impact

We. Spray. Future.

WELCOME TO IMPACT INNOVATIONS

MADE IN GERMANY



GLOBAL TECHNOLOGY LEADER

FOR INDUSTRIAL COLD SPRAY EQUIPMENT

20	30	50	70	100
YEARS OF EXPERIENCE	ACTIVE COUNTRIES	PEOPLE. ONE PASSION.	MATERIALS EXPERTISE	SYSTEMS INSTALLED WORLDWIDE

At Impact Innovations, we don't just build machines – we shape the future of industrial production. Since 2010, we have been the **Global Technology Leader** in **Cold Spray**, a revolutionary solid-state process for **metal coating, additive manufacturing**, and **repair applications** across industries.

Cold Spray unlocks new dimensions in material performance. By combining metals such as copper and aluminum without melting, it enables hybrid structures with outstanding thermal, electrical, and mechanical properties. The result: lightweight components, corrosion-resistant coatings, seamless repairs, and next-generation designs that conventional methods simply can't deliver.

From e-mobility to cookware, from additive manufacturing to aerospace and defense – our systems power high-performance applications around the world. With our modular **EvoCSII Cold Spray System**, we deliver **tailor-made, scalable solutions** – from R&D to full-scale 24/7 industrial manufacturing.

What makes us different?

- **Cutting-edge technology**
- **German-engineered precision**
- **A passionate team of engineers and innovators, always pushing boundaries**

We are your partner from idea to industrial success.
We. Spray. Future.

BUILT TO PERFORM

ENGINEERED AND MAUFACTURED IN-HOUSE



WHY IMPACT?

FROM SYSTEM DESIGN TO MATERIAL RESULTS

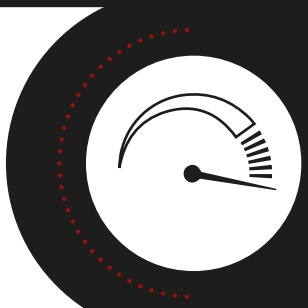
Flexible system solutions from R&D to industrial scale manufacturing

- 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



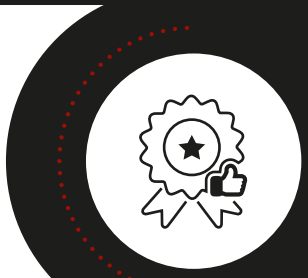
Best performing metal coatings and structures

- 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



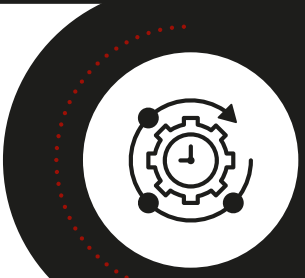
Top quality Made in Germany

- 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



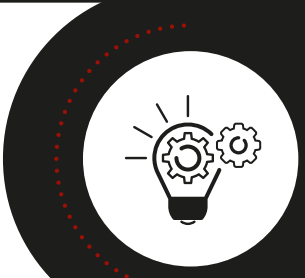
High resource-efficiency for sustainable production

