



Kapitel 21

Piezoelektrische , mit Kristallen gefüllte Glashandzylinder verstehen



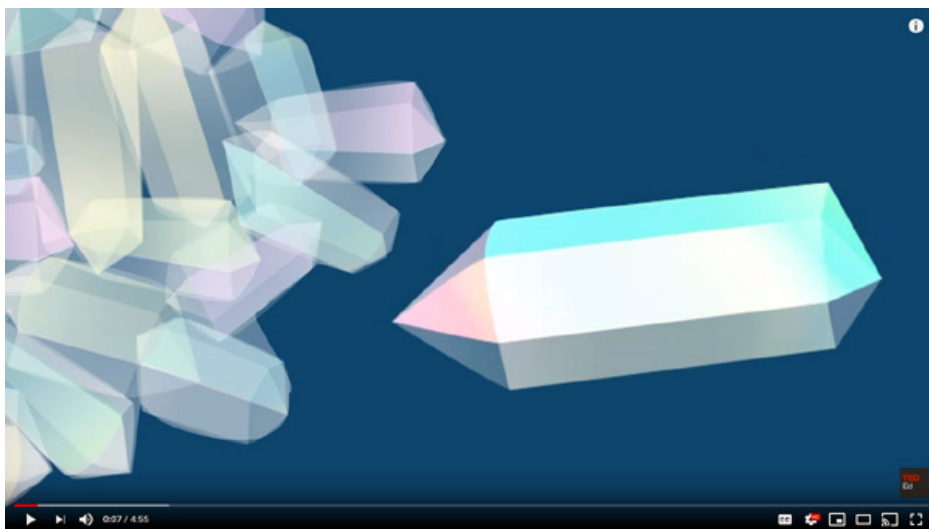
Viele Menschen haben mit "piezoelektrischem Kristall" gefüllte Glashandzylinder gekauft, weil sie den falschen Behauptungen glauben, dass sie Metallhandzylindern überlegen sind. Piezoelektrische Kristalle können entweder Elektrizität oder Ultraschallfrequenzen erzeugen. Es gibt keine Vermutungen oder Spekulationen darüber, wie piezoelektrische Kristalle wissenschaftlich funktionieren und wie sie elektrischen Strom oder Ultraschallfrequenzen erzeugen können. Dies geschieht jeden Tag mit Ultraschallgeräten.

Es ist klar, dass diejenigen, die diese "mit Kristall gefüllten Glashandzylinder" herstellen, die grundlegenden wissenschaftlichen Prinzipien und Methoden nicht verstehen, die befolgt werden müssen, um entweder Piezoelektrizität oder Ultraschallfrequenzen zu erzeugen. Wir behaupten dies, weil sie einige kritische, leicht verständliche schwerwiegende Konstruktionsfehler gemacht haben, die sie davon abhalten, jemals Ultraschallfrequenzen zu erzeugen.

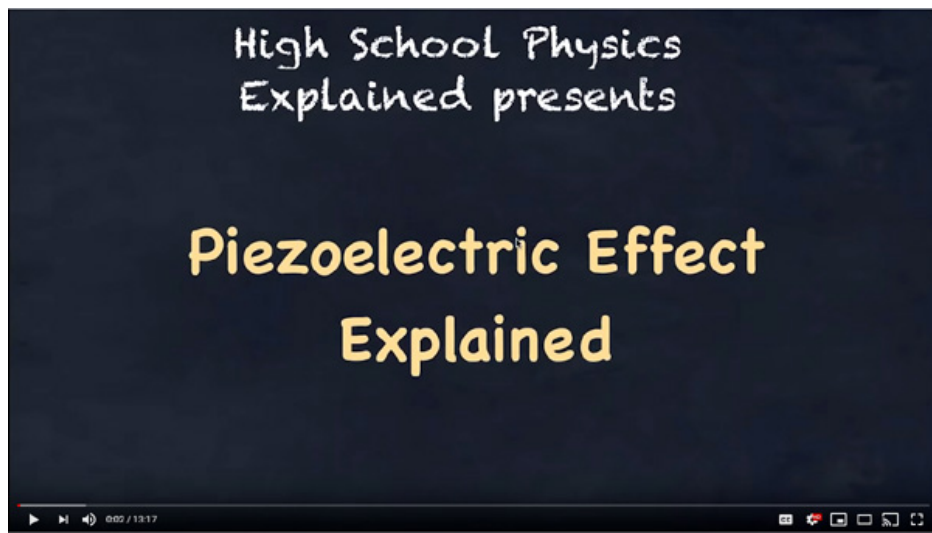
Die Wissenschaft beweist zu 100%, dass die Methoden, die sie in ihrem Design verwenden, niemals funktionieren werden. Das eigentliche Problem ist, dass diejenigen, die diese Kristallgeneratoren kaufen, nur einen Bruchteil der nützlichen Vorteile aus ihrer Verwendung erhalten, obwohl sie 175 bis 300 US-Dollar pro Set bezahlt haben.

Bevor wir die Konstruktionsfehler der mit Kristallen gefüllten Handzylinder erklären können, müssen die Menschen verstehen, wie piezoelektrische Kristalle elektrischen Strom oder Ultraschallfrequenzen erzeugen können. Aus diesem Grund empfehlen wir dem Leser, sich diese vier kurzen Videos anzusehen. Diese Videos zeigen, wie elektrischer Strom, der in piezoelektrische Kristalle eingebracht wird, Ultraschallwellen erzeugen kann. Sie zeigen auch, wie mechanische Belastungen, wie z. B. das Pressen dünner Scheiben piezoelektrischer Kristalle, dazu führen, dass diese ihre Form ändern, wodurch eine positive Ladung auf der einen Seite des Kristalls und eine negative Ladung auf der gegenüberliegenden Seite des Kristalls entsteht. Durch diese mechanische Beanspruchung funktionieren sie wie eine Batterie, die einen positiven und einen negativen Ausgang hat. Ihre Konstruktionsfehler hängen mit dem Wechselstrom bzw. dem positiven und negativen Ein- und Ausgang der Kristalle zusammen. Viele Leute sind in der Lage, die Designfehler zu sehen, wenn sie sich nur die Videos ansehen, so oder so, wir werden sie dem Leser dieses Berichts erklären. Klicken Sie auf die Links oder Fotos unten, um diese Videos anzusehen.

