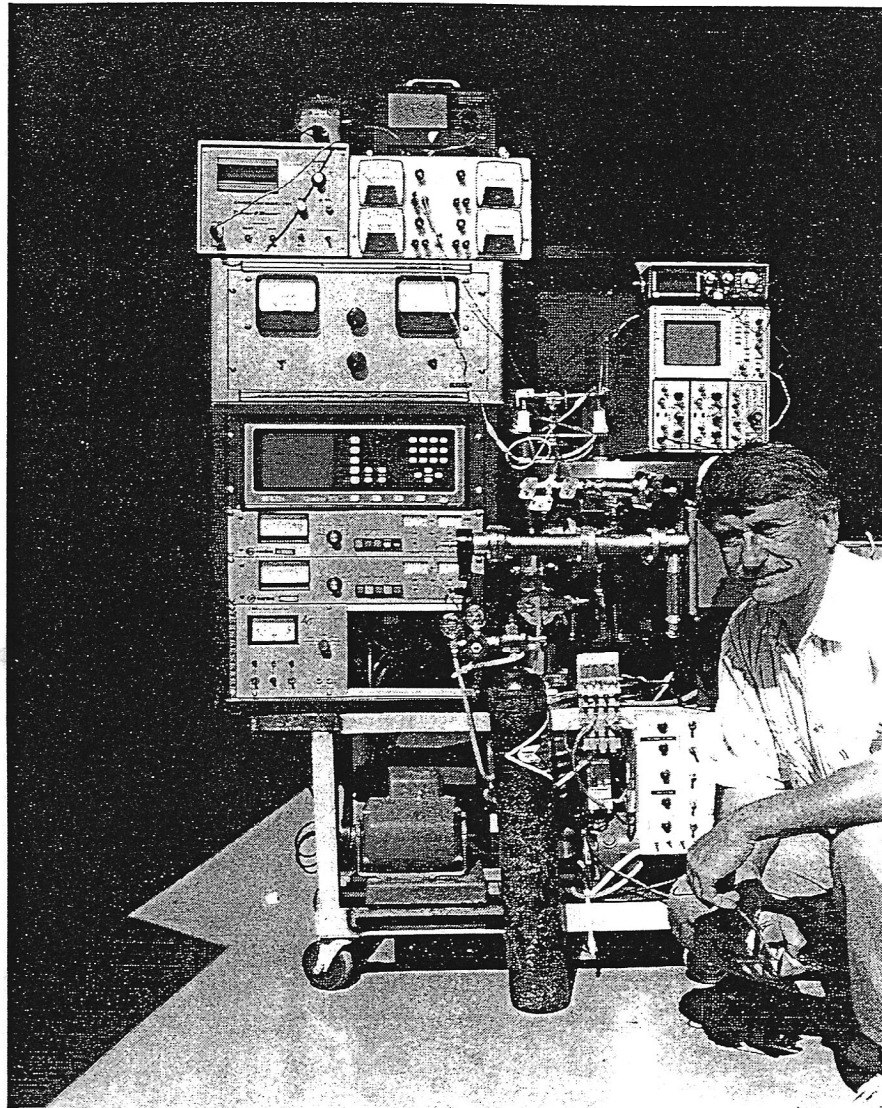


FULCRUM®

The Science Journal of The University of Science and Philosophy

In This Issue:

A Report on the Russell Science Research:
Transmutation of Nitrogen to Lithium and Helium



Ron Kovac

Russell Science Research Team's 2nd Generation Transmutor
w/Residual Gas Analyzer

The following article comes via Toby Grotz, the electrical engineer on the Russell Science Research Team. Paul Raymond Jensen offers his idea free to the world. Thank you Mr. Jensen. We welcome your feedback, comments, or questions regarding this or any other article.

THE UDT

by

Paul Raymond Jensen

I have built a transformer which supplies more power to its load than is drawn from its primary source.

I named this device **The Unidirectional Transformer (UDT)**, because the magnetic reaction of the load current does not affect the magnetic action of the primary circuit.

The UDT is composed of a parallel LC resonant primary, a split secondary, a gapped magnetic core, and a "feedback winding." Virtually the only input power needed is that used to magnetize the core.

The magnetic core I used came from a small 60 Hz commercial power transformer made of interleaved silicon steel E and I laminations. I took the core apart, separated the Es and the Is, and made one stacked E core and one stacked I core from the laminations. Then I filed down the center leg of the E core about 15 mils to gap the combined E-I transformer core. The resulting μ of the core at 60 Hz was about 100.

The primary winding is wound on the center leg of the core. The two secondary windings are wound on the two outer legs of the core and are series connected. Both secondary windings have the same number of turns. The "feedback winding" is wound over the primary on the center leg and is connected in series with the secondary.

The free-energy action of the UDT follows directly from the laws of magnetic circuits.

