HUDSON DEEP DRAW

A PRECISION GROUP Company

Deep Drawn Stamped Battery Solutions Guide

Battery Enclosures Manufactured with Deep Drawn Stamping

Battery enclosures are metal covers that shelter batteries within devices. The goal of these battery covers is often two-fold: to protect nearby device components in the case of battery failure and prevent outside contamination from reaching the battery. These enclosures can be made from a variety of materials, but seamless metal is often a favorite choice for its durability, lightweight construction, and non-reactivity.

At Hudson Technologies, we use precision deep drawn stamping processes to manufacture battery enclosures in over 15,000 standard shapes and sizes. Battery enclosures can protect batteries in extreme environments and in products or assemblies that face daily wear and tear.

Overview of Battery Enclosures

Battery enclosures house batteries so they can perform without interference from the surrounding environment. Devices ranging from implanted medical devices to space probes need to protect their power sources from radiation, corrosion, physical impact, debris, and more. These enclosures are made from metals in a process called deep drawn stamping, which forms individual metal blanks into shapes that perfectly match the exterior of the battery. This production method creates a seamless shell that offers superior protection.

Some of the key benefits of incorporating stamped battery enclosures into your assemblies include:

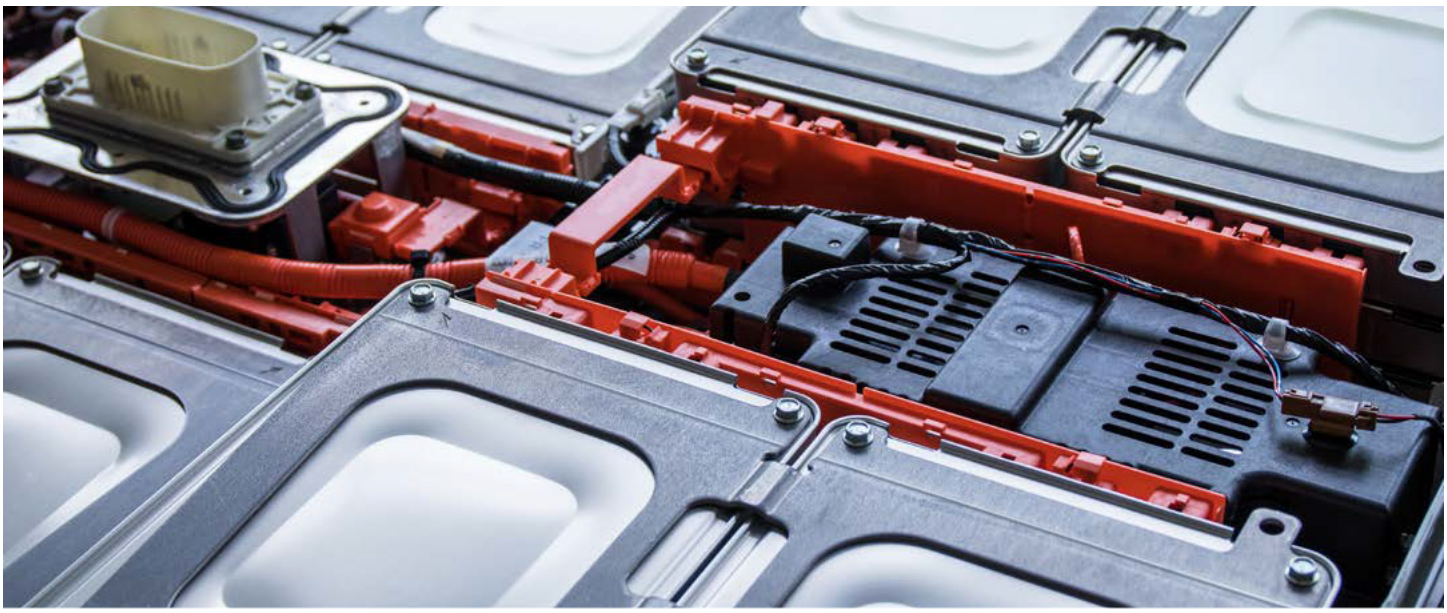
- **Protecting the battery from chemical and environmental damage**
- **Sealing off other device components from the battery in the case of battery failure or leakage**
- **Additional stability for the battery by holding it in place and limiting the impacts of rattling, vibration, and physical impact on the battery**
- **Ensuring a tight, sealed connection to other components within the device**
- **Providing a high-quality surface finish for enhanced aesthetic appeal, especially for medical devices**

At Hudson Technologies, we produce our deep drawn stamped battery enclosures from aluminum, stainless steel, steel, titanium, and more.