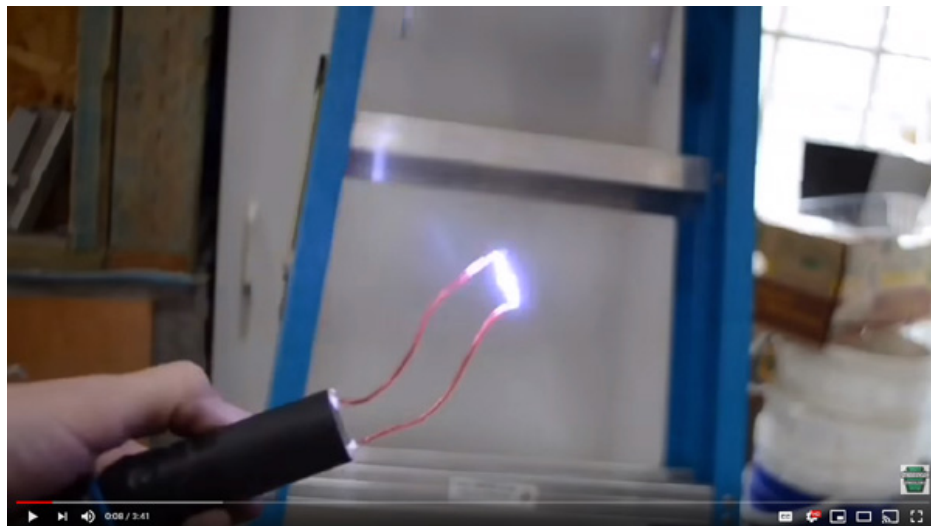
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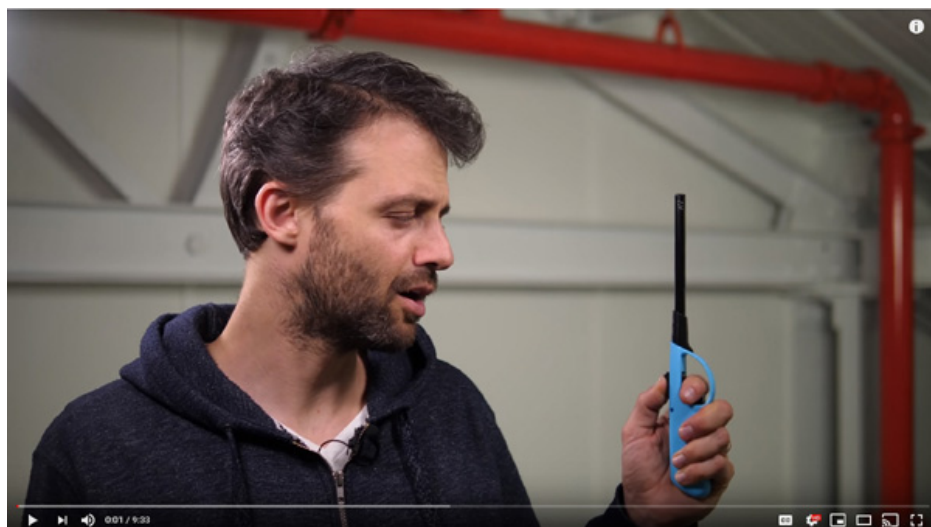
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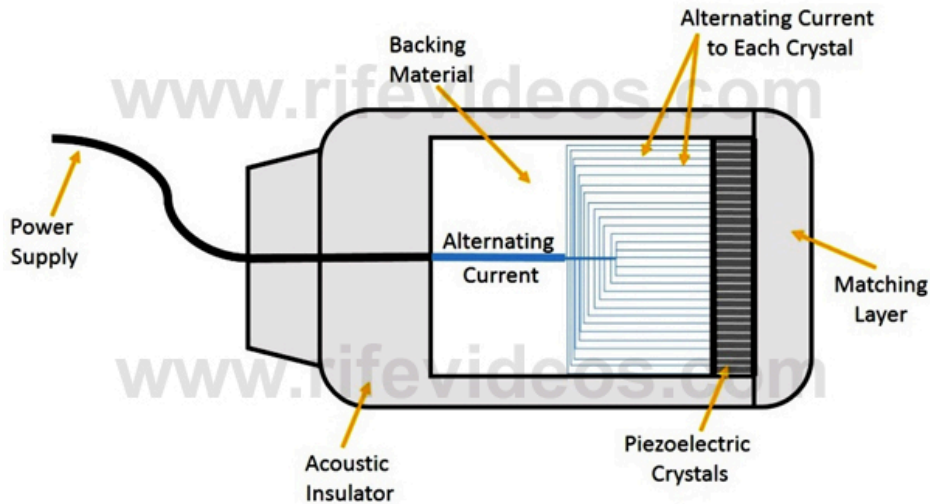
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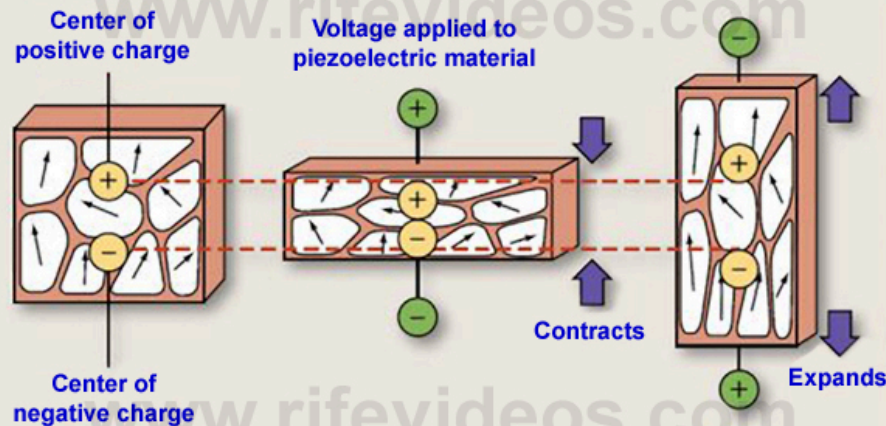
TRANSDUCER BASICS



