8TH NEWSLETTER
NOVEMBER 2025

MOZART

MOZART CONNECTING THE DOTS

INSIDE THIS ISSUE

we explore the rapid development of sustainable coating technologies and their growing impact across the industry.

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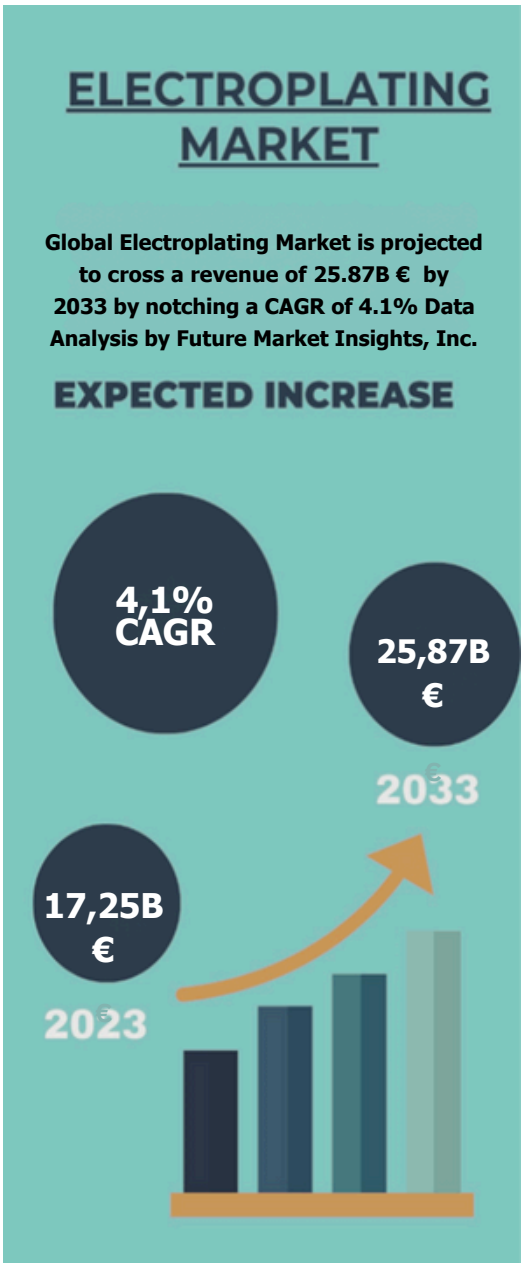
1. Market Growth & Industry Trends

Across Europe and the global industrial landscape, a big transformation is underway. Stricter environmental regulations, rising sustainability expectations, and the demand for high-performance materials are accelerating the shift away from hazardous hard chromium coatings. As a result, the market for safer and more advanced alternatives is expanding rapidly.



Global Electroplating Market

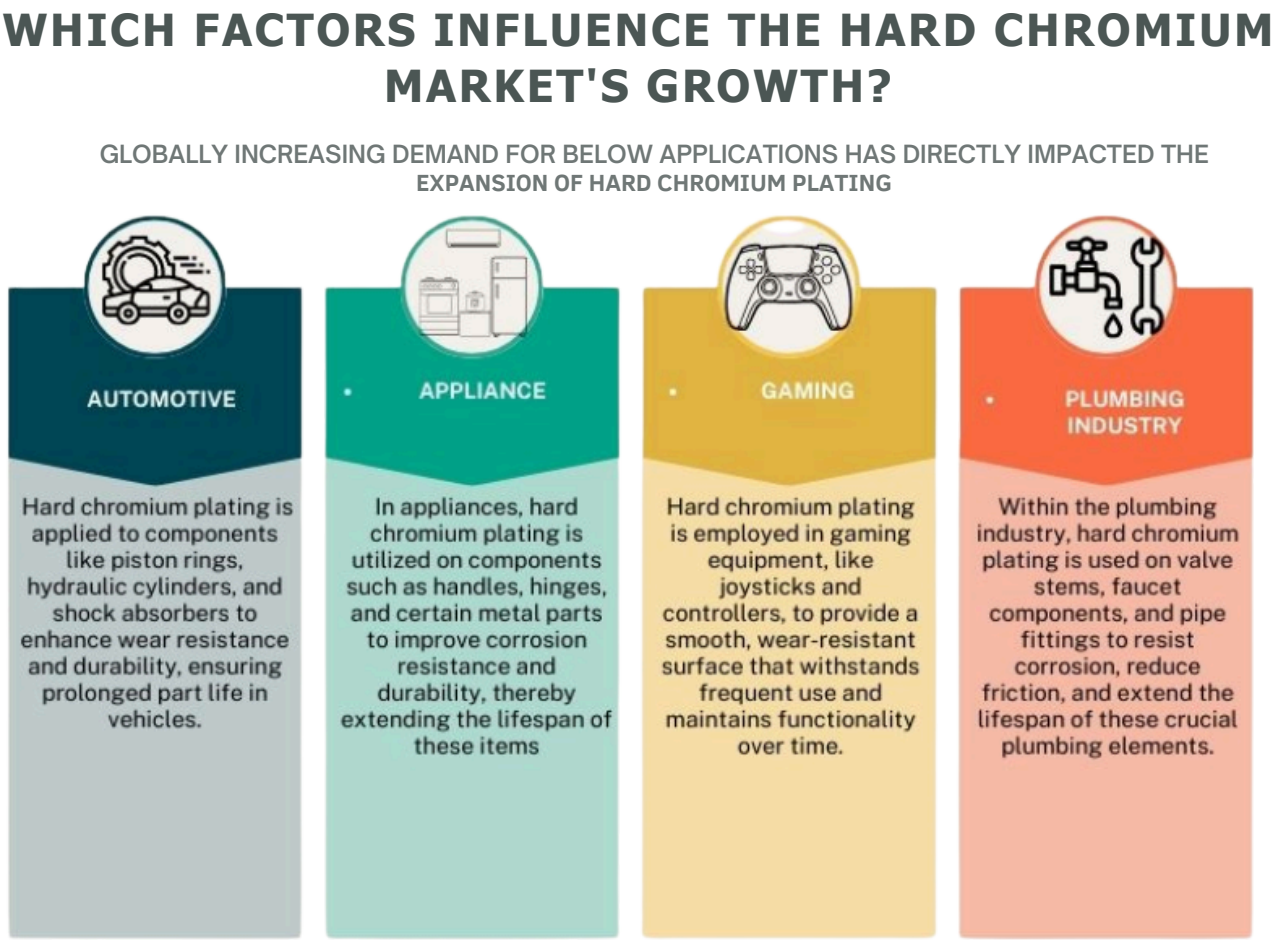
The global electroplating market is projected to grow from 17,25B Euro in 2023 to 25,87B Euro by 2033, representing a CAGR of 4.1%. Electroplating uses an electric current to deposit a thin, uniform layer of metal onto a substrate, enhancing surface properties such as wear resistance, corrosion protection, lubricity, and aesthetics. It can also increase thickness or shape small components [1] . Electroplating is widely used across industries including automotive, electronics, aerospace & defense, jewelry, and heavy machinery, where durable and high-quality surface finishes are essential.

