

## NOT JUST ANOTHER "NEW NAME"

A few years ago, notes began to appear in all eminent Hi-Fi editions, and then articles about the new cable products of High Fidelity Cables. In them, world experts not only praised the sound quality of new cables, but noted that this was a "technological breakthrough" and "revolution" in such a conservative and dogmatic sphere as connecting cables of sound equipment.



And, indeed, for decades, audio cables were, in essence, simply "wires" with more or less complex design and architecture. Manufacturers continuously experimented with the selection of metals and alloys for conductors, insulating materials, some even embedded additional passive or active devices in cables, but the general concept remained almost unchanged. So what is the technological breakthrough of **High Fidelity Cables??** After all, it would seem, to date, all conceivable options and combinations of solutions in the manufacture of audio cables have already been tried. The company's founder, Rick Schulz (Rick Schultz), does not consider cables as simple wires that perform a "supporting" role in the audio system, but as a full-fledged and full component, the same as the signal source, amplifier, etc., but the entire system not as a set of some electronic units, but as a complete electromagnetic complex. Several years of research and experimentation led him to a new solution, which was officially patented, US Patent 8272876. Until recently, these wonderful cables were unknown to us and practically inaccessible, but with the advent of the official representative of High Fidelity Cables products in Russia, we have the opportunity to study in depth this product.



## Likbez

Before proceeding to the practical testing and evaluation, it is worthwhile to understand the basic essence of the differences between new cables and traditional ones. Rick Schulz calls the technology of his cables "magnetic conductivity." And there is no mysticism or esoteric. Everything is based on the good old laws of physics - the equations of British physicist, mathematician James Clerk Maxwell, formulated as early as the middle of the XIX century, the Lorentz force, named after the Dutch physicist Hendrik Lorentz, who derived the expression for this force in 1892, and many other fundamental discoveries in electrodynamics and electromagnetism. In order not to bore the reader with formulas and quotations from academic textbooks, we will try to explain the essence of the phenomenon in a clear language. Electric current causes magnetism, and vice versa, and they are inseparable from each other. Starting from the power plug and even electrical wiring in the wall, to the very end of the audio path, the system depends on magnetism. Not only alternating currents, but also magnetic waves enter the audio system, are modulated by the source, amplified in the amplifier, and sent to the speaker's voice coil. Here they interact with a permanent magnet and make the speaker cone move and eventually play music. But this is only a very superficial glance at what is happening.



Without going into quantum mechanics, we can say this: electrons are "carriers" of electric current. And electrons "rotate around its axis." These are natural facts. Why in quotes? Because electrons are not some tiny balls or spheres that are spinning and moving somewhere. Imagine that it is impossible to rotate in an electron, the electron has no structure. These are charged particles, the energy itself, and these particles have an angular momentum or angular momentum that characterizes the amount of rotational motion of the particle. All this is rather abstract, and intuition and personal life experience will not help to realize this, therefore the term "spin" was introduced by physicists (from the English word spin - to rotate). Spin is characterized by the fact that particles behave as if they rotate around its axis. The spin sets the direction of the particle, makes it oriented in space, and generally behaves like miniature gyroscopes or small tops. But what's with the magnets? And despite the fact that since the electron has an electric charge, and since it "rotates along an axis," it creates a certain magnetic field, that is, it is simultaneously a microscopic magnet. And here it is - using other magnets, you can reject individual electrons, direct them in the right direction.



### **Overcoming problems in sound reproduction**

Practically any of you at least heard about the Large Hadron Collider, that at CERN, or about rail guns. They and High Fidelity cables are united by one remarkable detail: powerful external magnets allow you to concentrate and direct the flow of charged particles. To demonstrate this phenomenon, Rick Schulz at his seminars for clarity uses a simple transparent cathode ray tube (the simplest picture tube). Through the glass of the bulb it is clearly visible how the electron beam can change its density, focus and direction depending on the strength and directivity of the external magnetic field. Of course, in solid conductor, the processes are somewhat more complicated, but the essence can be caught.



