

# How Portable Power Sparked the Technological Revolution

The development of portable power sources has been a major driving force behind the technological revolution. From the first portable batteries to the modern smartphone, portable power has enabled us to create devices that are smaller, lighter, and more powerful than ever before. This article explores the history of portable power and its impact on the development of technology.



## The Battery: How Portable Power Sparked a Technological Revolution by Wendy Heard

★★★★☆ 4.5 out of 5

Language : English  
File size : 858 KB  
Text-to-Speech : Enabled  
Screen Reader : Supported  
Enhanced typesetting : Enabled  
Word Wise : Enabled  
Print length : 324 pages



## The Early Days of Portable Power

The first portable power sources were developed in the 19th century. These early batteries were large and heavy, and they could only provide a limited amount of power. However, they were still a major breakthrough, as they

allowed people to use electrical devices away from a fixed power source.



In the early 20th century, the development of the lead-acid battery made portable power more practical. Lead-acid batteries are more compact and lighter than early batteries, and they can provide more power. This made them ideal for use in a variety of applications, including cars, boats, and

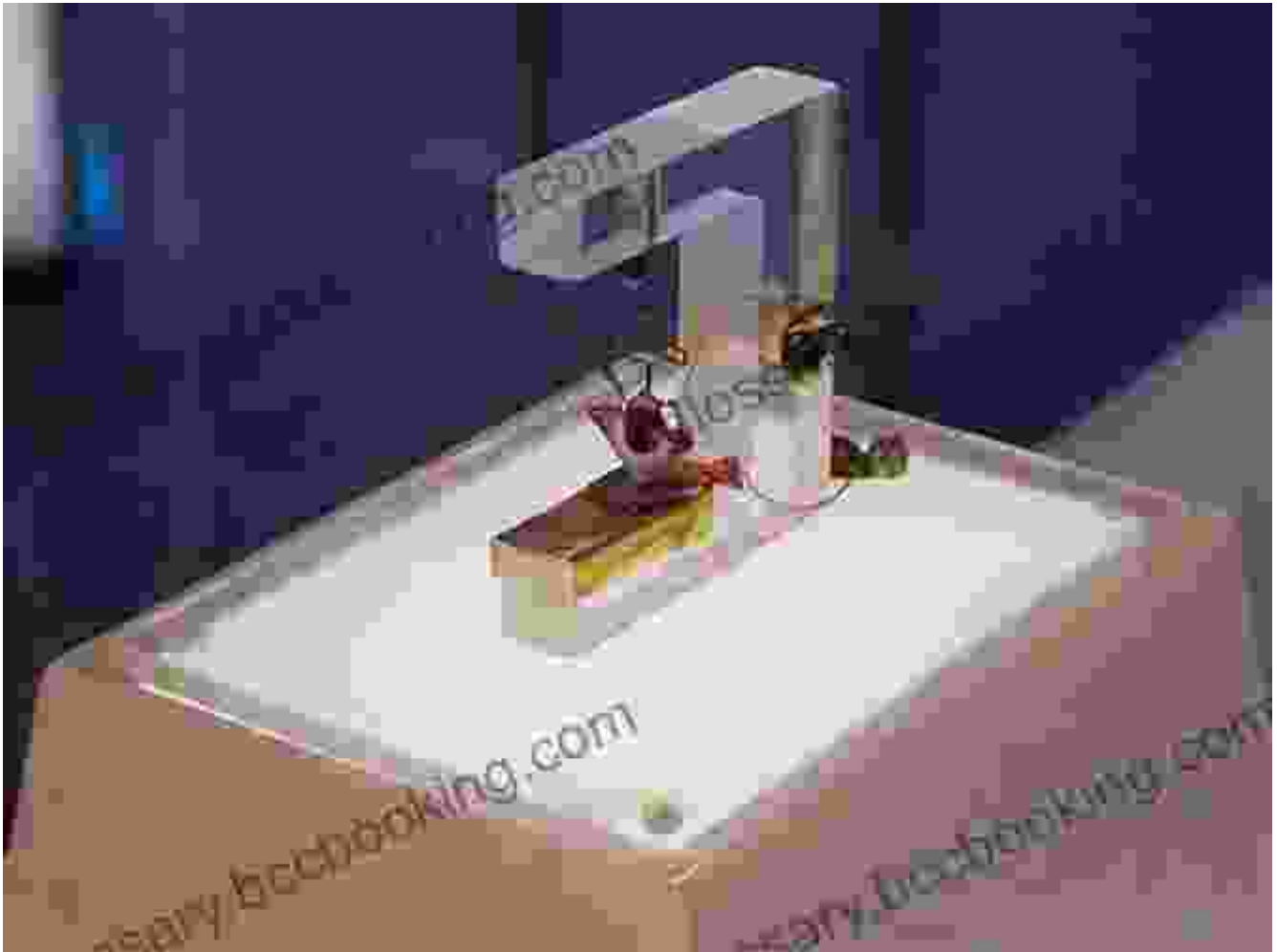
airplanes.



