of excitation, why this phenomenon has not been exploited until now. Over the past 200 years, millions of electrical engineers and electrotechnicians have been active in this profession, and no one thought that the heating coils are fed with current of a higher frequency than 50 Hz. Using this physical phenomenon, the current consumption of most electrical consumers can be reduced to a fraction of the nominal current. The population uses 72% of electricity for heating and cooling, 13% for producing hot water, and 5% for baking, cooking and ironing. This is a total of 90%. Only 10% is used for lighting and operating electrical and electronic devices.

With such rates, the use of resonant frequency feeding will be a huge relief for us. The electricity bill is radically reduced from one month to the next. Cheap electricity lowers skyrocketing energy prices and the resulting inflation. In addition, cheap and clean electricity contributes greatly to stopping global warming and avoiding climate collapse. Since electricity will be the cheapest source of energy, we will no longer use fossil fuels. There will be no need for natural gas or petroleum, and we will also get rid of dangerous nuclear energy.

A wire potentiometer, not a carbon layer, should be used to control the frequency.[46] The carbon track wears off after a while, and the potentiometer will have a contact fault. The control shaft must not be led out onto the device housing. Stay in it and the end should be slotted up. Then a rotary knob, which ends in a small screwdriver, must be attached to the device. When adjusting, the extension of the control button must be inserted into the hole in front of the potentiometer so that the screwdriver fits into the slot of the potentiometer shaft. Below the rotary knob, the front panel must be calibrated for frequency. (This safety solution is necessary so that children cannot unscrew the control knobs, because in this case the heating pad will burn out.)

When using the resonance generator, first insert the control knob into the opening of the potentiometer and set it to minimum by turning it to the left. After that, connect it to the device to be excited (radiator, boiler, etc.) Slowly raise the frequency and see at which value the resonance occurs. Then increase its value until the voltage meter connected to the heating coil shows 230 V. Be careful not to overheat the heating element, as it will quickly burn out. It is advisable to heat it slightly

[45] https://www.aliexpress.com/item/1005006147608322.html?spm=a2g0o.detail.1000014.3.3d095Dyr5Dyr5c&gps-id=pcDetailBottomMoreOtherSeller&scm=1007.40050.354490.0&scm_id=1007.40050.354490.0&scm-url=1007.40050.354490.0&pvid=dbd49af4-b831-44e6-b6c4-653f25a55fa2&_t=gps-id:pcDetailBottomMoreOtherSeller,scm-url:1007.40050.354490.0,pvid:dbd49af4-b831-44e6-b6c4-653f25a55fa2,tpp_buckets:668%232846%238108%231977&pdp_npi=4%40dis%21HUF%21185.54%21148.53%21%21%213.71%212.97%21%402103010f17059215343638656ee12b%212200035976016099%21rec%21HU%212803401475%21&utparam-url=scene%3ApcDetailBottomMoreOtherSeller%7Cquery_from%3A

[46] A helical wire potentiometer is most suitable for this purpose. The multiturn wire potentiometer (helipot) achieves not one, but 10 revolutions from the initial value to the final value. This allows the desired resistance value to be set very precisely. (Such wire potentiometers are also found in signal generators.)

below the operating temperature, as this will significantly extend its service life. After setting, remove the rotary knob. This procedure can only be used for appliances that do not have an electronic thermostat. In case of high-frequency power supply, the transformer of these circuits will burn out, which will destroy the circuit. In the future, this setting will not be necessary, because the manufacturers integrate the resonance frequency generator into all devices with heating pads. This will not increase the price of the device by much. This additional cost pays for itself in the first year.

The order of magnitude reduction in supply current makes it possible to bring back traditional incandescent lamps. Many people like them because the color temperature of tungsten filament lamps is most similar to sunlight. The LED lamp also consumes little electricity, but its vibrations tire the brain and cause insomnia. The eye does not perceive this vibration, but the brain does. (It is characteristic of the frequency tolerance of the LED that it can also vibrate at a frequency of GHz. However, due to its thermal inertia, the tungsten filament does not even flicker at 50 Hz.) In this case, it is not advisable to install the resonance generator in the light bulb, because there is an order of magnitude difference between the lifetimes of the two units. The excitation circuit must be installed in a porcelain socket, which is screwed into the socket of the light fixture, into which the light bulb is screwed. If the resonance frequency of the tungsten coil changes as it wears out, a small wire potentiometer must also be installed in this socket, which can be adjusted with a screwdriver.

With resonant excitation, the consumption of refrigerators and air conditioners can also be reduced. Millions of air conditioners are being bought worldwide these days due to the heat wave caused by global warming. An air conditioner is actually nothing more than a refrigerator. It differs from the kitchen refrigerator only in that it has two fans. One is in front of the cooling grid and blows the extracted cold air into the space to be cooled. The other sucks the warm air in front of the evaporator and blows it outside through a pipe. Both devices are compressors, which means they can only be operated with alternating current. In case of high-frequency excitation, the motor burns out. It cannot follow the speed dictated by the high frequency.

However, there is also another type of refrigeration equipment, the adsorption one. The essence of this system is that the coolant is not circulated by an electric motor, but by a temperature difference created by a filament. Half a century ago, it was produced in several countries, but with the decrease in the production cost of electric motors, they stopped producing it. Today, they are only produced in small sizes, for mini-studios and caravans. In narrow living spaces, the refrigerator cannot be placed in the kitchen or pantry. It must be operated in the room where the noise generated when the compressor starts and stops will wake up the sleepers.

Adsorption refrigerators are not produced on a large scale, because the production cost is much higher than the compressor version. However, the trend can be reversed if the heating coil is supplied with resonant frequency. Due to an order of magnitude lower power consumption, the higher purchase price will pay for itself in a few years. Another great advantage of the adsorption refrigerator is that it is completely silent. There is no engine noise, and there is no vibration noise associated with starting and stopping the engine. The air conditioners will also become quieter, although the whirring of the two fans will still be heard.

On the other hand, the overloading of the network, which occurs due to the fact that air conditioners are now used in almost every apartment in the southern countries, will be eliminated. The reduction in power consumption will be of great importance, especially in the case of air conditioners installed in cars. The current air conditioners consume so much electricity that the engine must be running even when the vehicle is stopped or parked, because the battery cannot handle the associated load. This in turn pollutes the air, not to mention high fuel costs. The battery will probably also be able to supply power for the air conditioner operating at the resonance frequency. The noise associated with the whirring of the engine, which disturbs both the occupants of the stopped car and the people around it, also disappears.

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