

# What I think is the basis of a Toroid Power Unit

The basic principle of deriving free energy from wave fields can be understood even without higher mathematics. When two waves with identical polarization, frequency, phase and amplitude propagate in the same direction and meet (and merge) in free space, then their amplitudes will add together and the amplitude of the resultant wave will be **double** that of a single input wave. This physical phenomenon is called superposition or interference of the waves, when (under the above conditions) the amplitude of the resultant wave is calculated by simply adding together the amplitudes of the incoming waves. The energy content of a wave is directly proportional with the **square** of its amplitude. This fact has a profound impact on the energy balance of the wave fields.

Calculating the energy balance of the above example, we get that if two units of energy enter the system, then the energy of the output resultant wave will be (calculated as the **square** of the resultant's amplitude, that is) **four** times that of one single input wave (and not only double). As we see, two units of energy enter the system and four units leave, that means we have gained two times more energy than what we have fed into it. If we take two units of energy from the output and feed it back into the input, then there are still two units remaining for utilization and the process can go on continuously.

## Longitudinal waves

The above rough explanation can serve as a first step approximation towards the understanding of the phenomena, but for its more specific and exact demonstration the use of some mathematics is unavoidable. Now let's try to understand it more exactly with the use of some calculations but still avoiding higher mathematics.

Let us consider two identical low intensity three dimensional waves propagating in the same direction freely in a medium (e.g. sound waves in air) to be the time function of sine (or cosine). Then at a fixed point in space they can be described as:

$$p_1 = p_0 \sin(ax) \text{ and } p_2 = p_0 \sin(ax)$$

using notation:  $p_1$  and  $p_2$  – momentary values of pressure change,  $p_0$  – amplitude of pressure oscillation,  $\omega = 2\pi f$  where  $f$  is the frequency,  $t$  – time.

When they meet in space and by merging together produce a resultant wave, then the time function of the resultant wave can be calculated using the principle of superposition:

$$p_r = p_1 + p_2 = p_0 \sin(ax) + p_0 \sin(ax)$$

$$p_r = 2p_0 \sin(ax)$$

For the sake of illustration in *fig. 1* we have taken the value of  $p_0 = 10^{-9}$  atm.