If you watched the videos then you have a better understanding of how piezoelectric crystals produce electrical current or ultrasound frequencies. Above is a diagram of an ultrasound transducer or probe that has multiple crystals in it like the Crystal filled hand-cylinders do, but there is a major difference. The ultrasound transducer has electrical wire connections on each side of all the crystals so the voltage can be put into them on the positive and negative side of the crystals. Alternating current is used so the crystals will be stressed back and forth in two different directions over and over again and this creates ultrasound frequencies. The diagram below shows this expanding and contracting effect.

THE PIEZOELECTRIC EFFECT

Ultrasound waves are produced using the piezoelectric effect. When a potential difference is applied across certain crystals the crystals themselves deform and contract a little. If an alternating current is applied then the crystal vibrates at the same frequency and sends out ultrasound waves. For ultrasound - lead zirconate titanate (PZT) crystals are used. The process also works in reverse. The piezoelectric crystal acts as a receiver of ultrasound by converting sound waves to alternating voltages and as a transmitter by converting the alternating voltages to sound waves.



The piezoelectric effect causes crystal materials like quartz to generate an electric charge when the crystal material is compressed, twisted, or pulled. The reverse is also true, as the crystal material compresses or expands an electric voltage is applied.

Notice in the diagram above that the crystals have a positive and negative side where the wires should be connected. Alternating Current or AC is basically like DC or Direct Current except the positive and negative is switched back and forth from positive to negative and this creates the ultrasound frequency waves. A piezoelectric crystal can also produce electricity and this is referred to as "Piezoelectricity." Here is the definition of piezoelectricity. Quote:

Piezoelectricity: *"Is the appearance of an electrical potential (a voltage, in other words) across the sides of a crystal when you subject it to mechanical stress (by squeezing it). In practice, the crystal becomes a kind of **tiny battery with a positive charge on one face and a negative charge on the opposite face**; current flows if we connect the two faces to a circuit. In the reverse piezoelectric effect, a crystal becomes mechanically stressed (deformed in shape) when a voltage is applied across its opposite faces."*

Here is a quote that describes how ultrasound or ultrasonic waves are created using crystals:

How are Ultrasonic Waves Generated: *"In order to duplicate ultrasonic frequencies, humans have harnessed the electrical properties of materials. When a specially **cut piezoelectric quartz crystal** is compressed, the crystal becomes electrically charged and an electric current is generated: the greater the pressure, the greater the electric current. If the crystal is suddenly stretched rather than being compressed, the direction of the current will reverse itself. Alternately compressing and stretching the crystal has the effect of producing an (AC) alternating current. It follows that by applying an alternating current that matches the natural frequency of the crystal, the crystal can be made to expand and contract with the alternating current. **When such a current is applied to the crystal, ultrasonic waves are produced.**"*

With this understanding, we will now read the written description or "**theory**" of how the manufacturers of these Crystal filled glass hand-cylinders claim they work. You will notice in the first two of the three paragraphs we quote almost all of what they describe is scientifically correct about how piezoelectric crystals work, but only if the crystals are used outside of the Crystal hand-cylinder design with wires connected to them on the positive and negative side of each crystal. The third paragraph with their claims is incorrect. We quote:

Crystal filled glass hand-cylinder operation theory: *"The Crystal Generators are a new technology that is currently very popular with users of frequency generators, Rife Machines, and many electro-therapy devices. The idea is that when the energy [energy = the electromagnetic frequency] from the frequency generator is transmitted into **the conductive saline/silver solution**, the electromagnetic energy [frequency] reacts with all of the different crystals and minerals in the Crystal Generators. That pulse of electromagnetic energy [frequency] reacting with the crystals and minerals causes a release of beneficial frequency energy-rich in harmonics. These special frequencies are extremely rich in harmonics due to the fact that every different crystal, mineral, or stone in the Crystal Generators creates its own unique harmonic frequencies when energized.*

*The charge distribution matrix within the quartz crystals and minerals is symmetric and the **net electrical potential is zero**. The quartz crystals and minerals, when activated by a frequency generator, delivers no electrical charge, but instead, delivers a sound wave compatible with the wellness needs of the cells. **There is neither an electric field nor a magnetic field associated with sound or ultrasound oscillations, vibrations, or waves.** This delivery system allows all cells to receive signals that activate their own blueprint frequencies.*

