Advances in 2011. In an effort to develop a device to emulate the function of a Joe cell without it's inherent stability issues, Dave Lowrance came up with the idea of a set of 3 concentrically-wound torsion field coils. In early testing it has become apparent that a field is being generated, as demonstrated by their effect on two test engines, even with no power being applied to the coils.

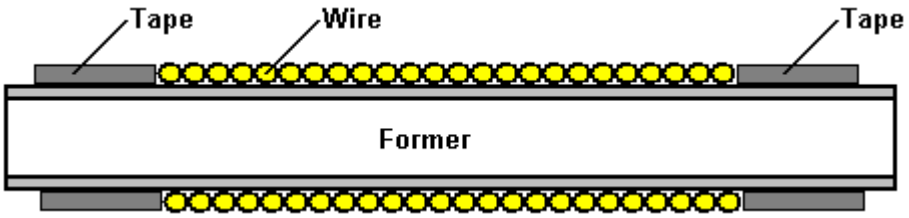
This is the very early stage of the investigation so this initial design is being released with the hope that others will wind and test similar coils and report their results to the appropriate groups, so that we can learn more about them through further experimenting on a variety of different engines.

The initial set of coils were wound on 7/8" (22 mm) diameter stainless steel tubing which happened to be to hand. The use of stainless steel is not significant and two successful replications have used half-inch (12 mm) PVC plastic pipe, as using a non-ferrous material is the main requirement.

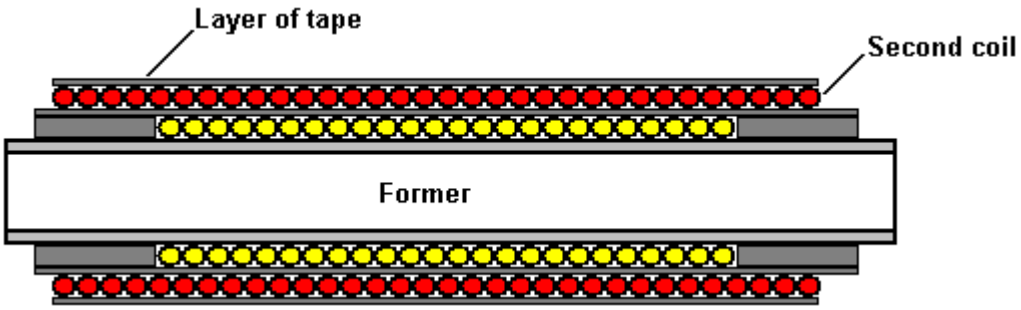
The wire diameter has an effect and while 20 gauge (0.812 mm diameter) enamelled copper wire was used for the coils shown here, coils wound with 12 gauge (2.05 mm diameter) copper wire work much better and it is now thought that the weight of copper in the winding is important.

For the first layer, a length of 311 cm is used and wound on the former in a clockwise direction. The ends of the wire are secured with tape, leaving three or four centimetres of wire exposed at each end of the coil, for connection purposes. This is the first layer wound and secured:

The wire for the second layer is cut to a length of 396 centimetres. This second coil layer will be longer than the first layer, so before winding it, it's necessary to build up the area at both ends of the first layer with tape:



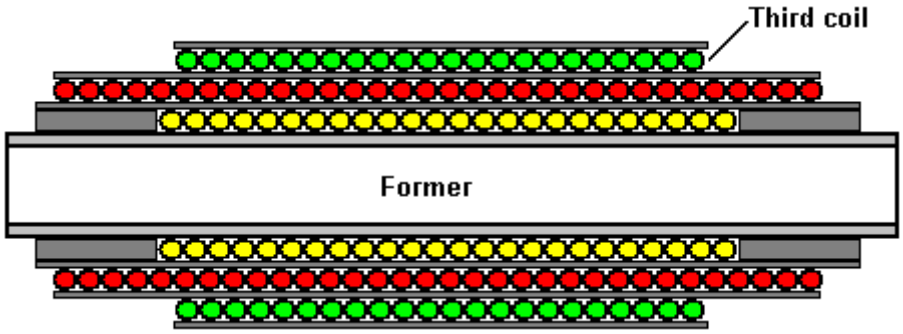
This is so that the second layer of wire will have the same diameter along it's entire length. It is probably a good idea to completely cover the first layer of wire with tape to ensure good electrical insulation.



The second wire layer is also wound in a clockwise direction:

The wire for the third layer is cut to a length of 313 centimetres. Since it will be covering less length along the former, there is no need to build up the ends of the earlier layers. So, simply cover the second winding with tape, and then wind on the third layer, but this time, the coil is wound in a counter-clockwise direction and then the entire coil is covered in tape to protect it.

To be sure that the second and third layers are centred over the earlier layers, it is a good idea to locate the centre of the wire and start winding from the middle outwards in both directions:



It has been found that one end of the centre winding is similar to the centre tube of the Joe cell, and the opposite end of the outer winding functions like the canister of a Joe cell. In theory, this can be tested by connecting a small capacitor between these two points, and checking for a low DC voltage using a digital voltmeter. Like a Joe cell, polarity is really the important issue to test for, since we do want the positive polarity end to transfer the energy, and the negative polarity end to be connected to engine ground. If the polarity is wrong, simply use the opposite ends of both coils.