[1] https://www.openpr.com/news/3177998/electroplating-market-set-to-reach-us-30-billion-by-2033

1. Market Growth & Industry Trends

Regional Insights:
North America is dominating the market due to early adoption across industries. Europe and Asia-Pacific ranked second and third, respectively. However, Asia-Pacific is now the fastest-growing region, led by industrial expansion and manufacturing hubs in Japan, India, and China. The growth is fueled by automotive, electronics, aerospace, jewelry, and heavy machinery sectors requiring precise and durable surface finishes.

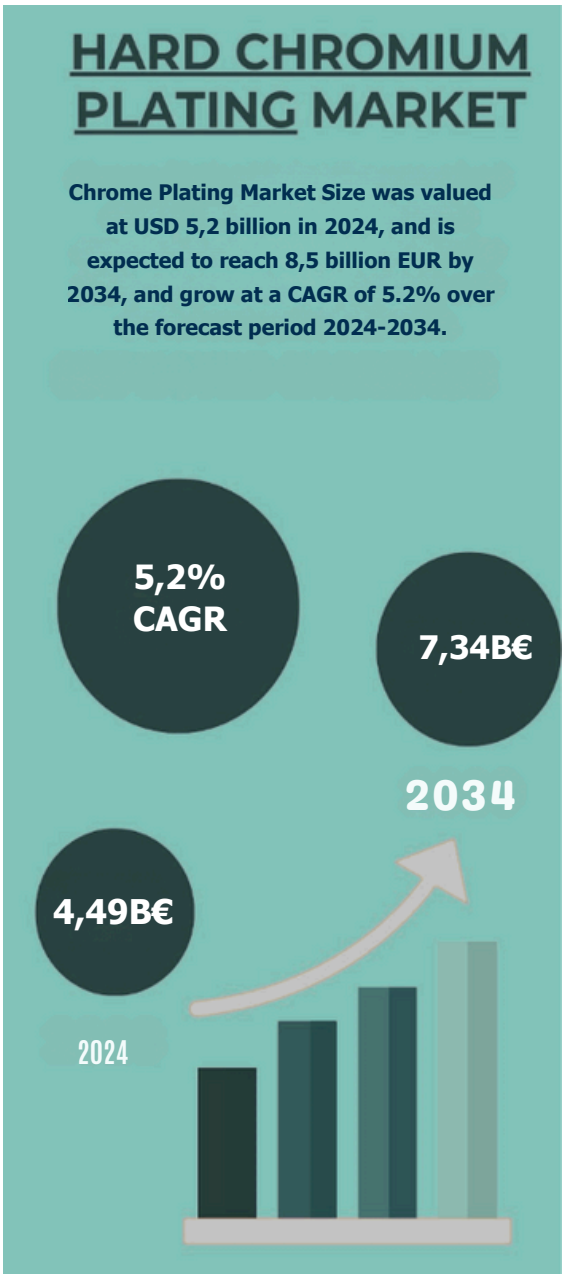
Key Players:
Major players in the global electroplating market include Peninsula Metal Finishing (US), Superchem Finishers (US), Roy Metal Finishing (US), Metalor Technologies International SA (Switzerland), J&N Metal Products LLC (US), Bajaj Electroplaters (India).



