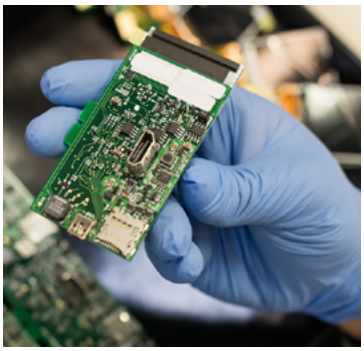
PROTECTION FROM THE INSIDE OUT®

AUTOMOTIVE FACT SHEET

Tried and Tested Automotive Protection to Reclaim Your Peace of Mind

By 2030, electronics will account for 50% of a car's total cost worldwide. In today's technological climate, connected cars are fast becoming the standard, with more than 286 million connected passenger cars forecasted to be added between 2019-2025. Connected services include advanced navigation, "infotainment," emergency assistance, and diagnostics alerts. Global revenue from these vehicles alone will grow five-fold, reaching over $24 billion by 2025.

At the forefront of change is autonomous vehicles estimated to comprise 25% of the global marketplace by 2040. These vehicles will require an unprecedented level of reliability. With AI taking the wheel, occupant safety will become of paramount concern.



CHALLENGES

Automotive electronics must withstand temperature extremes, moisture, abrasion, vibration, and a myriad of liquid (salt fog, corrosive gases, pollutants, engine liquids, rain, humidity, and more) and corrosive substances. These components must be appropriately protected to ensure functionality.

Traditional conformal coatings such as acrylics, epoxies, and silicone have been used to protect printed circuit boards (PCBs), sensors, and associated parts from environmental contamination. However, with the miniaturization of electronics and the expectation of reducing the part per million failure rate, they fall short. They also add weight and bulk, which comes at a premium.

SOLUTION

- Thin-film and nano coatings offer a solution to these issues, along with superior protection. Under the hood, Parylene and plasma-based coatings provide the highest liquid and corrosion protection for everything from mission-critical navigation modules and ECUs to various sensors (e.g., TPMS) and other sensitive circuitry.
- HZO coatings are applied as super thin conformal coatings (i.e. less than a fraction of a human hair) to protect automotive electronic components. Their chemical properties and application methods make them far superior over alternative solutions such as traditional conformal coatings or mechanical seals.
- Parylene forms a permanent bond with substrates, creating a gapless environment at the molecular level, making electronics utterly impervious to liquid and corrosion damage caused by life on the road.
- Plasma-based nano coatings offer durable protection at a competitive price point, with an appropriate level of protection for typically non-mission-critical vehicle components.
- HZO coatings are applied using a process called "chemical vapor deposition" or CVD. This delivers the consistency, quality, and repeatability required in automotive manufacturing. Mass production levels are attainable thanks to HZO's patented processes and the largest coating chambers in the industry.

BENEFITS

What OEMs Need to Know About Parylene and Plasma-Based Nano Coatings

FACT	BENEFIT
Parylene thin-film coatings offer superior corrosion resistance. It is insoluble in all solvents up to 150 degrees Celsius.	Parylene can prevent unnessary warranty claims and repairs, eliminating costs and improving the consumer experience. Able to stand the test of time (e.g. 20+ years), Parylene helps ensure your your brand and business are always covered.
Parylene thin-film coatings helps extend the lifecycle of components, sensitive circuitry and complete assemblies. It does this without adding any weight to the electronic assemblies in the vehicle.	Your engineers put significant time into adding capability to cars while managing to avert considerable weight gains[1]. Adopting stronger yet lighter materials is a way to add capacity and avoid excess weight.
Plasma is an ideal economical solution for protecting vehicle cabin components, including screens, stereo systems, instrument panel, and more from liquid exposure due to everything from moisture to spills.	The automotive interior market is projected to reach $301.56 billion (USD) by 2022. The automotive interior market has seen significant changes in the past few years with the advent of advanced technology and infotainment. Protecting these electronics is more important than ever.
With plasma-based nano coatings, connectors do not require masking, making for easier application in production.	With the growth rate of autonomous vehicles to grow over 890% from 2025 to 2030 in the United States alone[2], OEMs are looking for efficient manufacturing processes to decrease complexity and increase throughput.
Parylene and plasma-based nano coating represent thin-film alternatives than can be applied with incredible precision at tight tolerances. For example, a typical Parylene application in automotive is in the range of 25 microns, 1/3 the width of a human hair.	When you choose thin-film and nano coatings, you can fit more PCBs into a confined space. Although the measurements are exceptionally thin, these coatings yield robust protection.

[1]Forbes, [2]PWC

WHY HZO

- We are the only industry vendor to offer a Spectrum of Protection™, a portfolio of unique thin-film and nano coatings composed of materials aligned to an OEM's specific needs. Drawing upon our wide selection of complex chemical compositions, we meet protection requirements, design parameters, sustainability requirements, cost consideration, and market consideration.
- Our deposition chambers are the largest in the industry, increasing efficiency, and throughput. Up to 50% more units per hour can typically be coated.
- We offer coating as a service, in your location, or ours, drawing from an intellectual property and patent portfolio of over 370 assets.
- Our engineers have practical industry expertise and are ready to offer insight, delivering you a prescriptive, customized plan for a reliable protection solution.
- We bring the right people, processes, material science, and equipment together to deliver an optimized turnkey solution.
- We ensure results, deliver the industry's highest yields, and drive down costs at every stage of the protection process.
- Fortune 100 brands work with and trust HZO to deliver reliable, repeatable results.
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HZO
PROTECTION FROM THE INSIDE OUT®

WHEN IT COMES TO COATINGS, WE'VE GOT YOU COVERED!

Let us know how we can help at **HZO.COM/CONTACT-US OR 1-877-757-4HZO (4496)**