Panasonic

POWERING OUR FUTURE

How battery technology is evolving the way we move

Batteries are integral to our daily lives. From cell phones to smart watches to electric vehicles (EVs), batteries are what make on-the-go power possible.

As battery tech evolves, it opens up new possibilities for human mobility. What does the future hold?

CHARGING FORWARD

Engineers are constantly working to advance battery technology. What can we expect as batteries continue to improve?

FASTER RECHARGING
Recharging a battery takes time, especially if that battery stores a lot of energy. Imagine a future where charging an electric vehicle only takes as long as refilling at a gas station.

GREATER CAPACITY
Batteries can only hold a certain amount of energy. Improved energy density could mean your smartphone would last days or even weeks on a single charge.

MORE POWER
Batteries can only supply so much current to a device; greater power is needed to move larger and heavier vehicles. Advancements in battery power could pave the way for battery-powered airplanes.

LONGER LIFESPAN
All batteries lose their charge over time, and rechargeable batteries become less effective with each recharge. Imagine batteries that could be stored – and recharged – for decades.

LOWER COSTS
Batteries are the biggest cost driver for electric vehicles today, so working to produce batteries more efficiently would go a long way towards making EVs affordable for everyone.

PIONEERING POWER

Forward-thinking companies are also looking at new ways to manage the battery lifecycle – think "batteries as a service." Here's how that might look:

DEVELOP AND DEPLOY
Design and create a purpose-built battery for applications such as energy storage or mobility.

MONITOR AND MANAGE
Through battery monitoring, data can be gathered and used for deep learning. This intelligence can then be applied automatically to help maximize battery life.

REUSE OR RECYLCE
When the battery is no longer optimal for its original purpose, it can be reused for another application or recycled for its materials.

TOMORROW'S POSSIBILITIES

In addition to improving today's batteries, scientists are also looking at new ideas. Here are some battery types and applications that could soon power our lives:

SOLID-STATE BATTERIES
Contain a solid electrolyte rather than a liquid. This would make them cheaper and allow them to withstand extreme temperature changes.

BIO BATTERIES
Powered by organic compounds from glucose in the blood, these batteries will be useful for applications in the healthcare field.

PLANE/TRAIN BATTERIES
Will have the strength and efficiency to power larger vehicles over longer periods of time, making for cleaner and greener travel.

PAPER BATTERIES
Thin as paper, these batteries are environmentally friendly, flexible and able to be reshaped freely.

SEAWATER BATTERIES
Generate electricity from seawater, so will serve as a clean and economical source of energy.

CLOTHING BATTERIES
Clothing would work as a solar cell, making this battery both convenient and eco-friendly. This smart clothing could heat, cool, or change shade due to environmental conditions.

TODAY'S TECHNOLOGY

Secondary batteries can be recharged after their energy has been depleted. These include:

LEAD-ACID
First rechargeable battery ever invented. Large and powerful but not very portable. Widely used in powering car starters.

NICKEL CADMIUM (NiCd)
First rechargeable option for portable electronics. Sharp decline in use due to concerns around cadmium's toxicity.

NICKEL-METAL HYDRIDE (NiMH)
Replaced NiCd as rechargeable battery of choice for consumer electronics like digital cameras and power tools. Also widely used in hybrid cars.

LITHIUM-ION
Can store large amounts of energy; used almost exclusively in smartphones and laptops. They power EVs such as the Tesla Model S.

Primary batteries, also called "dry batteries," cannot be recharged. Common types include:

ALKALINE
Cost-effective, with a long shelf life. Used in many common household devices, from toys to remote controls to flashlights.

LITHIUM
More costly than alkaline, longer life span. Used in devices like wearables, medical devices and IoT sensors.

Want to know more about how Panasonic's battery tech can help power your mobility project? Contact sales at 1-800-344-2112.