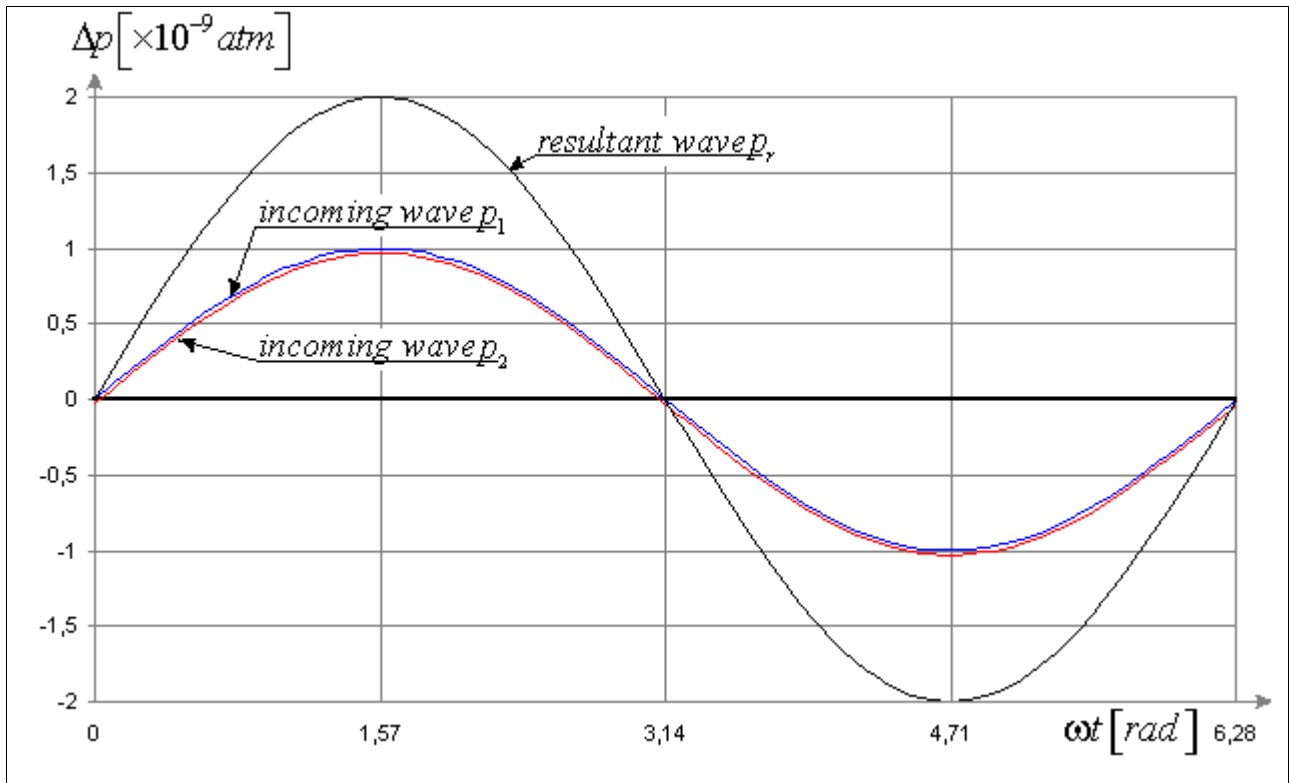


**Fig. 1.**

We can see that the amplitude of the resultant wave is  $2p_0$ , which is 2 times the amplitude of a single incoming wave  $p_0$ . The time mean value of the energy density (energy content per unit volume) of a longitudinal wave propagating in a medium is calculated as:

$$(1) \quad \bar{w} = \frac{1}{2} \frac{p_0^2}{\rho_0 c^2}$$

where  $\rho_0$  is the density of the medium when waves are not present, and  $c$  is the speed of wave propagation in that medium.

Now let's calculate the energy densities of the incoming waves and that of the resultant wave, and compare the results. The energy density of a single incoming wave is the same as in equation (1). Since we have two such incoming waves, the total average input energy per unit volume should be:

$$\bar{w}_{\Sigma} = 2\bar{w} = \frac{p_0^2}{\rho_0 c^2}$$

While calculating the energy densities of waves we will assume that the examined volume is so small, that the relative phase relationships of the waves are identical in every point within that volume with good approximation. If the two waves would enter the examined volume non-simultaneously, then the same amount of energy would leave as it entered, and the law of energy conservation would remain valid. But if the two incoming waves enter simultaneously and with identical phase, then they will merge together, producing one single resultant wave of amplitude  $2p_0$  according to the rule of superposition. The average energy density of this resultant wave according to equation (1) is:

$$\bar{w}_r = \frac{1}{2} \frac{(2p_0)^2}{\rho_0 c^2} = \frac{1}{2} \frac{4p_0^2}{\rho_0 c^2} = 2 \frac{p_0^2}{\rho_0 c^2} \Rightarrow \bar{w}_r = 2\bar{w}_{\Sigma}$$

This result shows that as the consequence of the interference of two waves, the average energy content of the examined volume will be **two times greater** than the total average input energy supplied by the two input wave packages filling that volume. With other words if the total input energy supplied by the two input wave packages to the examined volume is one Joule, then after the interference two Joules of energy will leave the same volume.

The above result – when we gain excess energy – is valid only if the two waves meet with identical phase (i.e. both have their maximums and minimums at the same time, at the same place).