- 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



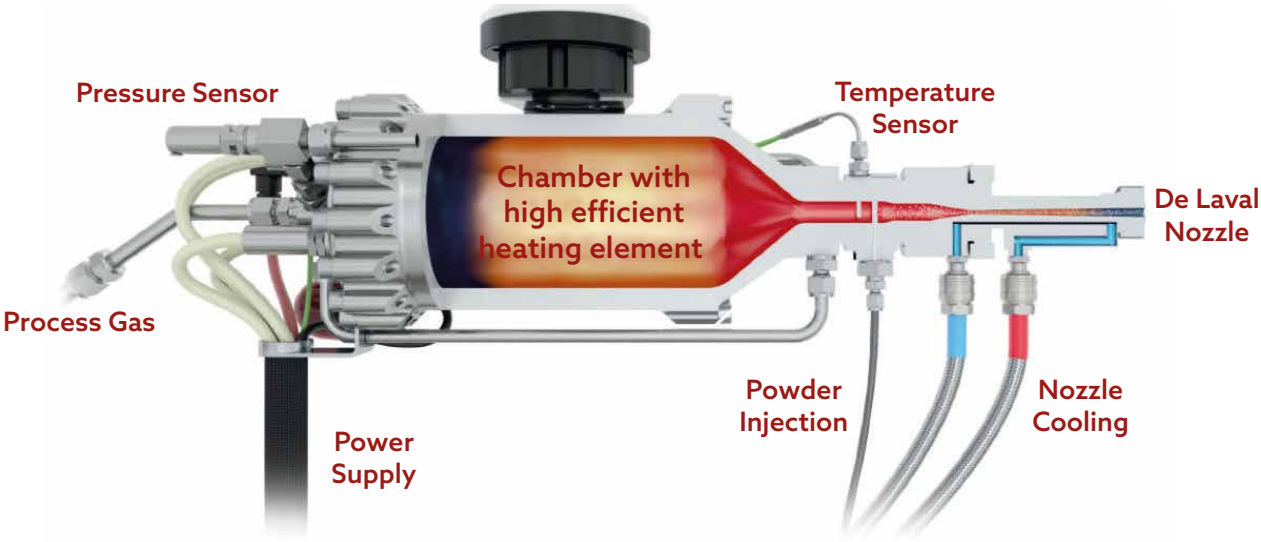
Innovation partner from idea to industrial success

- 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



COLD SPRAY TECHNOLOGY

FROM PARTICLE ACCELERATION TO STRONG, DENSE, HIGH-STRENGTH COATINGS

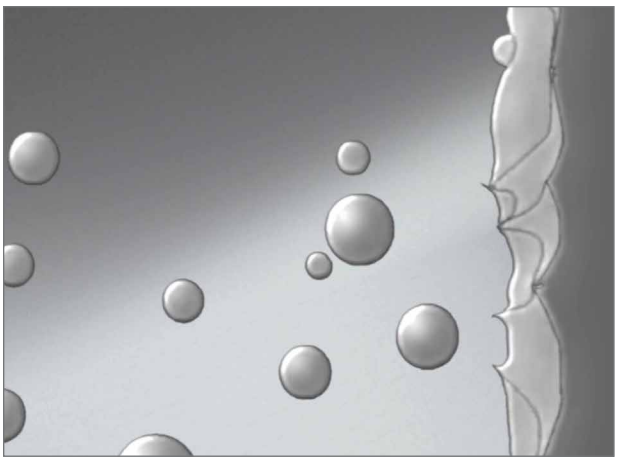


Unlike conventional thermal spray processes, Cold Spray bonds particles without melting. This minimizes thermal impact on the coating and the substrate, preserving material properties and preventing oxidation.

In the Impact Innovations system, heating elements operate at up to 1850 °C / 3362 °F to heat the process gases, which are pressurized up to 100 bar / 1450 psi.
At the nozzle entrance, the gas reaches temperatures of up to 1100 °C / 2012 °F and expands through a De Laval nozzle to supersonic speeds, while simultaneously cooling.

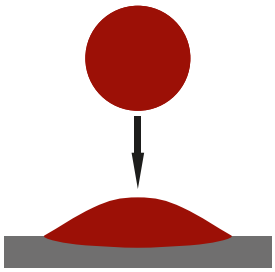
The resulting high particle velocities and plastic deformation upon impact create homogeneous, dense, and low-oxide coatings.
Coating thicknesses range from just a few tenths of a millimeter up to several centimeters.
The mechanical and chemical properties of the coatings are very close to those of the base material.

Metal powders are injected into the convergent section of the nozzle using a powder feeding system and carrier gas. They are accelerated to particle speeds of up to 1200 m/s in the main gas stream. In the highly focused spray jet, particles impact the untreated surface of the component, plastically deform, and bond together. The result is a strongly adhesive, cohesive, and oxide-free coating with exceptional mechanical strength and durability.