Consider what happens when an AC sine voltage is applied to the UDT primary. A magnetizing current flows, which can become rather high

because of the low μ of the core. Fortunately, gapping the core results in a fairly constant μ through the entire AC cycle, up to a peak H of about 720 A-T/M. This results in a constant primary inductance, which permits parallel LC resonance. Resonating the primary reduces the magnetizing power to that necessary to match $I^2 \cdot R$ losses in the primary and the hysteresis losses in the core.

Magnetizing the core results in an AC sine voltage being induced across the secondary. The magnetic coupling between the primary and the secondary is very high, but the core area within each secondary winding is only one-half that of the primary. This means that the volts/turn of the secondary will be only one-half that of the primary. For the secondary voltage to equal the primary voltage, the secondary must have two times the number of turns in the primary.

The primary also induces a voltage across the feedback coil, but the purpose and characteristics of the feedback coil will be explained later.

When a current is drawn from the output, the two secondary windings each generate a magnetomotive force (MMF) directed against the MMF of the primary. The MMF of each secondary winding "sees" a series-parallel magnetic circuit through the transformer core. One magnetic circuit, "seen" by each secondary winding, is through the center leg of the core. The other magnetic circuit "seen" by each secondary winding is through the two outer legs of the core.

The resulting magnetic flux generated by the MMFs of the two secondary windings is depen-

dent upon the reluctances of each of the magnetic circuits. Because the center leg is gapped, it has a higher reluctance than do the outer legs. This means that less magnetic flux from the secondary will pass through the center leg than will pass through the outer legs.

In my transformer, the reluctances of the magnetic circuits through the center leg were three times higher than the reluctances of the magnetic circuits through both outer legs. This was difficult to achieve and required hours of filing, polishing and fitting of the E and I cores. The alternative was to increase the gap, which was not acceptable in my particular design because I was driving the transformer at 60 Hz and could not afford any additional loss of μ in the core.

Since the reluctances of the "center leg circuits" were three times higher than the reluctances of the "outer leg circuits," one-quarter of the secondary flux passed through the center leg, while three-quarters of the secondary flux passed through both outer legs.

The magnetic flux from the two secondary windings cancels in the "outer leg circuits," leaving only one-quarter of the total flux generated by the output current to react back upon the primary. This resulted in a current gain in the secondary, relative to the primary. Lenz's law was bypassed, and free-energy resulted.

An alternate explanation for the current gain in the UDT is to consider each secondary winding as acting as the primary winding for the other secondary winding when an output current is drawn because the two secondary windings generate geometrically opposing fields.

Now consider the "feedback winding." It is connected in series with the secondary and is wound over the primary winding on the center leg of the core. When the core is magnetized, an induced voltage will appear across the feedback winding which will subtract from the voltage across the secondary. The purpose of the feedback winding is to cancel the remaining secondary flux passing through the center leg of the core. It effectively isolates the currents in the primary and the secondary at the cost of a reduced output voltage. The feedback winding generates a mag-

netic flux equal and opposite to the residual magnetic flux from the secondary when an output current is drawn.

Given the above example, where three-quarters of the secondary flux self-cancels in the "outer leg circuits," the feedback coil will only have to oppose one-quarter of the total secondary flux. Since the feedback winding has two times the core area of the secondary windings and carries the full output current, it need have only one-quarter the number of turns of each secondary winding. However, this will reduce the output voltage by 25 percent. Therefore, to achieve the originally desired output voltage, the total number of secondary turns must be increased by the factor 4/3; the feedback coil must then have one-quarter of the number of turns of each secondary winding in this new secondary circuit.

Given the condition in which the feedback coil perfectly cancels all the residual secondary flux through the center leg of the core, the power drawn from the output will be nearly independent of the primary input power. The primary input will be the magnetizing power and nothing more. The output power will have a negligible phase angle (due to the leakage inductance) if the μ of the core (as seen by the primary) is at least 100.

In practice, it is best if the feedback winding is short a turn or two, thereby preventing series inductance in the output at the cost of a small increase in the primary input power. A parallel resonant primary circuit allows for great input power reduction while ensuring voltage stability and linear operation under varying output loads.

The UDT can be used without a resonant primary circuit for the amplification of any time-varying signal. The main flaws of the UDT are the (normally) low primary μ and the very long secondary wire required to ensure isolation of the input from the output. A single or double stack of E-I laminations seems to provide the optimum core geometry, all factors considered. At high frequencies it becomes practical to use ferrite cores with "center leg circuit" reluctances less than their "outer leg circuit" reluctances because the volts/turn of each winding can be made very high. Conventional transformer design techniques should be

used once the basic UDT topology has been determined.

I have invented and developed the UDT on my own, without benefit of any knowledge of other free-energy devices, if they exist, which utilize the basic principles of UDT operation.

Please feel free to use this information as you desire. However, I hope that no one will attempt to patent and control this type of transformer. The

time on Planet Earth is 15 minutes before midnight; there is no time left to waste. Free-energy technology is not meant to be controlled by vain and greedy parasites who wish to use a gift from God to exploit their fellow man. Free-energy technology represents a spiritual transition of the human race. Free-energy is not meant to be owned, period!