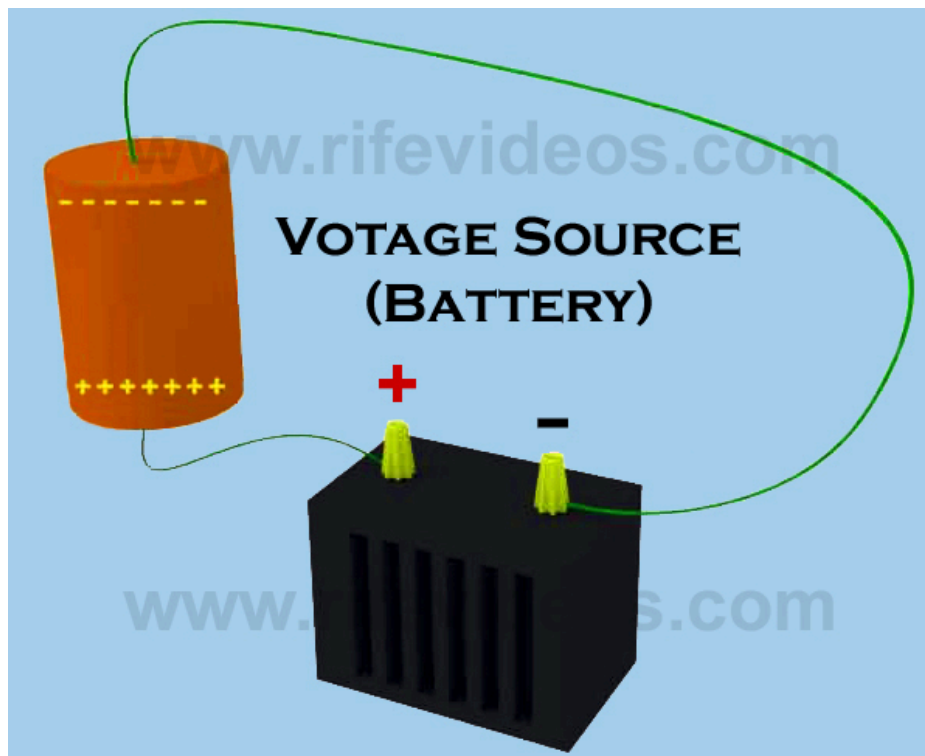
Crystals, as natural piezo-electric oscillators, convert Frequency Generator frequencies into multiple sound signals that cause sympathetic blueprint resonance. Crystal Generators provide an expanded frequency delivery system to cells of the research subject. The body evidently knows how to heal itself, and when given the appropriate blueprint frequencies, these regenerative patterns serve both as a pacemaker and a cellular reminder of the original blueprint frequency response." These kinds of harmonic frequencies are unavailable in any other frequency generator's mode of operational output and are unique to the Crystal Generators. As the subject holds the Crystal Generators in their hands and runs their program of choice on their frequency generator, the spectrum of rich harmonic frequencies is transmitted and delivered to the energy field of the body with beneficially valuable and health-enhancing results."

These Crystal filled hand-cylinders are not a **"new technology"** and have been around for almost 20 years. They mention that quartz crystals are "piezoelectric oscillators" and that they use these types of crystals in their Crystal filled glass hand-cylinders. Crystal oscillators have been used in electronics for many years. Below is a photo of many different style crystal oscillators. The crystals are within the metal enclosures so they can be used in different electronic designs. Notice that all of these crystal oscillators have at least two electrical connections so alternating (AC) or Direct (DC) current can be put into them to produce the desired frequency output.



In their description of the Crystal filled hand-cylinders they mentioned that **"the charge distribution matrix within the quartz crystals and minerals is symmetric and the net electrical potential is zero."** This statement is correct and **"piezoelectric"** crystals are always in a neutral state or do not produce any voltage and current until mechanical pressure or stress

is applied to them. The applied pressure then distorts the crystals creating a positive voltage on one side of the crystal and a negative voltage on the other side of the crystal. This applied pressure makes them work like a battery, as shown below, which has a positive and a negative.



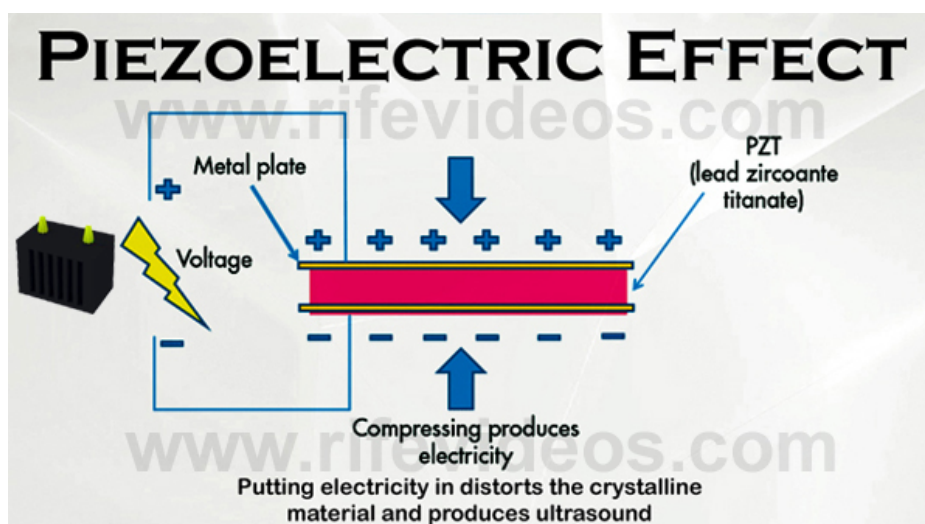
If the reader still does not understand where their design flaws are we will now explain and scientifically show how the Crystal filled glass hand-cylinder design flaws actually nullifies all of their claims about how they work. The reader will also see how some of these design flaws or mistakes can never be fixed.