PARTICLE VELOCITY INFLUENCE

THE COATING PROCESS



LOW PARTICLE SPEED

The particle impacts the surface at the minimum velocity, just reaching the material's "critical speed". A basic mechanical bond is formed, but with limited deformation and adhesion strength.



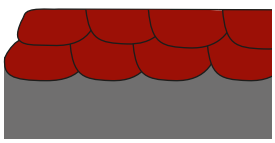
OPTIMAL PARTICLE SPEED

If the particle velocity is higher than the critical speed, the degree of plastic deformation increases. This enhances the bonding between particle and substrate, improving adhesion and coating quality.



HIGH PARTICLE SPEED

If the particle speed exceeds the material's "erosion velocity", the high impact energy causes material removal. Instead of building up a layer, the surface is eroded, and coating becomes impossible.



FINAL COATING BUILD-UP

Dense and robust coatings are achieved when particle velocities remain between the critical and erosion velocities. This balance ensures strong adhesion, minimal porosity, and optimal mechanical performance.

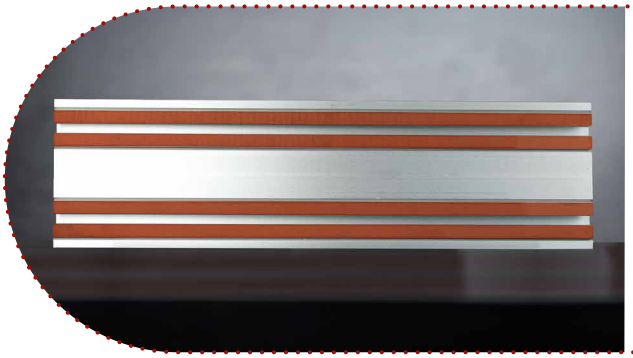
APPLICATIONS & USE CASES

FROM COATING TO ADDITIVE MANUFACTURING & REPAIR

Hybrid Heatsinks

Cold-sprayed hybrid heatsinks combine copper's superior thermal conductivity with aluminum's light weight. The result: up to 30% better cooling, lower production costs, and high durability – for powerful, lightweight, and sustainable thermal management solutions.





Hybrid Busbars

Cold Spray creates lightweight, highly conductive hybrid busbars for power distribution, renewable energy, and industrial systems. Copper is selectively applied to aluminum without masking. The same technology also optimizes busbars for electric vehicles – combining efficiency, performance, and sustainability across industries.

ID-Coating

ID-coating with Cold Spray protects internal surfaces against wear and corrosion, restores functionality, and extends the life of complex parts like crankcases, pipes, or housings. Even tight, hard-to-reach geometries can be coated precisely and reliably – ready for demanding industries.





Hybrid Brake Discs

Cold-sprayed hybrid brake discs combine extreme wear and corrosion resistance with minimal thermal impact. The robust coating technology ensures highest durability, prevents cracks, and reduces particle emissions – meeting the toughest industry standards for performance, sustainability, and cost-efficiency.



Induction Cookware

Cold Spray creates dense, oxide-free coatings for induction cookware, enabling direct heat transfer without losses. With exceptional bonding strength and minimal layer thickness, it ensures durable, corrosion-resistant, and energy-efficient solutions – ready for flexible, sustainable mass production.

Additive Manufacturing & Repair

Cold Spray enables fast additive manufacturing and repair: existing parts can be enhanced with new structures, restoring or upgrading functionality. The result: reduced production time, excellent mechanical properties, and high-quality solutions without thermal impact.





Aerospace

Cold Spray Additive Manufacturing enables rapid production of rocket nozzles and combustion chambers with optimized wall thickness and no thermal distortion. High-density coatings from advanced materials like niobium ensure durability, performance, and lightweight design – ready for next-generation space missions.

Defense & Aviation

Cold Spray unlocks new possibilities for Defense and Aviation: efficient repair of aircraft components like fan blades, landing gear, and housings – and high-performance manufacturing of missile parts, warhead components, and protective coatings. Fast, sustainable, and with minimal thermal impact.