UDT EQUATIONS

$$\text{Number of Turns} = N$$

$$a = V(\text{output})/V(\text{primary})$$

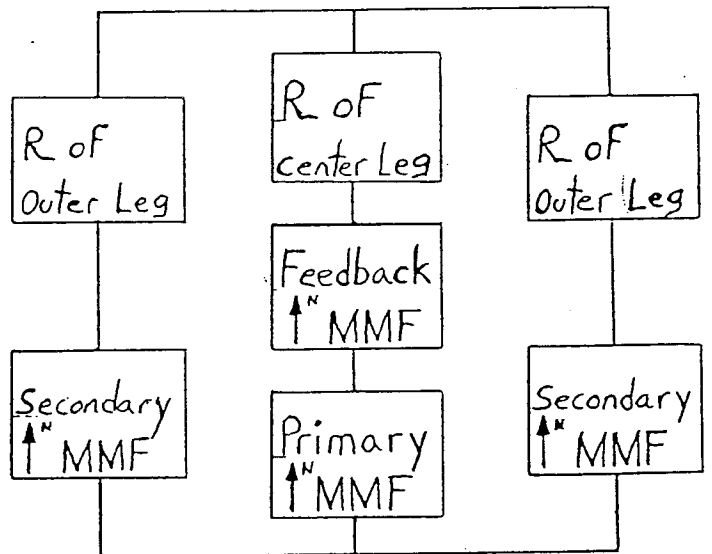
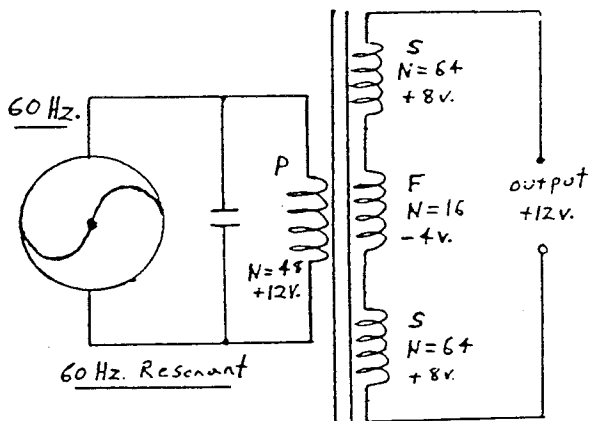
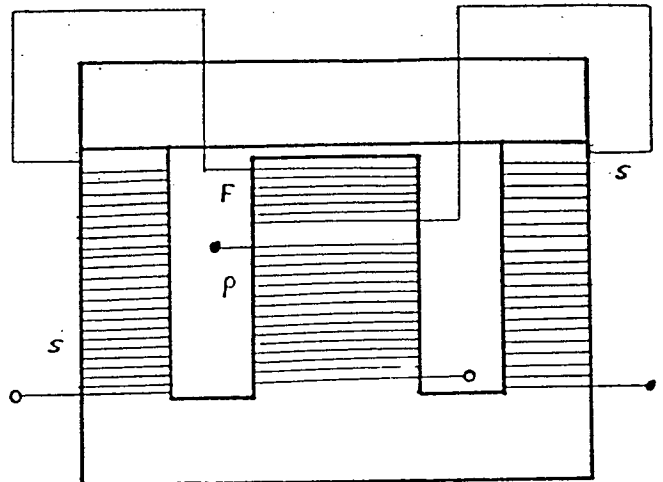
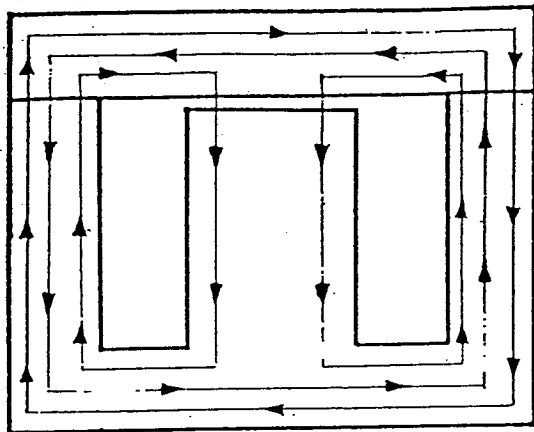
$$\begin{aligned} V(\text{Primary})/N(\text{Primary}) = \\ V(\text{feedback})/N(\text{feedback}) = V(\text{secondary})/N(\text{secondary})/2 \end{aligned}$$

$$N(\text{feedback}) = [N(\text{secondary})/2] [(R \text{ of outer circuit})/(R \text{ of outer circuit})+(R \text{ of center circuit})]$$

$$a[N(\text{Primary})] = [N(\text{secondary})/2]-N(\text{feedback})]$$

$$R = \text{Reluctance} = \Psi/\mu A$$

See next page for schematic diagrams of UDT



- Paul Raymond Jensen

Schematic diagrams of UDT