Everyone understands that if you take a battery, which has a positive and negative charge, and then immerse it into a conductive liquid such as water or a silver saline solution there would be a direct electrical short between the positive and the negative side of the battery. This is one of the fatal design flaws they made with their Crystal filled glass hand-cylinders. The **"conductive saline/silver solution"** they use inside the Crystal filled hand-cylinders creates a permanent **"electrical potential zero"** neutral state. Their **"conductive saline/silver solution"** is like having an electrical wire permanently connected between the positive and negative sides of the crystals. Because the crystals are in a neutral state until pressure or stress causes them to produce electrical current, then if any electrical current is produced, the **"conductive saline/silver solution"** creates a direct short between the positive and negative sides of the crystals. This **"conductive saline/silver solution"**

makes it so no electrical current or ultrasound frequencies can ever be produced from the crystals.

This simple explanation is why this flaw is one of the fatal flaws that nullifies every claim the manufacturers have made in their **"theory"** regarding how their Crystal filled hand-cylinders work. This fatal design flaw can never be fixed regardless of what they do. With this design, there is no way to separate the positive and negative sides of the crystals. Many people who purchase these Crystal filled hand-cylinders do not understand this simple fact until it is pointed out. If they did understand it they would never purchase them. It is apparent that whoever came up with this design has no understanding of how electrical voltage and current works.

We will now explain in greater detail how this single fatal design flaw affects every scientific claim they have made for their Crystal filled hand-cylinders. Since they are trying to produce ultrasound frequencies from every crystal (many hundreds) within the Crystal filled hand-cylinders then the alternating (AC) electrical current must be put into the positive side and negative side of every crystal (many hundreds) in order to produce the ultrasound frequencies. In order to put current into any piezoelectric property, you must have a metal plate or wire connection on the positive side and the negative side of every crystal as shown in the below piezoelectric effect diagram. Having no wires connected to every crystal is their second fatal design flaw.



Since every crystal within the Crystal filled glass hand-cylinders would need to have a set of metal plates and wires connected to them then you would have to put two plugins into each of the Crystal filled hand-cylinders, instead of just one, in order to apply the alternating (AC) electrical voltage and current to the positive and negative sides of each crystal to produce the ultrasound frequencies.

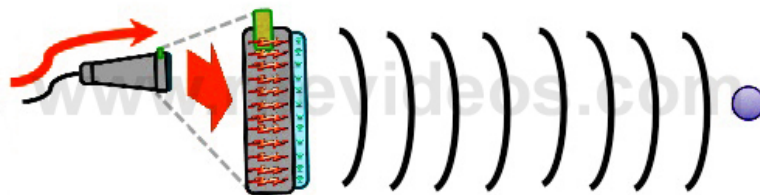
But if this was done the "**conductive saline/silver solution**" would still create a dead short because the alternating (AC) current going into the negative and positive sides of the crystals would all be immersed in the same liquid solution together creating a short.

The crystals cannot be immersed in any conductive saline solution or there will always be a dead short between the positive and negative sides of the crystals. This would be no different than dropping a hairdryer into a bathtub full of water and then claiming it is not going to create a direct short.

Below is a another ultrasound transducer diagram. Each crystal has alternating current going into them which requires two electrical wires, one connected to the positive and the other connected to the negative side of each crystal. There is no "**conductive saline/silver solution**" used in these transducer designs or there would never be any ultrasound frequencies coming out of them.

Ultrasound Fundamentals

An ultrasound beam is generated within the ultrasound **probe** by the **piezoelectric effect**, which is the production of a pressure wave when an applied voltage deforms a crystal element.



Below are two photos showing ultrasound transducers that use crystals. You will notice in the photo on the left the transducers have a red positive wire and a black negative wire. If they were put into a "**conductive saline/silver solution**" they would immediately short out and produce no ultrasound frequencies. The photo on the right shows a sealed transducer using shielded wire which can go into any conductive saline solution and still produce ultrasound frequencies.



It is apparent that whoever developed this Crystal filled glass hand-cylinder design should have taken some basic electrical 101 courses because these design flaws are simple to understand for anyone once it is explained to them.

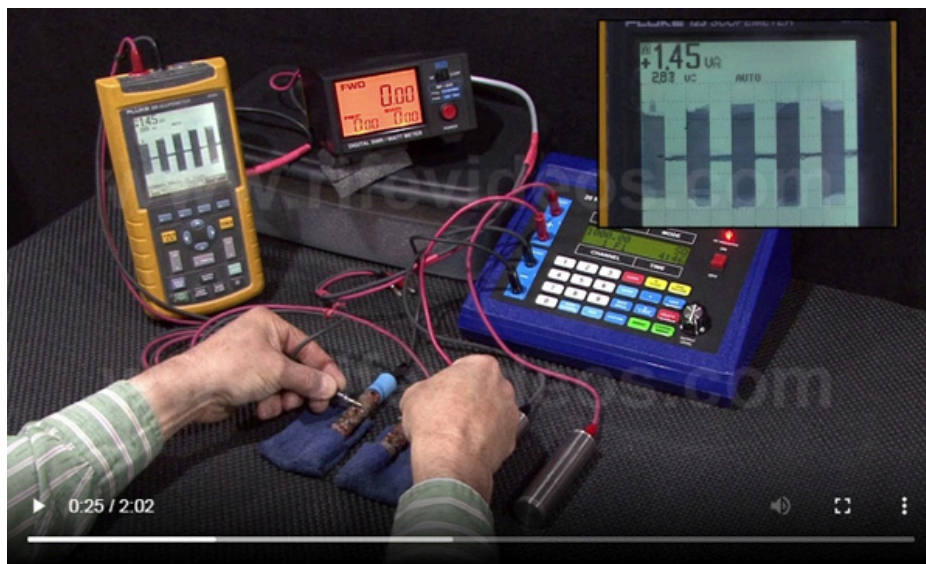
Dr. Rife's two partners, John Crane and John Marsh developed the use of the metal electrodes or metal hand-cylinders. In chapter 18 we discussed how "conduction" and "induction" works including how metal is a superior conductor of electricity (frequencies) than glass through direct contact. If you have not read chapter 18 we suggest you read that information in order to better understand this chapter.