Nuclear / Energy Applications

Cold Spray creates dense, uniform coatings that protect critical components in nuclear and energy applications. Corrosion-resistant nickel layers extend service life and ensure maximum reliability – without thermal distortion, even in the toughest environments.

R&D & APPLICATION CENTER

FROM FIRST TRIALS TO PRODUCTION-READY COLD SPRAY PROCESSES

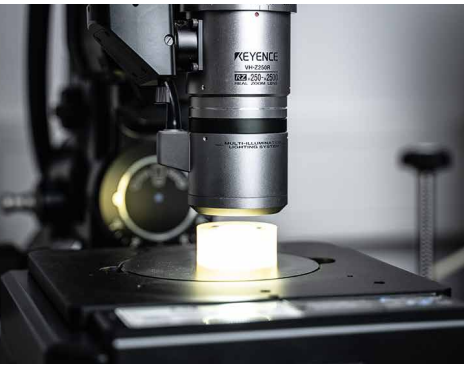
Our in-house Cold Spray R&D Center is dedicated to turning innovative ideas into industrially viable solutions. As a system manufacturer with extensive application know-how, we combine equipment development and process optimization under one roof.

From the initial selection of suitable materials to layer property optimization and system configuration, our team supports every stage of your project.

Our laboratory offers extensive testing, qualification, and prototyping under real production conditions. With a deep understanding of material behavior and deposition dynamics, we push the limits of what Cold Spray can achieve.

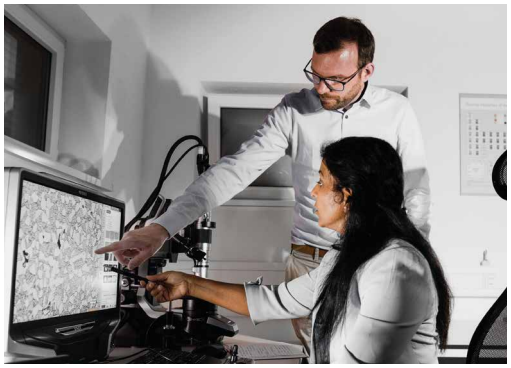
Whether you're developing a new product, optimizing an existing process, or scaling up to series production – we are your partner from first test to final implementation.

EFFICIENCY



From idea to prototype to production-ready process – with minimal development time and maximum impact.

EXPERIENCE



Decades of Cold Spray expertise meet real-world industrial insight – for proven, reliable results.

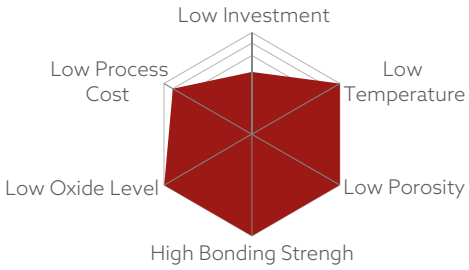
RESOURCES



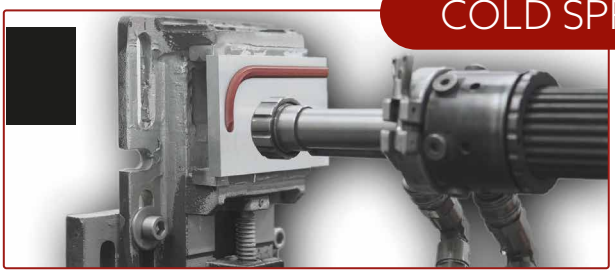
Our in-house lab infrastructure allows flexible testing, fast iterations, and process scaling – all in one place.

