

# Battery solutions

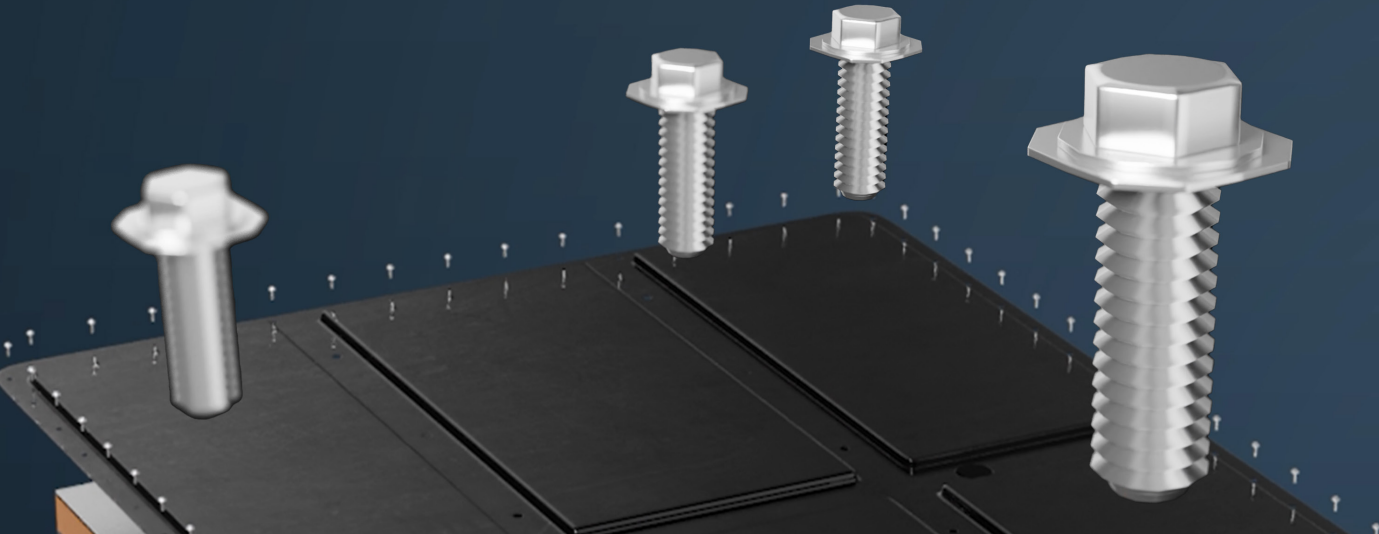
## Fasteners for battery housing



General Metal Finishing

Product portfolio

atotech.com



## Structurally stable fastener technologies – a crucial element in EV battery manufacture

Batteries need robust and secure settings. Therefore, they require high-quality fastenings. Battery components consist of diverse materials such as thin sheet steel, aluminum, or coated composites, and mixed materials. The battery pack must be lightweight, water and airtight while remaining fully serviceable. Battery modules and elements equipped with serviceable fasteners allow for maintenance and future updating. In addition, the battery recycling at the end of the battery's service life calls for reversible joints, facilitating automated retrieval of individual components, calling for similar torque capacities during assembly and disassembly, and multiple tightening capabilities. Battery fasteners must fulfill distinguished requirements. They must be lightweight, some need to be electrically conductive with minimum resistance or non-magnetic, and some require specific isolation coatings, handling different temperatures and tolerance demands. One common requirement that all battery fasteners must fulfill is technical cleanliness since present contaminations could lead to short circuits in the battery resulting in thermal runaway.

### Effective corrosion protection for battery housing fasteners

Atotech® electrolytic and zinc flake-based coatings for brackets, fixtures, and fasteners that fix joints at the contact of metal and non-metal material mix meet the high demands for reduced contact corrosion, improved conductivity, and defined coefficients of friction. Our electrolytic zinc, zinc nickel, and zinc iron processes together with the appropriate post-treatment of passivates, sealers, or topcoats provide outstanding corrosion protection, stable and specific clamping forces, and improved contact corrosion. Our corrosion protection solutions combining top-notch zinc flake topcoats with the highest corrosion-resistant electrolytic coatings show superior corrosion protection results.

# Sustainable surface finishing solutions for the new fastener generation

**UniPrep®:** Long life and low temperature cleaning and degreasing solutions

**UniClean®, Tri-Max®:** Full range of soak and electro cleaners

The combination of **Zinni® 220 + EcoTri® NC + Zintek® Top XT** is a coating system with a stainless-steel appeal, passing 120 cycles of the ASTM G85 A5 cyclic corrosion test.

**Zinni 220:** Acid zinc nickel process combining high plating efficiency with superior thickness distribution

**EcoTri NC:** Cr(III)-based, cobalt-free passivate offering high corrosion protection and operating at low temperatures

**Zintek Top XT:** Inorganic-based, clear topcoat applied over electroplated and passivated layers providing high corrosion protection and best-in-class performance in cyclic corrosion tests

The coating system **Zinni® AL 450 + EcoTri® HC 2 + Techseal® Clear** can achieve the lowest possible contact corrosion possible.

**Zinni AL 450:** Alkaline zinc nickel plating process with a stable nickel incorporation of 12 – 15%

**EcoTri HC 2:** Cr(VI)-free, complexing agent-free thick film passivate for zinc and zinc alloy coatings

**Techseal Clear:** Organic solvent-based topcoat with high barrier protection for reduced contact corrosion

The combined **Hiron® + EcoTri NC + Sealer 350 WL8** system is a nickel and cobalt-free system for high corrosion protection with adjusted coefficient of friction properties.

**Hiron:** Sustainable cyanide and nickel-free zinc iron electrolyte providing excellent adhesion to organic top coats or e-coats

**EcoTri NC:** Cr(III)-based, cobalt-free passivate offering high corrosion protection and operating at low temperatures

**Sealer 350 WL8:** Organic transparent sealer providing superior appearance and corrosion performance

## Atotech auxiliary equipment for corrosion resistant coatings

The **Atotech Inert Anode Technology** inhibits the anodic dissolving of zinc and nickel balancing the anodic and cathodic consumption of metals. The technology allows for an unlimited continuation of the acid zinc nickel electrolyte eliminating the need for a new make-up.

The Atotech ion exchange system, **Tricotect®**, selectively removes contaminating metals from high-performance passivate electrolytes. Compatible with many Atotech trivalent chromium passivates, the continuous on-line purification operation does not interrupt production, providing a potentially unlimited bath life.

The **ZYPHEX®** regeneration system for acid zinc and acid zinc nickel electrolytes removes contaminants like dragged-in oils and residues from pretreatment and organic breakdown products from the electrolyte solution. It ensures consistent process conditions over extended operating times while reducing chemical consumption and minimizing waste and wastewater generation.

### Features and benefits

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- Reduces chemical consumption
- Reduces wastewater treatment burden
- 20 – 30% saving by eliminating new make-up

### Features and benefits

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- Eliminates the need for new make-ups
- Minimizes wastewater
- Significant chemical savings

### Features and benefits

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- Reduced additive consumption
- Reduced generation of waste and wastewater
- On-line purification that eliminates production downtimes