With the original metal disks that were later changed to metal hand-cylinders the alternating current (AC) goes into the body through the right and left metal hand-cylinders, with no "conductive saline/silver solution" between the two cylinders, which does not create any type of electrical short. The "Conduction" method will not work with the Crystal filled hand-cylinders to produce ultrasound frequencies because each glass hand cylinder does not have two electrical connections for the (AC) alternating current. Also, even if they did have two connections the **"conductive saline/silver solution"** and the **lack of sealed electrical wires** connected to the positive and negative sides of all the crystals would cause a short between the positive and negative sides of the crystals within each individual glass hand-cylinder. All of these design flaws of using **(1) a "conductive saline/silver solution"** **(2) no double connection for each crystal filled glass hand cylinder** **(3) no sealed electrical wires to the positive and negative sides of every crystal** keeps the crystals in a **"Permanent Fixed Neutral State"** with the **"Electrical Potential"** at **"Zero."** What we have just explained is scientifically why all of their claims about ultrasound frequencies coming from the crystals are nullified by these design flaws.

Because of these flaws the only thing the Crystal filled glass hand-cylinders will output is the frequency that is put into them from a frequency generator. This is how Metal hand-cylinders work. But the Crystal filled glass hand-cylinders have another major flaw in their

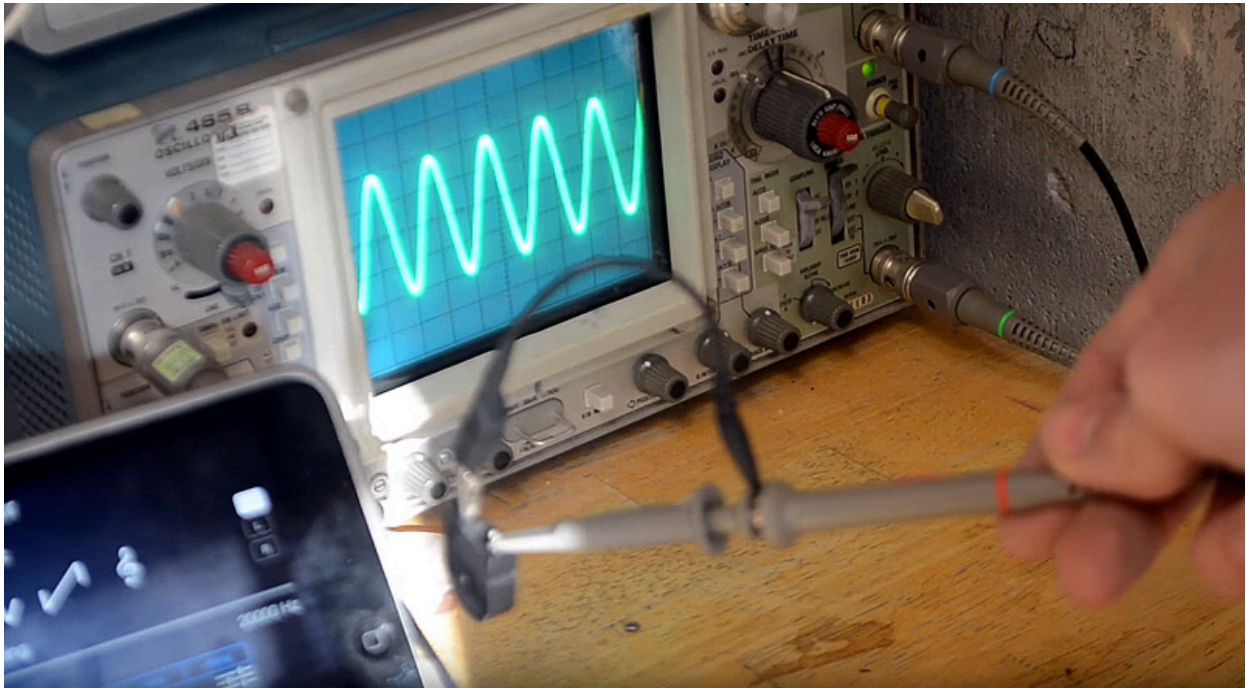
design that needs to be discussed. They put the crystals into glass or plastic cylinders. Glass or plastic is an insulator and a dielectric. If a plasma gas is not used within the glass cylinders then the insulating properties of the glass will greatly reduce the power output that is put into them from a frequency generator. Almost everyone understands glass is not a good conductor of electricity and this fact does not change when using the "Conduction" method of delivering frequencies even with the silver saline solution inside of them. To show that this statement is correct we made a video showing the enormous power loss when using glass as a conductor of electricity with this design.

As you watch this video you will see the frequency generator voltage output is about 60 volts being put into both the Crystal filled glass hand-cylinders and the Metal hand-cylinders. But the voltage measurement on the surface of the glass of the Crystal filled hand-cylinders is only about 1.5 volts peak. This is a loss of about 58.5 volts or a 97.5% loss in voltage. But the voltage on the surface of the Metal hand-cylinders is still about 60 volts showing no real voltage drop. This is why metal hand-cylinders are superior electrical conductors. Click on the photo below to watch the Oscilloscope 1000 Hertz square wave into the Crystal filled glass Hand-Cylinder test video.



If you watch the video then you can now understand why using glass with the Crystal filled hand-cylinders is also another very serious design flaw. People need to receive the full power output of a frequency generator. The original "Pad" frequency generator that John Crane and John Marsh used only output about 12 volts peak and Dr. Rife did not like that low 1/10th (0.10) to 1/5th (0.20) of 1-watt power level. This should make everyone wonder what Dr. Rife would think about only a 1.5-volt power output level.