CLEAR ADVANTAGE

COLD SPRAY COMPARED TO HVOF AND PLASMA SPRAY



COLD SPRAY



KEY BENEFITS

FLEXIBILITY

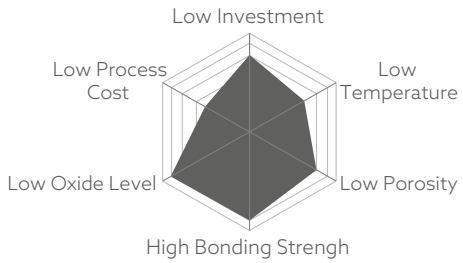
- Broad material range and combinations
- No workspace size limitations
- Coating thicknesses from thin layers to AM
- Fast and easy material change

QUALITY

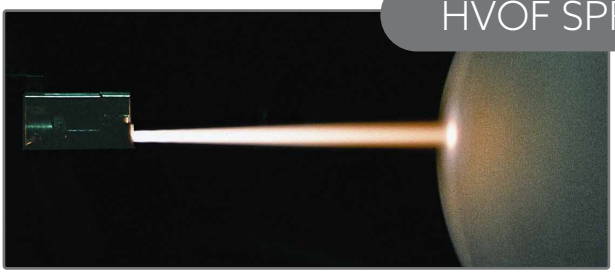
- Dense, gas-tight coatings with low porosity
- No thermal stress on materials and substrates
- High electrical and thermal conductivity
- High bonding and tensile strength

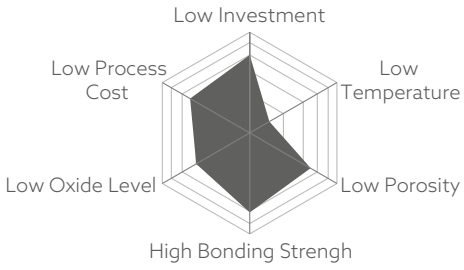
EFFICIENCY

- Fewer required process steps
- High cost efficiency (high DE and DR)
- Sustainable process without emissions
- High automation capability



HVOF SPRAY





PLASMA SPRAY



EvoCSII SYSTEM

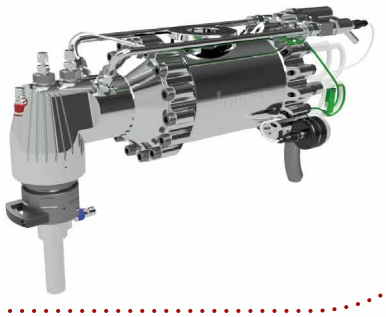
OUR MOST ADVANCED SYSTEM - DESIGNED FOR SCALABLE, HIGH-PERFORMANCE COLD SPRAY

FULL PRODUCT OVERVIEW

The Impact Spray System EvoCSII is our most advanced Cold Spray solution – engineered for high-volume, high-availability production. Developed from over a decade of experience, EvoCSII is a modular, plug-and-play platform with intelligent process control and robust architecture. The system enables parallel operation of up to four powder feeders and two spray guns, ideal for double-sided coating or increased throughput. Integrated sensors, real-time data processing, and seamless connection to higher-level control systems enhance process reliability. Its modular design ensures long-term flexibility and easy adaptation to future requirements. Interfaces for automation and expansions are already in place – making EvoCSII ready for today's and tomorrow's challenges.

IMPACT GUN 6/11 AH EvoCSII

- Suitable for the entire range of cold gas spraying
- Gas chamber temperature up to 1850 °C / 3362 °F
- Process gas pressure up to 60 bar / 870 psi
- Process gas temperature at nozzle entrance up to 1100 °C / 2012 °F
- Integrated heating with a maximum heating capacity of 44 kW
- Water cooling jacket for nozzle included
- Water cooling of prechamber and injector possible



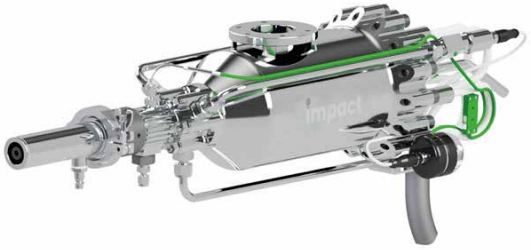


IMPACT GUN 6/11 EvoCSII

- Suitable for the entire range of cold gas spraying
- Gas chamber temperature up to 1850 °C / 3362 °F
- Process gas pressure up to 60 bar / 870 psi
- Process gas temperature at nozzle entrance up to 1100 °C / 2012 °F
- Integrated heating with max. 44 kW heating capacity
- Air and water cooling of the nozzle possible

