Betavolt successfully develops atomic energy battery for civilian use

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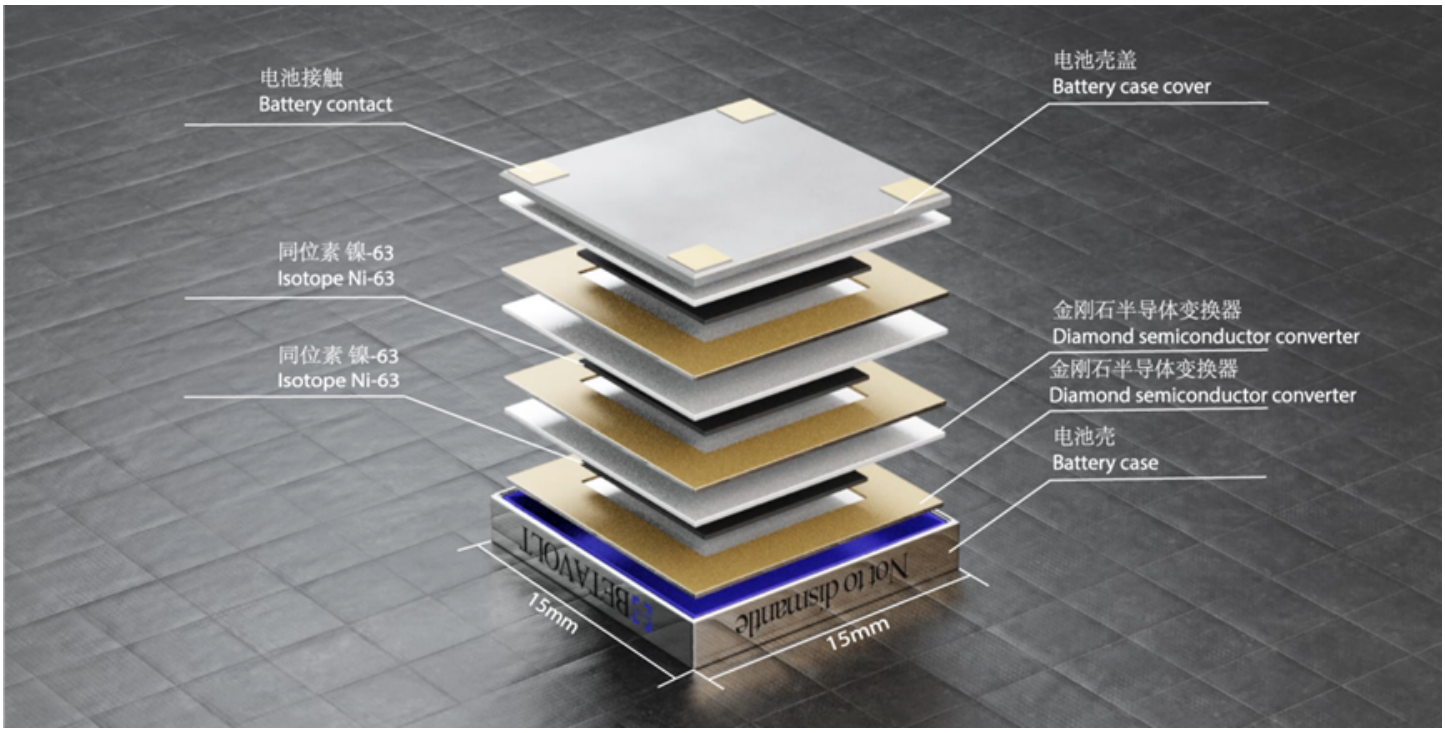
Beijing Betavolt New Energy Technology Co., Ltd. announced on January 8 that it has successfully developed a miniature atomic energy battery. This product combines nickel 63 nuclear isotope decay technology and China's first diamond semiconductor (4th generation semiconductor) module to successfully realize the miniaturization of atomic energy batteries. , modularization and low cost, starting the process of civilian use. This marks that China has achieved disruptive innovation in the two high-tech fields of atomic energy batteries and fourth-generation diamond semiconductors at the same time, putting it "way ahead" of European and American scientific research institutions and enterprises.



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Atomic energy batteries, also known as nuclear batteries or radioisotope batteries, work on the principle of utilizing the energy released by the decay of nuclear isotopes and converting it into electrical energy through semiconductor converters. This was a high-tech field that the United States and the Soviet Union focused on in the 1960s . Currently, there are only thermonuclear batteries used in aerospace. This type of battery is large in size and weight, has high internal temperatures, is expensive, and cannot be used by civilians. In recent years, miniaturization, modularization and civilian use of nuclear batteries have been the goals and directions pursued by European and American countries. China's "14th Five-Year Plan and 2035 Vision Goals" also propose that the civilianization of nuclear technology and the multi-purpose development of nuclear isotopes are future development trends.

Betavoltaic nuclear batteries develop a completely different technological approach, generating electric current through the semiconductor transition of beta particles (electrons) emitted by the radioactive source nickel -63 . To do this, Betavolt's team of scientists developed a unique single-crystal diamond semiconductor that is just 10 microns thick, placing a 2- micron-thick nickel -63 sheet between two diamond semiconductor converters. The decay energy of the radioactive source is converted into an electrical current, forming an independent unit. Nuclear batteries are modular and can be composed of dozens or hundreds of independent unit modules and can be used in series and parallel, so battery products of different sizes and capacities can be manufactured.

Zhang Wei, chairman and CEO of Betavolt , said that the first product the company will launch is BV100 , which is the world's first nuclear battery to be mass-produced. The power is 100 microwatts, the voltage is 3V , and the volume is 15 X 15 X 5 Cubic millimeters are smaller than a coin. Nuclear batteries generate electricity every minute, 8.64 joules per day, and 3153 joules per year. Multiple such batteries can be used in series and parallel. The company plans to launch a battery with a power of 1 watt in 2025. If policies permit, atomic energy batteries can allow a mobile phone to never be charged, and drones that can only fly for 15 minutes can fly continuously.

According to reports, the atomic energy battery is a physical battery, not an electrochemical battery. Its energy density is more than 10 times that of ternary lithium batteries. It can store 3,300 megawatt hours in a 1- gram battery . It will not catch fire or explode in response to acupuncture and gunshots. Because it generates electricity automatically for 50 years, there is no concept of the number of cycles of an electrochemical battery (2000 charges and discharges). The power