Applications of Deep Drawn Battery Covers

Deep drawn battery covers are used for products across a diverse range of industries to make devices last longer and protect against contamination, unsafe conditions, and other hazards associated with unprotected batteries. Some of the most popular applications of our deep drawn battery covers include:

- **Aerospace and aviation.** Deep drawn battery covers protect against the extreme conditions associated with the aerospace and aviation industry, such as high pressures, extreme temperatures, and vibration.
- **Consumer electronics.** Battery covers enable devices to maintain more consistent power connections for consumer use, especially on mobile devices.
- **Hybrid electric vehicles.** Battery enclosures protect against vibration and impact that may occur within vehicles.
- **Implantable medical devices.** Seamless battery covers reduce the risk of buildup and corrosion on implanted medical devices so they are safer for long-term use. These devices include pain management devices, pacemakers, surgical implants, and more.
- **Military and defense.** Battery enclosures keep the batteries on moving assemblies — such as unmanned vehicles, missiles, and communication devices — securely in place, even in harsh conditions with lots of vibration and movement.
- **Oil and gas.** Unmanned vehicles, light sources, and critical safety equipment in field locations need the protection that battery covers offer for reliable device performance and reduced risk of equipment failure.



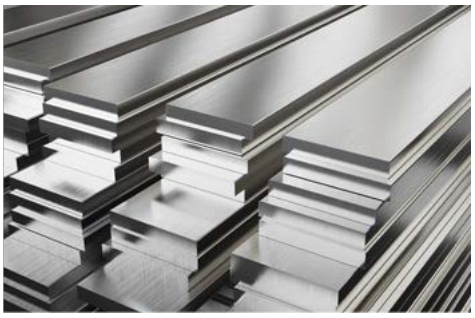
Manufacturing Processes Utilized

At Hudson Technologies, we excel in a variety of manufacturing methods to create long-lasting battery covers from high-quality metals. Our deep drawn stamping process involves the following steps:

- **Design review.** Deep drawn battery covers protect against the extreme conditions associated with the aerospace and aviation industry, such as high pressures, extreme temperatures, and vibration.
- **Press selection.** Battery covers enable devices to maintain more consistent power connections for consumer use, especially on mobile devices.
- **3D virtual prototyping.** Battery enclosures protect against vibration and impact that may occur within vehicles.
- **Equipment setup.** Seamless battery covers reduce the risk of buildup and corrosion on implanted medical devices so they are safer for long-term use. These devices include pain management devices, pacemakers, surgical implants, and more.
- **Deep draw process.** Battery enclosures keep the batteries on moving assemblies — such as unmanned vehicles, missiles, and communication devices — securely in place, even in harsh conditions with lots of vibration and movement.
- **Annealing and finishing.** Unmanned vehicles, light sources, and critical safety equipment in field locations need the protection that battery covers offer for reliable device performance and reduced risk of equipment failure.

We work with a wide range of materials to suit various needs. Our material options include but are not limited to:

- **Stainless steel.** Stainless steel is strong and offers excellent resistance to corrosion and extreme temperatures, making it a suitable material for battery enclosures.
- **Titanium.** Titanium features a strong strength-to-weigh ratio and great corrosion resistance. It is especially suitable for battery covers in the medical and aerospace industries.
- **Steel.** Steel is strong and features good drawability, making it perfect for creating deep drawn battery enclosures.



Deep Drawn Stamped Battery Covers from Hudson Technologies

Battery enclosures hold batteries in place within product assemblies and protect them from external interference and contamination. At Hudson Technologies, we can create standard or custom battery enclosures for your project using high-quality deep drawn stamping processes. Our company is ISO 9001 compliant and we have over 80 years of experience providing deep drawn metal stamping services. Contact us today to learn more about our capabilities or request a quote to start your order.