When they meet in counter phase (i.e. one has its maximum when the other has its minimum) then during the interference the waves will add together as follows:

$$p_1 = p_0 \sin(at) \text{ and } p_2 = p_0 \sin(at + \pi) = p_0 [\sin(at) \cos \pi + \cos(at) \sin \pi] = -p_0 \sin(at)$$

$$p_r = p_1 + p_2 = p_0 \sin(at) - p_0 \sin(at)$$

$$p_r = 0$$

The two waves mutually annihilate each other and the amplitude of the resultant wave will be zero, or with other words there will be no resultant wave leaving the volume. In this case instead of gaining excess energy we would lose or **annihilate the total input energy**.

If the relative phase shift between the two input waves has some value between 0 and  $\pi$  then the energy of the resultant wave will be between  $2\bar{w}_x$  and 0.

The same principle is valid for the interference of more than two waves as well, with the difference that the maximum possible energy gain will not be double, but it will depend on the number of components. In the case of  $n$  longitudinal waves with identical phases, amplitudes, and frequencies, propagating in the same direction we get:

$$p_1 = p_0 \sin(at); p_2 = p_0 \sin(at); \dots p_n = p_0 \sin(at)$$

$$\bar{w}_x = n\bar{w} = \frac{1}{2} \frac{np_0^2}{\rho_0 c^2}$$

$$p_r = p_1 + p_2 + \dots + p_n = p_0 \sin(at) + p_0 \sin(at) + \dots + p_0 \sin(at) = np_0 \sin(at)$$

$$\bar{w}_r = \frac{1}{2} \frac{(np_0)^2}{\rho_0 c^2} = \frac{1}{2} \frac{n^2 p_0^2}{\rho_0 c^2}$$

If we compare the total input energy with the output energy of the resultant wave:

$$\xi = \frac{\bar{w}_r}{\bar{w}_x} = \frac{\frac{1}{2} \frac{n^2 p_0^2}{\rho_0 c^2}}{\frac{1}{2} \frac{np_0^2}{\rho_0 c^2}} = \frac{n^2}{n} = n$$

we get  $n$  times more energy from the resultant wave than the total energy of the input waves.

## Electromagnetic Waves

Since the electromagnetic waves are transversal waves and consist of two components, the analysis is a bit more difficult than with longitudinal waves. One component is the electric field, and the other one is the magnetic field, which is perpendicular to the electric component. The basic principle described above is also valid for this case, but only if the incoming waves have the **same polarization** as well. If the polarization of the incoming waves have  $90^\circ$  or  $270^\circ$  relative difference in direction, then the law of energy conservation will remain valid for all amplitude-, phase-, and frequency conditions. But in all

other cases the validity (or violation) of the law of energy conservation will depend on the relative phase relationships and other parameters.

We will not analyze the electromagnetic waves here like we have performed for the longitudinal waves above, since the same method of calculation can be adapted for the electromagnetic waves with identical polarization, frequency, phase, and amplitude propagating in the same direction

$$E_1 = E_0 \sin(\omega t); E_2 = E_0 \sin(\omega t); \dots E_x = E_0 \sin(\omega t);$$

when the time mean value of the energy density

is calculated as:

$$\bar{w} = \epsilon E_0^2 = \mu H_0^2$$

where  $\epsilon$  is the dielectric constant, and  $\mu$  the magnetic permeability of the medium,  $E$  is the amplitude of the electric field intensity and  $H$  is the amplitude of the magnetic field intensity. This would lead essentially to the same conclusions about the energy balance as derived for the longitudinal waves above.

Our simplified analysis is valid only for specific very limited conditions, for a small volume of examined space. The skeptics might say that the above determined violations of the energy conservation are valid only locally for that small volume. But since in practical cases it is not possible to satisfy the same conditions for the whole space at the same time, the relative phase relationships would change significantly for different coordinates of the space. Therefore while gaining excess of energy in some places, we would lose the same amount at other places, and if the total energy balance would be calculated for the whole space, then the law of energy conservation would remain valid. This explanation is, however, wrong and it can be disproved easily with careful and exact calculations even for practical cases.

