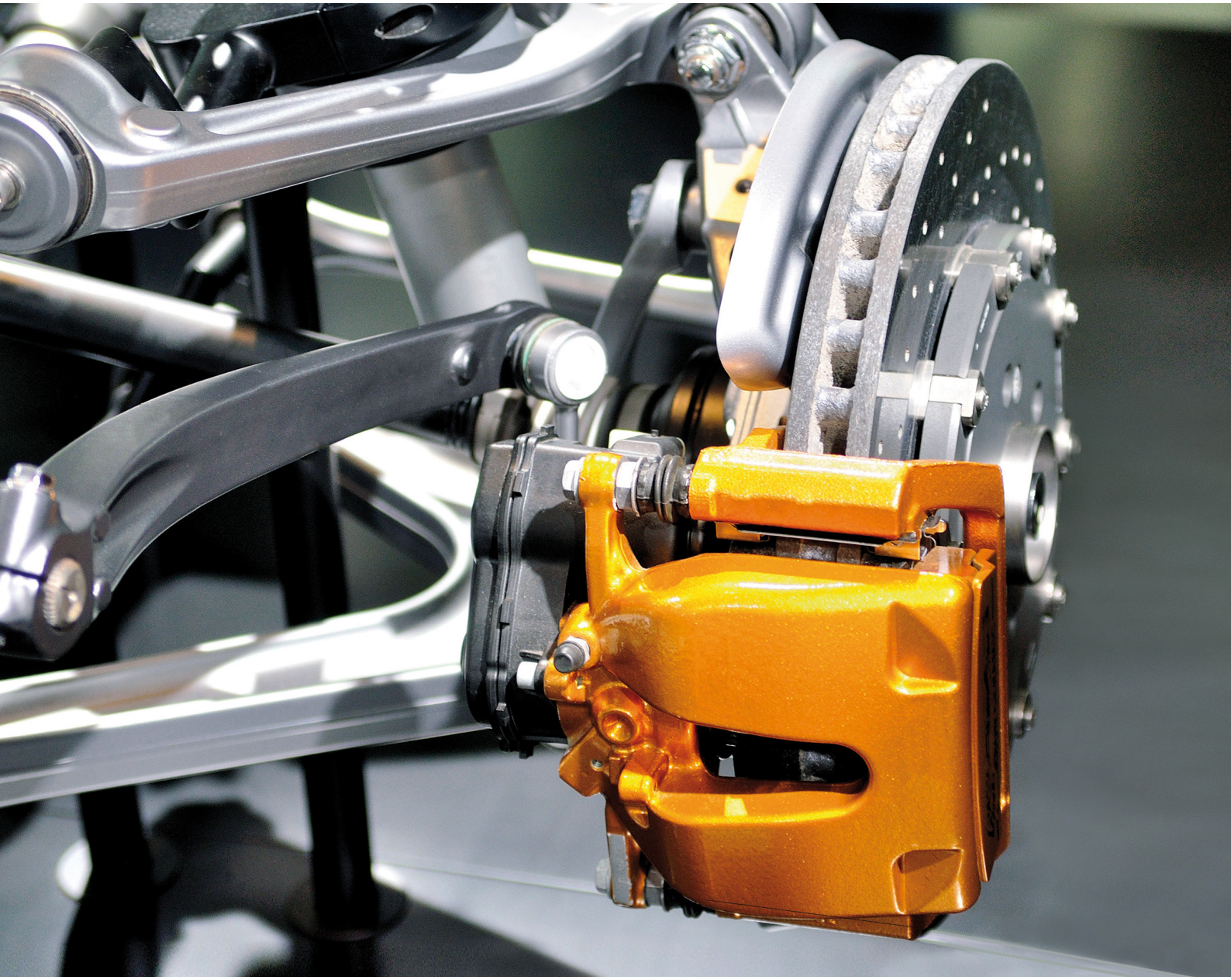
CP3.0®

Combining three coating technologies for extreme corrosion protection

General Metal Finishing

atotech.com



mks | Atotech

Overcoming corrosion protection limitations

Rising industry challenges

The ever-increasing requirements for durable components call for corrosion protection solutions that put current conventional process technologies under scrutiny. New OEM and Tier specifications require hybrid systems based on electroplated and painted corrosion protection coatings that meet extreme corrosion performance and quality standards.

The use of different coating solutions or their combination requires appropriate system design and application expertise. Only a few coating suppliers can provide the industry with a product portfolio and extensive process know-how consisting of the three system components required: electrolytic zinc and zinc nickel coatings, zinc flake coatings, and paint support technologies.