In the testing the negative end was connected to chassis ground, and the positive end to a Hull-effect type oil probe already installed in each test vehicle. The oil probe is Robert Hull's contribution to this technology. He found that if you apply a torsion field to the oil, it will charge up an engine in a way similar to a Joe cell, but more consistently than a Joe cell would. There are two basic types of Hull-effect probe - the simplest is just a wire inserted down the dipstick tube. However, the preferred method is to remove the oil-pressure sensor and insert a T-fitting, then slide an insulated stainless steel rod into the high-pressure oil at that point. By using an oil probe, one can eliminate the aluminium transfer tube in favour of a length of wire.

The experimenter who wound the 20-gauge coils then wound a larger diameter set using 12-gauge wire on a 1.5-inch (38 mm) diameter former. He fitted these over the original set and connected just two wires, one end of the innermost of the six coils and the opposite end of the outermost coil. This gave about a 25% reduction in the fuel used by an old Honda Accord car with an Electronic Fuel Injection system.

Fuel-less operation has not yet been achieved, but that could just be a matter of getting the engine set up properly. Some of the issues we need to deal with are things like antifreeze, which destroys the dielectric properties of water, and inhibits it from charging up. This has never been discussed, but it is one of the key things which limited the ability of people to succeed with their cells. Oil is a similar issue. Some oils, particularly the ones with all the additives and detergents, simply won't charge up.

There still needs to be a lot of testing done. For instance, with this setup it might be better to connect one end of each coil to ground. Or possibly the coils would do better if the windings were all connected in series. This is all uncharted territory! Dave's original concept was to use a set of these coils to replace each tube of a Joe cell.

The engine from an old Pinto car is also being used as a test bed. Attempts were made to run it completely fuel-less. It would kick repeatedly, but just wasn't quite there. It would only kick at a very specific timing setting - somewhere between 50-60 degrees before Top Dead Centre. The Pinto has antifreeze and with just water it's more likely to run fuel-less. But that should be a last-resort option, since most people do need antifreeze.

Devices such as the Joe cell tend to work really well on engines which have a carburettor because the spark timing can be adjusted quite easily. They work well on older EFI engines (probably those prior to OBD2) but they can be a real problem on the newer EFI models as they are liable to cause a fuel injection error state to be reached almost immediately. The newer ECUs control everything so tightly that they are almost impossible to work with (which was probably a design objective of the ECU design).

The Pinto engine had not been started for over six months. No T-field devices were connected to the engine during this period, so we can assume that there was little or no residual charge on the engine. The cooling system had only water in it. The crankcase was filled with NAPA brand 30-weight oil. We fiddled with the engine to get it started. At that time the car had a little motorcycle carburettor on it, rather than the stock carburettor and the timing was set quite a bit advanced.

After just a few minutes of idling we realized that the engine was getting extremely hot with the exhaust manifold glowing red. So we shut it down. Being the optimist that I am, we went ahead and connected the coils at this time.

The next morning I took a little compass and found that it didn't point to North anywhere within about 2 feet of the car body - a very good sign! So we went ahead and started it up, and carefully monitored the head temperature with an infra-red thermometer. The temperature rose slowly to about 170 degrees F which is a little below normal. After verifying that the temperature held steady at that value, I tested with the compass again, and now it was messed up out to about 10 feet from the body. So the field strength had jumped up about 500% after starting the engine.

We then played with the carburettor and timing to get the smoothest operation at the lowest RPM at which it would idle smoothly. The RPM appeared to be well below a normal idle RPM., and when I went back and checked the timing, it was very close to 60 degrees before Top Dead Centre. At this point everything was looking so good that we tried a few attempts at fuel-less operation, but the engine died each time.

Due to pressure of other work, the car was ignored for a couple of months. When I finally got back to doing a little further testing, I found it surprisingly easy to get it started again. I didn't have to reset the timing to get it running. It actually started up with little effort, which was amazing, since the timing was still way advanced. It should be nearly impossible to start an engine with the timing set like that. The spark is just occurring at the wrong time in the cycle so it should try to push the pistons in the wrong direction.

Anyhow, it was starting to get cold here, so I decided to install some antifreeze, and that just set everything way back. It reduced the field strength by over 80%.

Since then Dave has come up with a coil-set designed to charge up antifreeze, but I was disappointed when I tried it. It did better with the antifreeze than the original set did, but we came to the conclusion that the antifreeze destroys water's diamagnetic properties to the point that the mixture is just hard to charge up. Working on this problem is the reason why I didn't release the coil info sooner. I kept hoping that we might solve this problem as well, but we didn't. However, this just might not be as big a problem as I thought, because I've heard that well-charged water just might have a significantly lower freezing point. This has not been tested yet to verify it.

An interesting side issue is the fact that the water which I drained out when adding antifreeze, showed no sign of rust. It was perfectly clear. Under normal circumstances, with no additives in the cooling system, this water should have been a horrible orange mess. It wasn't, and that has to be because of the field on the engine.

The Pinto is not roadworthy, so I have no way of knowing what kind of fuel consumption is possible with this setup or what power it might be capable of producing. At this time, I just use it to test different devices, and to try for fuel-less operation. However, if I was to achieve a consistent, repeatable fuel-less operation, it could become roadworthy very quickly, so I could do some actual road testing.