This power video we made also shows another fact that the crystals in the Crystal filled hand-cylinders are not producing any ultrasound frequencies. In the third video about piezoelectric crystals, at 3 minutes into the video, they show that when you put a square wave frequency into a piezoelectric crystal the oscilloscope shows that you only get a sine wave out. Below is a photo taken from the video at 3 minutes showing this fact.

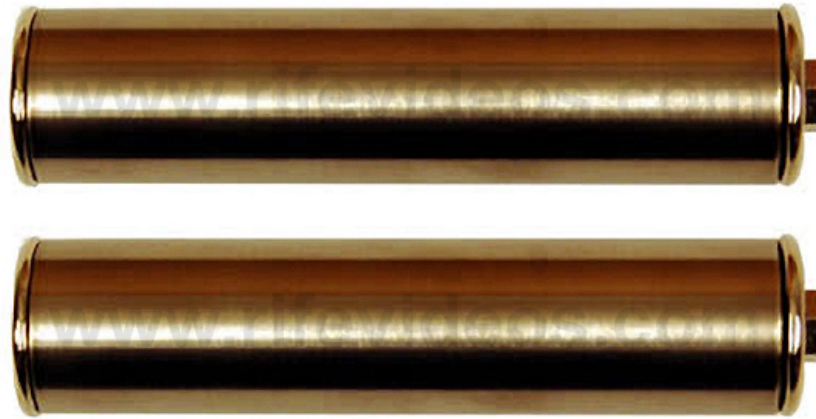


If the square wave frequency was actually going into the crystals, as claimed, the oscilloscope in our video should have shown a sine wave coming out, but it only showed a square wave. This shows that no frequency is going into the crystals or coming out of them because of the design flaws. What is really happening is the frequency is only going into the **"conductive saline/silver solution"**, and coming through the glass at a very low power level of 1.5 volts instead of 60 volts. As mentioned before the glass is both an insulator and a dielectric and it is the insulating properties of the glass that causes the enormous power loss which will keep a person from getting any real benefit when using the "Conduction" or contact method with any type of glass conductor.

Here is the last claim about the Crystal filled hand-cylinders that needs to be discussed. We quote:

"The Crystal Generators, it is reported, will provide an overall increase of 200% greater immune building, and a 300 to 400% health and wellness boost beyond the capabilities of the steel electrodes. They may effectively be applied in either the "Direct" or "Broadcast Mode."

You may have noticed they claim, but give no scientific proof other than **"it is reported,"** for this 200% to 400% health and wellness superiority above metal hand-cylinders. They also claim that these Crystal filled glass hand-cylinders can broadcast frequencies just like a plasma tube or a properly tuned metal antenna. But when we measured them the only way any frequency could be read was by direct contact with the glass. If they really did broadcast any frequency no contact with the glass would have been necessary. This fact eliminates their incorrect **"Broadcast Mode"** claim.



To be fair, this same false broadcast mode claim has also been made for metal hand-cylinders by some people. Metal hand-cylinders have their limits and are not long enough at 5 to 6 inches to work like a metal antenna used with CB radios and Walkie-talkies, therefore, this eliminates this same broadcast mode capability as some have claimed. Metal hand-cylinders must be in contact with the user's skin in order to work correctly.

Since the frequency output from a frequency generator is the only frequency that is being put into the Crystal filled glass hand-cylinders with no ultrasound frequencies coming out, except those that are put into them, then their claim is not correct. Also, the voltage that was measured dropped from 60 volts down to 1.5 volts which is a 97.5% power drop and this should make anyone wonder how they can claim to have an **"overall increase of 200% greater immune building, and a 300 to 400% health and wellness superiority capabilities above metal hand-cylinders."** It appears these claims are only sales-hype based on no real scientific proof. The tests and science do not support their claims. All of these tests and the power levels measured clearly show that these Crystal filled glass hand-cylinders cannot produce ultrasound frequencies or broadcast frequencies like a plasma tube or deliver the full power output from a frequency generator.

In order to fix the design flaws, the crystals would have to be

removed from the glass cylinders out of the **"conductive saline/silver solution"** which keeps them in a permanently neutral state. Doing this would also keep the crystals from shorting between the positive and negative sides of the crystals if physical pressure was applied to produce electricity. Then all of the crystals would need to be cut on the correct angle and have two metal plates attached with wires so that each crystal had a positive and negative connection like an ultrasound transducer does. Each crystal would also have to be sealed so there wouldn't be any electrical short. Even if you did this and you again put the crystals back into the glass cylinders with the **"conductive saline/silver solution"** you would still lose about 97.5% of the power output because glass is an insulator. It is for all of these reasons their design flaws can never be fixed unless the **glass cylinders** and the **"conductive saline/silver solution"** are removed from the design. Then, of course, you no longer have Crystal filled glass hand-cylinders. A person would be better off using metal hand-cylinders and not waste their money. Metal hand-cylinders are less the \$50 a set but crystal filled glass hand-cylinders are from 175\$ to \$300 a set.

In chapter 18 of the "Rife Machine Report" we discussed how "conduction" and "induction" works including how metal is a superior conductor of electricity (frequencies) than glass through direct contact. If you have not read chapter 18 we suggest you read that information in order to better understand this chapter. Of these two different methods, the videos you have watched show metal is a superior conductor of electrical voltage and current than glass when it comes to direct contact. You never hear that someone was electrocuted by touching glass.

