

## Applications of lithium ion batteries

Lithium-ion batteries have revolutionized portable power since their mainstream introduction in the early 1990s. Their energy density, rechargeability and declining costs have made lithium cells ubiquitous across consumer electronics and industrial sectors. This post examines 15 popular lithium-ion batteries applications that have been made possible through advancements in lithium-ion battery technology.

Some of the earliest mass adoption of lithium-ion batteries came from laptop computers and smartphones in the late 90s and 2000s. As processors grew more powerful yet compact, lithium cells kept devices operable for hours untethered. Their success helped spark a wave of consumer gadgets optimized for mobile usage. Today, the list of products powered by lithium batteries continues expanding rapidly to serve new frontiers of portable power.

Of course, one of the most well-known uses of lithium-ion batteries is in smartphones. Virtually every cell phone sold today relies on lithium batteries to provide power. Advancements in lithium technology have enabled smartphones to become thinner, lighter and last longer on a single charge over time. Continuous improvements aim to satisfy growing demands for longer battery life as smartphones take on more functions.

Like cell phones, laptop computers were also early adopters of lithium-ion battery technology. Their rechargeable nature makes them perfect for portable computing applications. The high energy density of lithium batteries allows laptops to run for hours on a single charge. Many laptops today feature 24/7 battery life thanks to efficient processors and lithium technology advancements.

One area witnessing explosive growth in lithium-ion battery use is electric vehicles (EVs). EVs like Tesla, Chevy Bolt and Nissan Leaf all rely entirely on lithium batteries for power. As demand for EVs grows due to environmental concerns, lithium manufacturing is racing to keep up. Battery costs have declined while driving range has increased, making EVs more practical for many drivers.

Handheld power tools commonly use lithium-ion batteries as well. Drills, saws, sanders 211; they all run on rechargeable lithium packs. The high energy density of lithium allows compact battery designs that don't add much bulk. And they deliver enough power and runtime for job site use. Contractors appreciate not having to deal with corded tools or changing non-rechargeable batteries constantly.

Due to their small size and rechargeability, lithium batteries are well-suited for medical device applications too. Pacemakers, defibrillators and other implantable devices rely on lithium microbatteries to function for years inside the body. Outside the body, lithium batteries power portable medical equipment like pulse oximeters and blood pressure monitors.

The flight time of consumer and professional drones dramatically increased thanks to lithium-ion batteries.

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High-capacity lithium packs provide drones with around 30 minutes of flying on a single charge. As drone technology develops, battery improvements will likely enable features like sense-and-avoid and extended hovering times. Lithium is key to making drones practical tools.

Digital cameras were another early mass market product to use lithium-ion batteries. Their rechargeable nature eliminated the need to constantly buy disposable batteries. Higher capacity lithium batteries now provide DSLR cameras battery lives measured in hundreds of shots per charge. Action cameras like GoPro also rely heavily on compact, powerful lithium batteries.

Kids' toys like ride-on vehicles and robotic dinosaurs often run on lithium-ion batteries. Their reusability makes lithium appealing for toys that see frequent use. Battery packs provide functional toys that don't require frequent battery replacements. Meanwhile, high-capacity lithium enables features like remote controls with realistic range.

Cordless power tool lineups from Dewalt, Makita, Milwaukee and more are completely lithium-ion powered today. Their lightweight lithium battery packs deliver the necessary runtime and power for jobsites. Rapidly charging battery technologies eliminate downtime spent waiting for NiCad packs to recharge. Compatible battery packs even work across different cordless tool lines.

As cycling becomes more popular for recreation and commuting, e-bikes are surging in sales. Lithium-ion batteries enable e-bike designs that don't look much different than normal bicycles. High-capacity lithium packs provide pedal-assist ranges up to 50+ miles on a single charge. Like electric cars, e-bikes represent a growing lithium application.

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