

History of Lithium-Ion Batteries



POWERING THE FUTURE

Lithium [Li³] is ideal for batteries because of its low density and atomic weight. This small size speeds its diffusion and ability to flow energy. Early Li-ion cells had serious safety issues, however the development in the 1990s and 2000s focused on safer electrolytes, separators and additives. This has resulted in an innovation cycle with dramatic growth in applications and market demand.



























Lithium batteries were first proposed by British chemist M. Stanley Whittingham while working for Exxon.



Adam Heller invents the lithium-thionyl chloride battery, still used in implantable medical devices and defense systems due to their 20-year shelf life, high energy density, and extreme operating temperatures.



Working on separate teams, Stanford University Ned Godshall and John Goodenough with Koichi Mizushimaat Oxford University, demonstrated rechargeable lithium cells using lithium cobalt oxide (LiCoO2) cathodes.



French Moroccan scientist Rachid Yazami, working at the University of Grenoble, discovered the graphite anode used in today's lithium-ion battery chemistry.



Sony, based on earlier research by Asahi Chemical in Japan, introduced the first commercial lithium-ion battery.



Scientists succeeded in using lithium manganese oxide as a cathode material allowing for the world's first rechargeable battery. NEC applied this new battery technology to mobile phones and electric assist bicycles.



Farly lithium-ion batteries made by Sony were not thermally stable and prone to catch fire. John Goodenough, considered the"father of the lithium-ion battery", developed a nano technology that enabled a more stable polymer-based solution



Scientists developed the first laminated lithiumion batteries making them ideal for small, portable devices like mobile phones, cameras, laptops and tablets.



Lithium-ion batteries continue to become smarter, cleaner, safer and lighter. This has created a product innovation cycle that has increased dramatically as the batteries are now commonly used in electric and hybrid vehicles, drones, energy storage and have many industrial uses for both small and large capacity requirements.

The Amplify Lithium & Battery Technology ETF (BATT) is a portfolio of companies generating more than 50% of their revenue from the development, production and use of lithium battery technology, including: 1) battery storage solutions, 2) battery metals & materials, and 3) electric vehicles. BATT seeks investment results that correspond generally to the EQM Lithium & Battery Technology Index.

Carefully consider the Fund's investment objectives, risk factors, charges, and expenses before investing. This and additional information can be found in Amplify Funds statutory and summary prospectus, which may be obtained above or by calling 855-267-3837, or by visiting AmplifyETFs.com. Read the prospectus carefully before investing.

Investing involves risk, including the possible loss of principal. Shares of any ETF are bought and sold at market price (not NAV), may trade at a Investing involves risk, including the possible loss of principal. Shares of any ETF are bought and sold at market price (not NAV), may trade at a discount or premium to NAV and are not individually redeemed from the Fund. The Fund is not actively managed. The Fund invests in securities included in its Index regardless of their investment merit. Narrowly focused investments typically exhibit higher volatility. A portfolio concentrated in a single industry, such as lithium battery technology, makes it vulnerable to factors affecting the companies. The Fund may face more risks than if it were diversified broadly over numerous industries or sectors. The Fund has become more susceptible to potential operational risks through breaches in cybersecurity. The Fund invests in securities that are issued by and/or have exposure to, companies primarily involved in the metals and mining industry. Investments in metals and mining companies may be speculative and subject to greater price volatility than investments in other types of companies. The exploration and development of metals involves significant financial risks over a significant period of time, which even a combination of careful evaluation, experience and knowledge may not eliminate. Rare earth metals have more specialized uses and are often more difficult to extract. The increased demand for these metals has strained supply, which could adversely affect the companies in the Fund's portfolio. Some of the companies in which the Fund will invest are engaged in other lines of business unrelated to the mining, refining and/or manufacturing of metals and these lines of business could adversely affect their operating results.

The Fund's assets are concentrated in the materials sector, which means the Fund will be more affected by the performance of the materials sector than a fund that is more diversified. The Fund currently has fewer assets than larger funds, and like other relatively new funds, large inflows and outflows may impact the Fund's market exposure for limited periods of time. The Fund will invest in the securities of non-U.S. companies. Investments in emerging market issuers are subject to a greater risk of loss than investments in issuers located or operating in more developed markets. The mining, refining and/or manufacturing of metals may be significantly affected by regulatory action and changes in governments. Small and/or mid-capitalization companies may be more vulnable to adverse general market or economic developments. Electric vehicle technology is relatively new and is subject to risks associated with a developing industry.

The EQM Lithium & Battery Technology Index (BATTIDX) seeks to provide exposure to global companies associated the development and production of lithium battery technology and/or battery storage solutions; the exploration, production, development, processing, and/or recycling of the materials and metals used in lithium battery chemistries such as Lithium, Cobalt, Nickel, Manganese, Vanadium and/or Graphite; and/or the development and production of electric vehicles.

Amplify Investments LLC is the Investment Adviser to the Fund, and Toroso Investments, LLC serves as the Investment Sub-Adviser.

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ONLINE: AmplifyETFs.com
EMAIL: info@AmplifyETFs.com

PHONE: 855-267-3837 | (855-AMP-ETFS)