The musical signal, which is the most complex form of alternating current, inevitably degrades by “traveling” along the wires from component to system component. One of the main factors influencing this set is the dispersion and modulation by external variable magnetic fields. It is worth remembering about the notorious “skin effect”, which consists in the fact that the higher the frequency (or the shorter the signal micro-points), the closer current flows to the conductor surface. In the middle, there is practically “complete calm” and no current. Audio electricians furiously deny this fact by stating that this phenomenon cannot occur at frequencies in the audio range. However, this is not the case. With a large assumption, it is possible to draw an analogy between what is happening with a musical signal in a conventional wire and a steam jet discharged from a narrow nozzle into a pipe of large diameter. The concentrated stream quickly turns into a dispersed cloud, although it continues to move in a given direction. High Fidelity Cables technology eliminates the “spreading” of electrons through the conductor's body, as if concentrating them closer to the central part, at the same time increasing the signal “resistance” to external parasitic electromagnetic fields, thereby significantly reducing distortion and loss of the useful signal.



**Signal quality preservation with magnets**

But this is only half the magnetic conduction technology. Rick Schulz went ahead and made the magnets themselves a signal conductor. This causes their unusual appearance. High Fidelity cables in the middle of their length have very massive elongated cylinders, inside of which there are packages of many very strong rare-earth magnets. In the middle there is a special set of magnets through which the signal goes directly. This set is surrounded by a “jacket” of a variety of precisely oriented magnets that act as concentrators and screens. The same cylinders are located at the ends of the cable, instead of the usual connectors. RCA connectors or acoustic terminals are integrated into these magnetic cylinders and are integral. Moreover, the conductor between the cylinders can be made of magnetically soft materials (characteristic of permalloy or mu-metal) or materials with ferromagnetic properties, depending on the model and purpose of the cable. Great importance is attached and damping. If to summarize - the obtained effect exceeded expectations, and it turned out very fast and accurate transmission of musical information. The sound of cables made according to patented magnetic conduction technology turned out to be so good that only single models of several well-known manufacturers, from the highest price category, can compete with High Fidelity cables. It is worth emphasizing that at the same time High Fidelity cables are much cheaper than competitors with comparable sound quality. Great importance is attached and damping. If to summarize - the obtained effect exceeded expectations, and it turned out very fast and accurate transmission of musical information. The sound of cables made according to patented magnetic conduction technology turned out to be so good that only single models of several well-known manufacturers, from the highest price category, can compete with High Fidelity cables. It is worth emphasizing that at the same time High Fidelity cables are much cheaper than competitors with comparable sound quality. that only a few models of several well-known manufacturers, from the highest price category, can compete with High Fidelity cables. It is worth emphasizing that at the same time High Fidelity cables are much cheaper than competitors with comparable sound quality. that only a few models of several well-known manufacturers, from the highest price category, can compete with High Fidelity cables. It is worth emphasizing that at the same time High Fidelity cables are much cheaper than competitors with comparable sound quality.



Of course, in our world, nothing is perfect. Users of High Fidelity cables are challenged by the fact that, due to the specifics of physical processes, new cables show all their capabilities and are fully revealed after about 400 hours of warming up (or “playing around”), less or more depending on the model. Not everyone has the patience to wait for this moment. Those who have enough patience will be rewarded a hundredfold. In addition, volumetric and rather heavy central cylinders and end magnetic systems require some care from users during installation. No, they are absolutely durable and reliable and in this regard there is nothing to worry about, but it’s undesirable to touch them with the surrounding objects and equipment. It’s like waving small dumbbells. But at the same time the cables themselves are quite flexible and do not cause difficulties in connecting,



*Mikhail Alexandrov*

*November 4, 2018*

**# HIGH FIDELITY CABLES , #CABLES**