Our Atotech team of experts is a reliable partner in the selection of a coating process that not only meets the required performance and quality standards but is also cost-efficient and environmentally friendly. As neutral advisors, we provide our customers with the best possible guidance on which coating system is best suited to their needs.

CP3.0® = Corrosion Protection using three coating technologies

The Atotech solution

Extreme corrosion protection systems consist of at least three protective layers: the electrolytically deposited layer, the passivation layer and the painted layer.

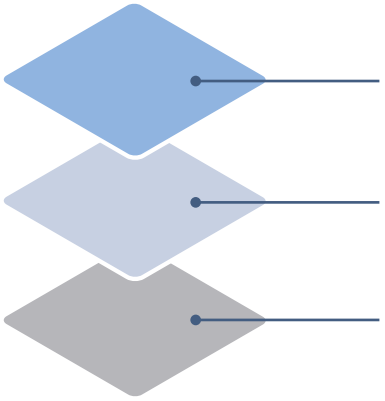
Typically, only one or two of the three required corrosion protection coating technologies are offered by suppliers in the market. Our innovative new approach allows us to utilize all three corrosion protection technologies — corrosion resistant coatings, zinc flake coatings, and paint support technologies — in diverse combinations to achieve new standards in extreme corrosion protection.

1 **Electroplating**
Cleaning, zinc, and zinc alloy electrolytes, passivates, and sealers

2 **Zinc flake coatings**
Base coats, organic and inorganic top coats / dip-spin and spray application

3 **Paint support technologies**
Cleaners, neutral descalers, conversion coatings, powder and wet paint primers

The synergistic use of three Atotech product lines



Paint primers
Wet and powder paint primers

Paint support technologies
Cleaners, neutral descalers, conversion coatings

Electroplated corrosion resistant coatings
Zinc and zinc alloys, passivates, and sealers

200 tried and tested CP3.0® systems of compatibility

We have tried and tested more than 200 CP3.0® systems. Combined with powder or spray coats, these systems provide ultimate corrosion performance. Our world-class powder coating and wet paint primer systems over zinc nickel plating have been fully certified by OEMs and Tiers.

Atotech powder coat primer combined with colored powder coatings is exceptionally adhesive and protective. Our wet spray primer ensures outstanding corrosion protection and provides excellent adhesion properties for subsequent paint layers.

Most demanding tests passed by CP3.0® systems

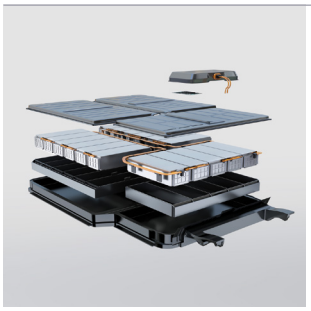
Test methode	Standard	Criteria	Result
Neutral salt spray	ASTM B-117, DIN EN ISO 9227	< 5% RR @ 1,200 h	1,680 h
Thermal shock	ASTM D-2485	1 cycle + D-3359 adhesion	3 cycles
Hot water immersion	ASTM D-870	500 h + D-3359 adhesion	Passed
Humidity	ASTM D-1735, DIN EN ISO 6270-2	240 h + D-3359 adhesion	2 cycles
Cross hatch adhesion	ASTM D3359, DIN EN ISO 2409	58 ratings	Passed
Thickness	ASTM B-748	15 µm	Passed
Cyclic corrosion	GMW 14872	9 ratings after 70 cycles	Passed

Surface preparation – the essential first step for all CP3.0® applications

In order to guarantee that a surface will accept and absorb treatment, it must be primed prior to the application of any plating, conversion coating, or passivation processes. Surface contaminates, like the metalworking fluids used in manufacturing production parts, will compromise any subsequent coating. Incomplete coating coverage, poor coating adhesion, and premature corrosion failure may result from applying coating technology to an unclean surface. To ensure that finished parts are of the highest quality, applicators must therefore adequately prepare the surface.

Conventional cleaning chemicals have long been used to prepare surfaces, owing to their low prices and ease of application. However, their high energy consumption combined with wastewater treatment and maintenance requirements result in high operating costs. Today, applicators are tasked with identifying greener process solutions without compromising quality or increasing operational costs. Atotech surface preparation processes address the first step of all coating applications with technologies that consume less energy and support CO_2 reduction, generate less waste, and offer a more sustainable alternative to conventional processes.

CP3.0® = solutions for extreme corrosion protection



Battery housings

Battery housings manufactured from aluminum or steel require strong protection against corrosion to ensure the longevity of the components. The electrolytic plating of steel battery housings results in high-performance corrosion protection. An appropriate passivate ensures that subsequent paint or fire-retardant adheres to the surface.