IMPACT GUN 5/8 EvoCSII

- Gas chamber temperature up to 1400 °C / 2552 °F
- Process gas pressure up to 50 bar / 725 psi
- Process gas temperature at nozzle entrance up to 800 °C / 1472 °F
- Integrated heating with max. 34 kW heating capacity
- Compact and lightweight construction
- Air and water cooling of the nozzle possible



IMPACT POWDER FEEDER IS (Integrated Scale) EvoCSII

- Uniform powder conveyance with up to 80 bar / 1160 psi delivery pressure
- Fully integrated in the system control
- Exchangeable conveyor discs for flexible use
- Easy container change, cleaning & level monitoring
- Gravimetric powder feeding for high precision
- Integrated flow monitoring for simplified QA
- Up to 4 powder units for parallel or alternating operation





IMPACT ELECTRONIC CONTROL & GAS MANAGEMENT UNIT EvoCSII

- Internal power & gas distribution as well as to all system components
- Intelligent architecture of the system components "plug and play"
- Central process and safety control of all system components
- Interface for connection to a higher-level control unit
- Integrated data memory for process data recording

IMPACT WATER COOLING EvoCSII

- Adjustable cooling temperature
- Less nozzle wear
- Avoiding nozzle clogging
- More consistent coating result
- Fully integrated in the control system



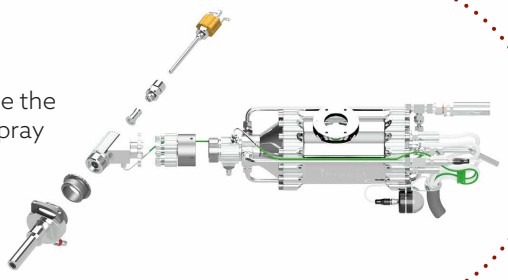


IMPACT MOBILE SYSTEM

- Fully functional portable CS system in an industrial container unit
- Based on the EvoCSII platform with full process capability
- Two independent process-gas lines
- Includes Impact Gun EvoCSII, Powder Feeder, Powder Swap Container, Central Injector Kit, set of nozzles, accessories and tools
- Integrated display – fold-out or detachable for remote operation
- External cable and hose connections for fast setup & commissioning
- Transport-ready design with integrated forklift & crane lifting points
- Weather-protected, rugged construction for mobile industrial use

ADDITIONAL COMPONENTS

Numerous additional components are available to enhance the performance, flexibility, and usability of the Impact Cold Spray System. From custom injectors and mixing chambers to cleaning stations, prechamber extensions, and ID coating devices for the protection and repair of internal surfaces, every add-on is engineered for industrial efficiency.



SERVICE & SUPPORT

PERFORMANCE BEYOND INSTALLATION

At Impact, customer-specific service is an essential part of our philosophy.
We support you with intelligent, systematic solutions – from calibration and maintenance work to on-site training and remote diagnostics.

With an Impact Service Contract, you benefit from preventive maintenance, priority access to our specialists, and discounted rates for service activities.
Our goal is to maximize your system uptime, efficiency, and satisfaction with tailored support.

Talk to our experts – we are happy to create a customized service contract to meet the exact needs of your company.

BENEFITS OF THE IMPACT SERVICE CONTRACT

- Priority handling for your inquiries
- Preventive maintenance
- Calibration at a fixed rate
- Customized support levels
- Remote diagnostics
- Discounted service rates

MAINTENANCE **CALIBRATION** **TRAINING** **SUPPORT**



GLOBAL NETWORK
FIND OUR STRONG PARTNERS ALL OVER THE WORLD

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