A further question is that if an excess of energy appears, or an existing energy disappears as the result of the interference of waves, then from where does it come from, or to where does it disappear? In the case of longitudinal waves propagating in a medium one might imagine that the excess of energy is derived from the heat of the medium and the energy that disappears is transformed into heat (although this is not true). But the case of electromagnetic waves is a bit more mysterious. If we stick to the idea that when the electromagnetic waves propagate in vacuum, in that empty space there is no medium, then there is certainly no explanation for the question. But if we assume that there is a medium that fills even the vacuum, which might be called ether (it does not have to be a static medium), then we get some basis for the explanation.

We can get closer to the understanding if we compare the characteristics of the energy propagation of waves, and other forms of energy propagation. First it is important to understand that in waves the energy is not transmitted by macroscopic movements of the particles that compose the medium. The particles do not move macroscopically, but oscillate around their original neutral positions, only the energy moves through macroscopic distances. This is the reason why a sound wave can pass thousands of meters in few seconds even though the air does not move macroscopically.

We could say that this is not a unique characteristic of the waves, since even in the case of heat conduction the energy propagates through the medium while the medium can be practically motionless. The main difference between these two is that the heat on microscopic level does not propagate in an organized manner and in a specific direction. It is not spreading exclusively from the source towards the infinity, but the direction of the macroscopic resultant energy flow will be determined by the heat (and energy-) potentials (temperatures) of the different regions in the medium. The molecules oscillate chaotically and therefore there is no organized direction of propagation on microscopic level. Consequently the macroscopic resultant direction of the heat conduction will go from the higher temperature towards the lower temperature (from the higher energy density towards the lower energy density) only (if no external heat pump is active).

The waves however, if unhindered, will propagate from the source towards the infinity, and the macroscopic energy flow will not be determined by the energy potentials of the medium. At the same time at the microscopic level there is an organized movement of energy in a specific direction. The waves are "transparent" to each other, and they do not exchange their energies by "collision" or by any other means while crossing each other's path in free space. A wave will not be reflected from another wave while crossing its path, independently of the energy density of the other wave, but it will simply

pass through it, as if the other would be nonexistent. Therefore in the case of waves the energy can propagate even from a place of lower energy density towards a region of higher energy density, as it is happening in the case of interference. These considerations are only the first step towards a deeper understanding of the nature of waves, and we will come back to the issue later.

## Practical considerations

Finally let's see how can this principle be utilized for the generation of free energy in practice.

To create the initial conditions of the process, we need an energy source to feed two or more radiation sources. The radiators should be arranged so as to have minimal back coupling between them (the wave radiated from the 1st source should cause minimal, or zero energy loss in the 2nd source and vice versa). If the arrangement allows the waves to expand in free space as spherical waves, then after the interference of the waves we will have to find a way to collect them again into a receiver antenna for utilization.

The above calculations of energy gain represent the theoretical maximum values, but in practical arrangements we will have to be satisfied with lower gains, since many factors tend to diminish this energy gain. Let's suppose e.g. that the practical setup does not generate double output energy after the wave packages pass through the amplification chamber but only 1,5 times the input energy. If we make a positive feedback, then the initial external energy source can be disconnected from the apparatus without stopping the generation of free energy. Naturally the divider and regulator should feed back enough energy to continuously keep the process going, and also to cover the losses in the feedback loop. The schematic illustration of the process is shown in *fig. 2*.