We offer a full range of sustainable cleaners, surface preparation, and adhesion-promoting processes for battery modules and housings. Our highly efficient electrolytic-based coatings provide unmatched corrosion resistance to protect steel battery housing components. With our electrolytic and zinc flake-based coatings, fasteners, and fixings for battery assembly meet high demands for reduced contact corrosion, improved conductivity, and defined coefficients of friction.

Brake calipers

Open wheels expose brake calipers, making their visual quality and construction a prime important feature in designing modern automotive systems. Painted brake calipers can be used to complement or accent a car's color scheme. These new considerations mean that brake calipers must simultaneously meet the demand for increased corrosion protection and aesthetic quality.

For brake calipers, systems with electrolytic coatings, passivates, and paint layers (e-coat and/or powder paint) provide the best corrosion protection and range of colors. However, paint adhesion on top of corrosion protection layers on cast-iron brake calipers constitutes a big challenge for the automotive industry.

We have developed high corrosion protection systems comprising pretreatments, electrolytic zinc, or zinc nickel coatings with passivates and sealers for silver and black colors. Along with these solutions,we offer pretreatments, electrolytic zinc or zinc nickel coatings, passivates, and paint primer solutions for powder paints and wet paints. Our systems are approved for excellent corrosion protection, advanced paint adhesion, and cyclic performance for wet and powder paints as well as for e-coats.

Fasteners

Fasteners are small in size but massive in impact, responsible for holding together entire systems. The automotive industry, alongside motorsports, agriculture, and construction, is beginning to require more stringent corrosion protection for fasteners that still maintain their functionality.

No matter how much corrosion protection is required, we offer the right system of corrosion protection coatings. Our solutions cover the full spectrum of coating technologies, from pretreatment, zinc, and zinc alloy plating processes to zinc flake coatings and a comprehensive range of post-treatment systems.

The versatile hybrid systems are suitable for applications that must provide excellent corrosion protection, durability, temperature stability, and chemical resistance while offering an attractive appearance and suitable coefficients of friction to meet stringent industry requirements.

Fluid delivery systems

No matter the industry — whether it's construction, automotive, or heavy machinery — corrosion is the worst enemy of any fluid delivery system. Increased lifespan and durability of these parts have become a critical industry goal. Advanced corrosion protection saves time and money, as fixing errors in this system are incredibly cost-intensive.

Many fluid delivery systems currently employ tube bending after the coating process to facilitate perfect connections and fittings. However, tube bending requires tubes to be crimped and deformed. The industry has struggled to find a way to sustainably apply chromate-free plating on fluid delivery tubing which has undergone bending. Conventional plating processes are ineffective post-bending, as early corrosion subsequently appears in all bent tube areas.

We have engineered a triple-stack layer of quality alkaline zinc nickel systems featuring post-plating flexibility, high-performance passivates, and sealers or zinc flake top coats. These processes effectively protect against corrosion, are highly resistant, and reduce the likelihood of contact corrosion when combined with aluminum for bent pipes.

Rubber bushings | anti-vibration components

Undercarriage components in the automotive and power sports industries must be long-lasting, well-designed, and aesthetically pleasing. Rubber bushings, which are used in a variety of industries, such as oil, gas, and agriculture, are critical anti-vibration components for any system. Traditionally, rubber bushings are treated with phosphor-containing conversion coatings as pre-or post-vulcanization processes to facilitate rubber adhesion. OEMs are currently investing in processes to increase both, longevity and durability of crucial anti-vibration rubber-bonded parts.

With 50+ years of rubber bonding experience offering reliable pre-and post-vulcanization solutions, We have developed an advanced system comprised of electrolytic zinc nickel featuring post-plating flexibility, high-performance passivates, and sealers suitable for pre-and post-vulcanization applications. The system provides excellent corrosion protection, an improved aesthetic, and best-in-class rubber adhesion with high pull strength. These features allow Atotech system to fulfill current rubber adhesion requirements while reducing the environmental impact of rubber bushing manufacturing by avoiding phosphates.