It is important to understand that every frequency that Dr. Rife used was measurable and readable with an oscilloscope. His frequencies covered from the audio range to about the 18 million Hertz or 18 Megahertz range and are always readable with electronic test equipment. All ultrasound frequencies are also readable. The reason it is important to understand that all of Dr. Rife's frequencies were measurable and readable, including ultrasound, is that there are some people who make these crystal filled hand-cylinders that claim they are using a superior method of delivering frequencies, which is neither measurable nor readable. This would be like purchasing a frequency generator and then taking it to an electronics company for testing only to find out that the frequency generator is not outputting any frequencies. But when the manufacturer is contacted they claim their frequency generator is working, but on a superior method which is not readable or measurable. Anyone would know, at that very

moment, the company which sold them the frequency generator was dishonest.

The reader should also understand that all frequencies have an electromagnetic field even though the manufacturers of the Crystal filled hand-cylinders incorrectly claim **"there is neither an electric field nor a magnetic field associated with sound or ultrasound oscillations, vibrations, or waves"** output from their "Crystal filled hand-cylinders." They call them Crystal Generators but we have shown they do not actually generate or produce any frequencies because of the design flaws made in their construction. It is actually the frequency generator they are connected to that produces the frequency or frequencies they output. This is why they are not really Crystal Generators.



They say a picture is worth a thousand words. Power measurement videos were made so the reader can see real power tests comparisons of Metal Hand-Cylinders to Crystal Filled Glass Hand-Cylinders. This first video demonstrates that metal conductors, such as Metal hand-cylinders, are almost 100% efficient. In the two photos above are Watt Meters. The one on the left is the MFJ-849 digital readout Watt Meter and the other on the right is the MFJ-872 needle style Watt Meter. The digital readout watt meter will be used to measure the RF or Radio Frequency power output level from the frequency generator and then the power level will be measured on the surface of the metal hand-cylinders. You will notice that the power level only drops from 5.16-watts to 4.94-watts. The "FWD" or Forward reading represents the power output in Watts with all Watt Meters. Click on the photo below to watch the Watt Meter Metal Hand-Cylinder power test video.



The next video is very revealing. It shows both the "Crystal filled glass hand-cylinders" and the "Metal hand-cylinders" are both connected to the same positive and negative output of the frequency generator. The power output is measured using the MFJ 849 digital readout Watt Meter which can read power levels as low as 0.05-watts or 1/20th of 1-watt. If the power levels are less than 0.05-watts the meter will read 0 (zero watts) output. With this understanding, the power output is first measured on the surface of the "Metal hand-cylinders" which reads a 4.72-watts output. Then the power output is measured on the glass surface of the "Crystal fill glass hand-cylinders" which reads 0-watts output. This 0-watts output reading is because the power output level is less than 0.05-watts on the surface of the glass because glass is both an insulator and a dielectric. Most people use wet cloth covers when using "Metal hand-cylinders" for higher conductivity. These wet cloth covers were put onto the "Crystal fill glass hand-cylinders" in order to increase the conductivity so the power output level could be read. Since glass is both a dielectric and an insulator it will allow a small amount of electrical current to pass through it and the wet cloth covers will increase the conductivity to a level that is readable by the wattmeter. With this explanation, you will then see we measure the power level touching the wet cloth covers and the power output level is about 0.36-watts or 1/3 of 1-watt. This shows that the power level dropped from 4.7-watts on the surface of the "Metal hand-cylinders" down to 0.36-watts or 1/3 of 1-watt on the surface of the wet "Crystal filled glass hand-cylinders." This means there is a 13 times power level drop between a metal conductor and a glass conductor.

As the video continues, an oscilloscope is used to measure the voltage on the surface of the glass of the "Crystal filled glass hand-cylinders" which only reads about 1.7 volts or a 29.4 times voltage

drop from metal to glass. Next, the voltage level is read from the wet cloth covers and it reads about 6 volts. Then the voltage on the surface of the "Metal hand-cylinders" is read at about 50 volts. This is an 8.3 times voltage drop from metal to glass. Both voltage and current determine watts of power and this is the reason we used a wattmeter to measure the power output levels. Since the majority of the people that use these "Crystal filled glass hand-cylinders" never use wet cloth covers they would never receive even 1/3rd of 1-watt of power. The power level they actually receive is probably around 0.05-watts or 1/20 of 1-watt instead of the full 4.7 watts the frequency generator is outputting. With this understanding of what to look for when watching the video click on the photo below to watch this video.



Since metal is a superior conductor than glass no claims are necessary or needed for "Metal hand-cylinders" because they work 100% on the scientific law of "Conduction." In other words, whatever the voltage, current or watts that are output from a frequency generator will be what is delivered to the person using the "Metal hand-cylinders" from their direct contact when holding them. This is not the case with the Crystal Generators or Crystal filled glass hand-cylinders, and the video tests you watched clearly verify this fact. If "Crystal filled hand-cylinders" were actually 100% efficient and worked as claimed they would be worth using but their design flaws make this impossible. When people come to understand these facts they always choose metal over glass for any direct contact use. The "broadcast mode" should never be used because the user will receive nothing but the "placebo effect." We realize some people really believe in these so-called "Crystal Generators" but the majority of the people using them get no positive results and this is because of the design flaws that are easily understood. Piezoelectric crystals cannot

work using the incorrect design they use with these "Crystal filled glass hand-cylinders."

Chapter Summary: "Crystal fill glass hand-cylinders", because of their design flaws, do not create any ultrasound frequencies from any frequency put into them. The only frequency they output is the frequency put into them from a frequency generator. The power loss from using glass or plastic cylinders is almost 13 times. The "Metal hand-cylinder" design used by John Crane and John Marsh is a superior design with almost a 100% power transfer capability.

In chapter 22, we will discuss how "Hand-Held Ray Tubes" work and their power limits.

[\(To read chapter #22\)](#)