## **The Development of the Transistor**

The development of the transistor in the late 1940s was a major turning point in the history of portable power. Transistors are much smaller and more efficient than vacuum tubes, which were used in early electronic devices. This made it possible to create portable devices that were much

smaller and lighter than before.



In the 1950s and 1960s, the development of new battery technologies, such as the nickel-cadmium battery and the lithium-ion battery, made portable power even more practical. These batteries are smaller, lighter, and more powerful than lead-acid batteries, and they can be recharged many times. This made them ideal for use in a wide range of portable

devices, including laptops, cell phones, and digital cameras.



### The Rise of the Smartphone

The development of the smartphone in the early 2000s was a major turning point in the history of portable power. Smartphones are small, powerful computers that can be used for a wide range of tasks, including making phone calls, sending text messages, browsing the Internet, and playing

games.



Smartphones require a lot of power, and this has led to the development of new battery technologies, such as the lithium-polymer battery. Lithium-polymer batteries are thinner and lighter than other types of batteries, and

they can provide more power for a longer period of time.

## 5 Types of Lithium-Ion Batteries



The infographic is titled "5 Types of Lithium-Ion Batteries" and is set against a blue background. It features a central illustration of three cylindrical battery cells. The text is organized into five columns, each describing a different battery type. The columns are: Lithium-Cobalt Oxide Battery (top left), Lithium-Nickel/Manganese-Cobalt Oxide Battery (top right), Lithium-Iron Phosphate Battery (center), Lithium-Titanate Battery (bottom left), and Lithium-Manganese Oxide Battery (bottom right). Each column contains a list of bullet points detailing the battery's characteristics and typical uses. A small image of a black rectangular battery is shown at the bottom center.

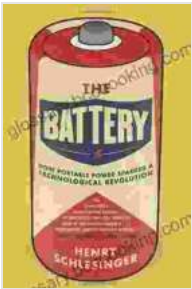
- Lithium-Cobalt Oxide Battery**
  - Used mostly in portable electronics (Cell phones, laptops and cameras)
  - Risky especially when damaged
  - Expensive to make and expensive to recycle
  - Low discharge rates
  - Higher energy density (150-200) Wh/kg
- Lithium-Nickel/Manganese-Cobalt Oxide Battery**
  - Longer life and inherently safer
  - Less prone to overheating
  - Used in power tools, e-bikes and electric power trains
  - Lower energy density (80-110) Wh/kg
- Lithium-Iron Phosphate Battery**
  - Dramatically reduces the risks of overheating and fire
  - Offers much less volumetric capacity
  - Used in power tools and medical equipment
  - Longer life and inherently safe
  - Lower energy density (90-140) Wh/kg
- Lithium-Titanate Battery**
  - Can operate at very low temp (-90°C)
  - Reapid charge and discharge
  - Used in Mitsubishi iMiEV
  - Lower inherent voltage 2.4 V (compared to 3.7 V)
  - Lower energy density (50-110) Wh/kg
- Lithium-Manganese Oxide Battery**
  - Lower cost
  - Longer life and inherently safe
  - Used in hybrid vehicles, cell phones, laptops
  - High discharge rates
  - Lower energy density (110-120) Wh/kg

The development of portable power sources has been a major driving force behind the technological revolution. Portable power has enabled us to create devices that are smaller, lighter, and more powerful than ever before. This has made it possible for us to stay connected, entertained, and productive on the go.

The development of portable power sources is a continuing process. New battery technologies are being developed all the time, and these technologies are making it possible for us to create devices that are even more powerful and portable than before. It is clear that portable power will



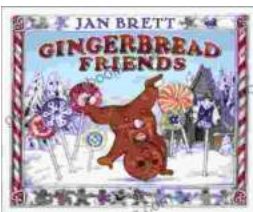
continue to play a major role in the development of technology in the years to come.



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