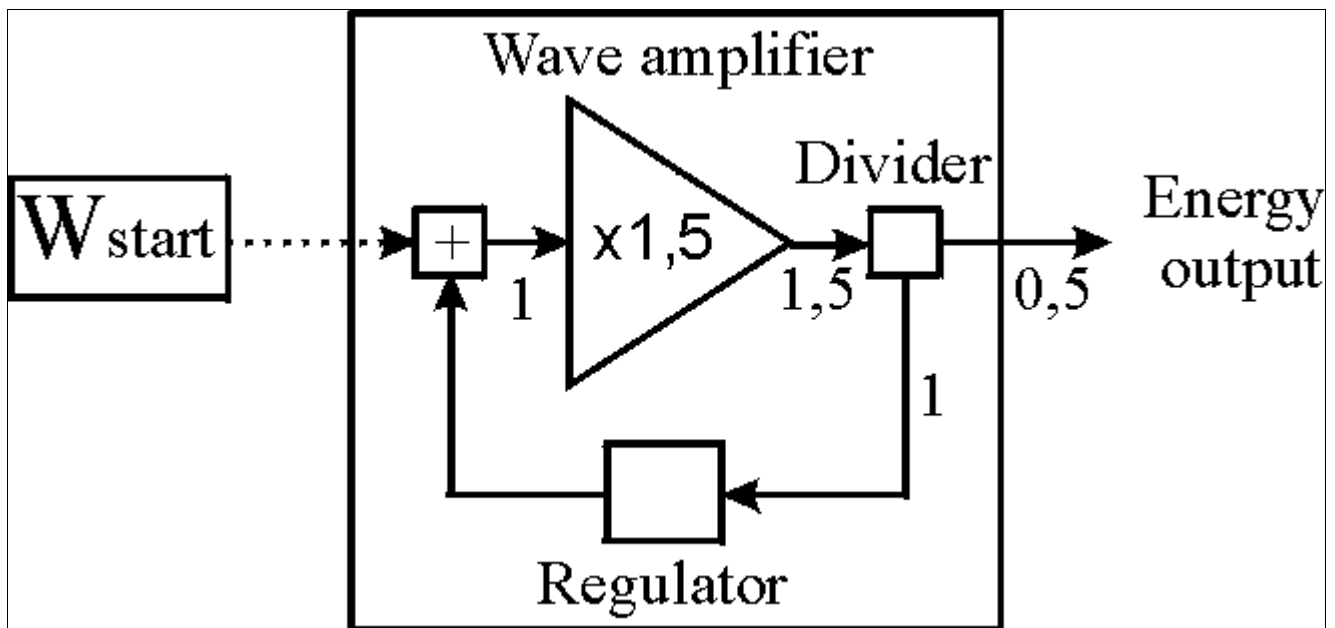


**Fig. 2.**

Although at first sight the less than 50% of energy gain of the interference chamber seems to be unimpressive in our example, still even with such an arrangement the maximum available output energy is limited only by the energy conducting capacity of the parts. After starting the device, the input energy source can be disconnected, and the energy generation process will be self sustaining. During the startup process the regulator feeds back more energy to the input than what has started the amplification cycle. Consequently the amplitude and energy of the wave circulating in the system will continuously increase from few watts of the starting input to several kW to be utilized at the output. Since there is no further need for any input energy, the coefficient of performance of the device will be infinite. The level of output energy can be adjusted through the regulator, and it does not depend on the

strength of the starting energy source. While few watts of input power can start the process, the device can provide several kW of power continuously at the output, even with the external starter energy source disconnected.

Using sound waves in practice it might appear to be difficult to achieve noteworthy outputs, since the practical limit of energy density is quite low in such conventional arrangements. However, since the creation of this article, new acoustic technologies made it possible to maintain high energy densities in special resonator types, and using the described principles can generate usable quantities of excess power.

Using electromagnetic microwaves it is possible to make very efficient, relatively cheap and compact devices without any moving parts. The output of such generators can vary from several W to the range of GW, depending on the size and types of the components. As you can see, this is a real free energy principle that is based on the law of wave superposition and on the equations for calculating the energy density of a wave, which are accepted by official science. No new theory has been created, only the existing knowledge clarified and interpreted in the correct way, and it's possible new applications suggested.