We make the difference with CP3.0®

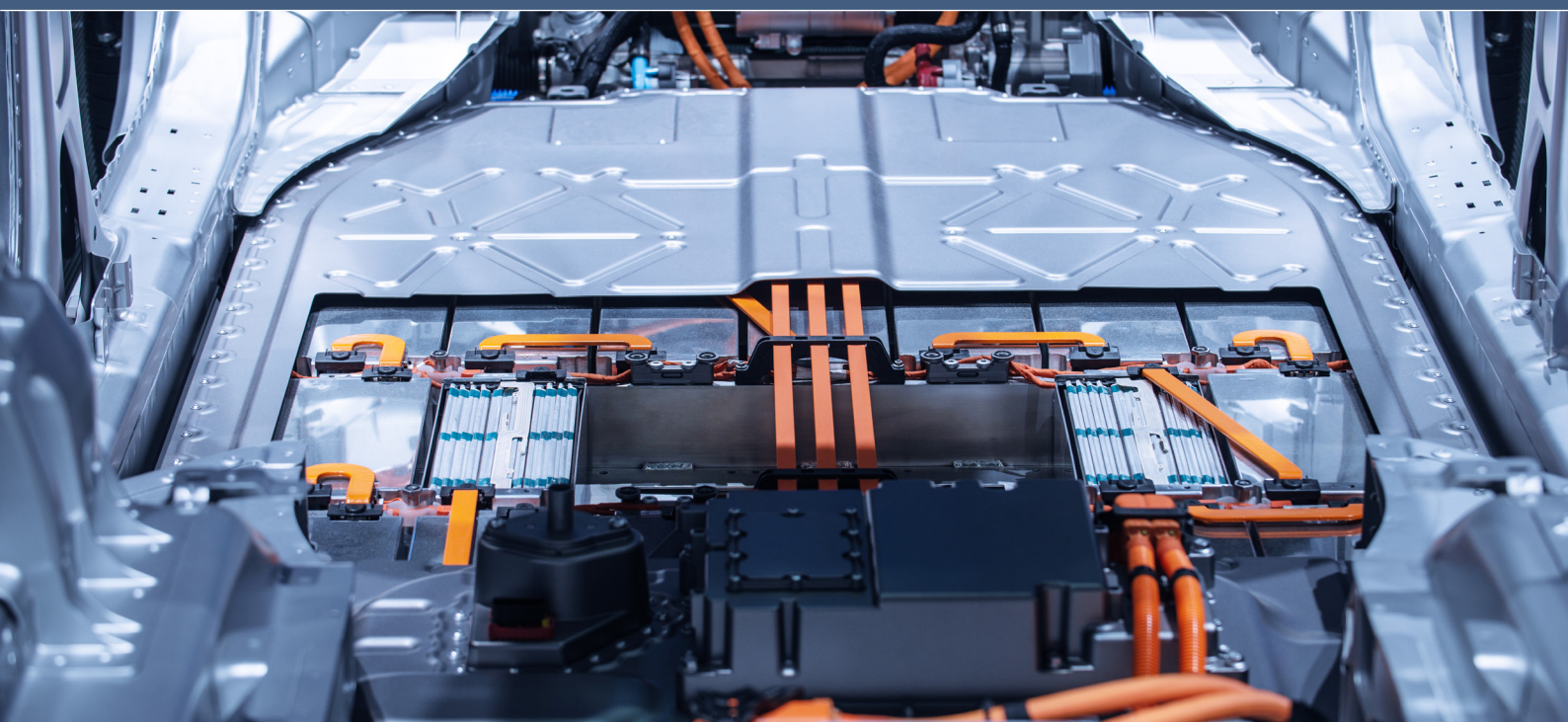
As a full solution provider, MKS acts as a single-line supplier.

Our complete and extensive understanding of the entire corrosion protection system, including substrate material, cleaning, electroplating, zinc flake coating, adhesion promotion, and paint, allows us to provide expert integration advice and objective advice on the best solutions available for our customers' individual needs.

Our processes have been thoroughly tested for their combined usage and have been proven to offer maximum corrosion resistance as well as perfect adhesion and aesthetics.

Our global presence enables us to deliver our unique chemical processes in the same high quality all-around the world.

Our vast network of TechCenters, manufacturing facilities, and teams enables us to provide unparalleled worldwide local technical support.



MKS - Your partner for exteme corrosion protection

Corrosion protection

We offer high-performance corrosion protection systems combining electroplating, zinc flake coatings, and paint support technologies creating a product that perfectly balances functional and durable technology with modern aesthetics.

Global presence

Sales and service for our Atotech products in more than 40 countries enable us to provide efficient customer support worldwide. Many of our products are approved by numerous OEMs worldwide.

Best local service

Our unique global TechCenter network allows us to offer an unmatched spectrum of services, from pilot production, chemical and materials science investigations to comprehensive training for customers and business partners.

Leading technologies

We collaborate heavily with the entire value chain to seek new paths and set benchmarks for the development of innovative surface finishing processes.

Production know-how

We provide customers with complete factory design concepts. Our production systems guarantee the highest level of quality and efficiency in wastewater treatment solutions, all at a reduced cost.

Sustainable solutions

We use less hazardous chemicals whenever possible, eliminate wastewater to the greatest extent possible, as well as reduce our carbon footprint.

Atotech an MKS Brand

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