



Cold Spray for EV Applications

Driving the Future of E-Mobility

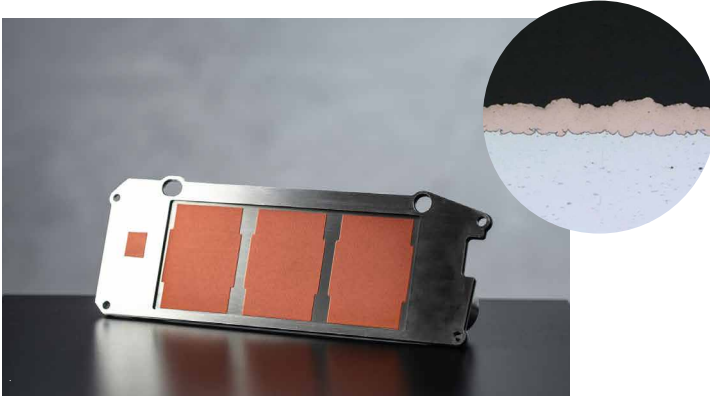
Cold Spray is a Revolutionary Technology for High-Performance Hybrid Components in Electric Vehicles – Combining Copper and Aluminum without Melting Materials. A Solid-State Process for Superior Thermal and Electrical Performance.



Cold Spray for Hybrid Heatsinks

By selectively combining aluminum with copper, this innovative process ensures exceptional thermal management at significantly reduced weight. Cold-sprayed hybrid heatsinks boost cooling performance by up to 30%, thanks to optimized heat transfer and highly conductive soldering – outperforming conventional TIM materials while reducing production costs.

Liquid-Cooled Inverter Heatsink



Layer thickness 100 μm

- Bonding strength greater than 60 MPa
- Overall flatness ≤ 0.15 mm
- Electrical conductivity exceeding 75% IACS
- Copper purity 99.95%

Copper Cold Spray Turnkey Solution for High-Volume Heatsink Applications

Up to 1.5 million parts per system annually

High efficiency for maximum material efficiency

Flexible for various cooler designs

Cycle time: 8-16 seconds per part

Fully automated spray cell

Coating cost: \$0.50-\$2.00 per piece, Deposition efficiency up to 99.8%



impact

& Hybrid Busbars

For hybrid busbars, Cold Spray enables efficient aluminum-copper connections, reducing copper use to where it's needed most. This not only addresses raw material challenges in EV production but also offers a cost-effective, sustainable solution – without compromising conductivity or performance.

Automotive Busbar



- Lightweight design for reduced overall weight
- Low manufacturing costs through efficient production
- Connection points coated with copper powder only where necessary
- Environmentally friendly and sustainable process

Hard Facts:

Continuous Control

Real time monitoring of more than 150 process parameters and system datas

Ready for 24/7 Operations

Robust machine designed for non-stop industrial manufacturing

Durable Products

Proven adhesion strength of over 60 MPa ensures exceptional durability

Cold Spray is not just for e-mobility

The technology is also widely used in the electrical industry – for manufacturing stationary busbars and heat sinks in power distribution, renewable energy, and industrial applications. Cold Spray enables light-weight, highly conductive, and resource-efficient components that meet the demands of modern energy infrastructure.



Cold Spray sets a new benchmark in the manufacturing of lightweight, high-performance components – whether for next-generation e-mobility or advanced applications in power distribution, renewable energy, and industrial systems.

Ready to get started? Contact us!

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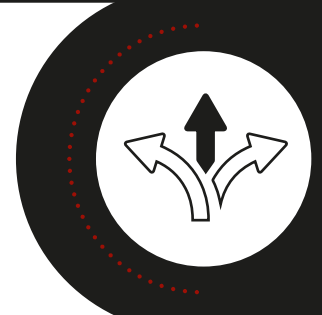
Innovative Technology & Smart Solutions

Impact Innovations is the **Global Technology Leader** for industrial Cold Spray equipment – Your Solution Partner from **Application Development to Industrialization**.



Flexible system solutions from R&D to industrial scale manufacturing

- Material flexibility with widest range of metals and alloys
- From thin coatings to additive manufacturing of large components
- From individual repairs to scalable 24/7 mass production
- Modular plug-&-play hardware for tailor-made solutions



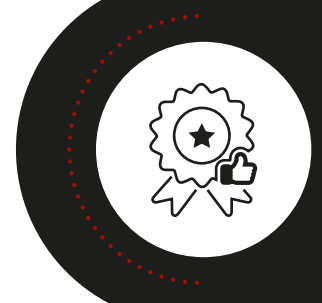
Best performing metal coatings and structures

- No phase transformation and oxidation due to a solid-state process
- Outstanding and adjustable material properties
- Unique material combinations to maximize component performance
- Assured and repeatable quality from prototypes to high volumes



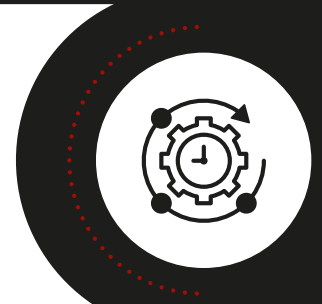
Top quality Made in Germany

- Robust cold spray hardware developed for industrial use
- Continuous online process monitoring and quality control
- Maintenance and user-friendly equipment design
- Future-proof system architecture for digital manufacturing



High resource-efficiency for sustainable production

- Fast spray process with up to 99,8% deposition
- Short cycle time due to high spray rates up to 60 kg/h / 132 lb/h
- Low Total Cost of Ownership (TCO)
- Green process with zero emissions



Innovation partner from idea to industrial success

- Application development experts pushing the technological boundaries
- Solution partner for application specific engineering and industrialization
- On-site and online customer support and service
- Groundbreaking results enabled by pioneering hardware