1. Market Growth & Industry Trends

Global Hard Chrome Plating Market

The hard chrome plating market was valued at USD 4,49B Euro in 2024 and is projected to reach USD 7,34B Euro by 2034, at a CAGR of 5.2%. Hard chrome plating deposits a thin layer of chromium onto metals or alloys to improve durability, hardness, corrosion resistance, and wear protection. It is used in machinery, automotive, aerospace, and other industries where smooth, long-lasting surfaces are essential. Products are divided into hard chrome plating and decorative (thin-dense) chrome plating, with types including Bright Chrome, Satin Chrome, Chrome Flash, and Brushed Chrome [2].



Regional Insights:

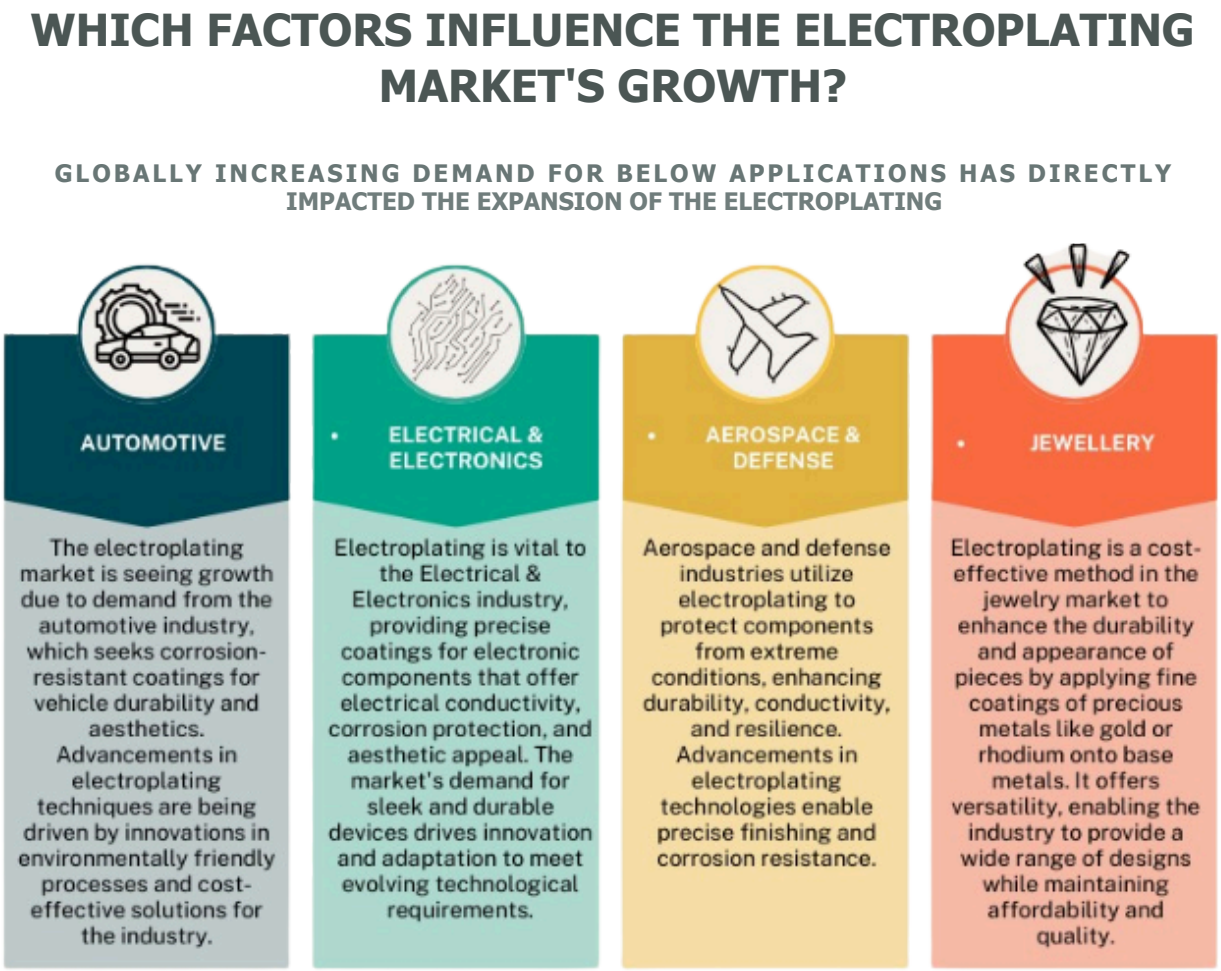
North America leads growth, driven by aerospace and defense industries requiring durable components. Europe's automotive sector boosts demand, especially in the SUV segment. Asia-Pacific is the fastest-growing market, with industrialization and growing automotive manufacturing in China and India driving demand.

https://www.openpr.com/news/4042878/hard-chrome-plating-market-size-share-and-growth-report-2034

Global Hard Chrome Plating Market

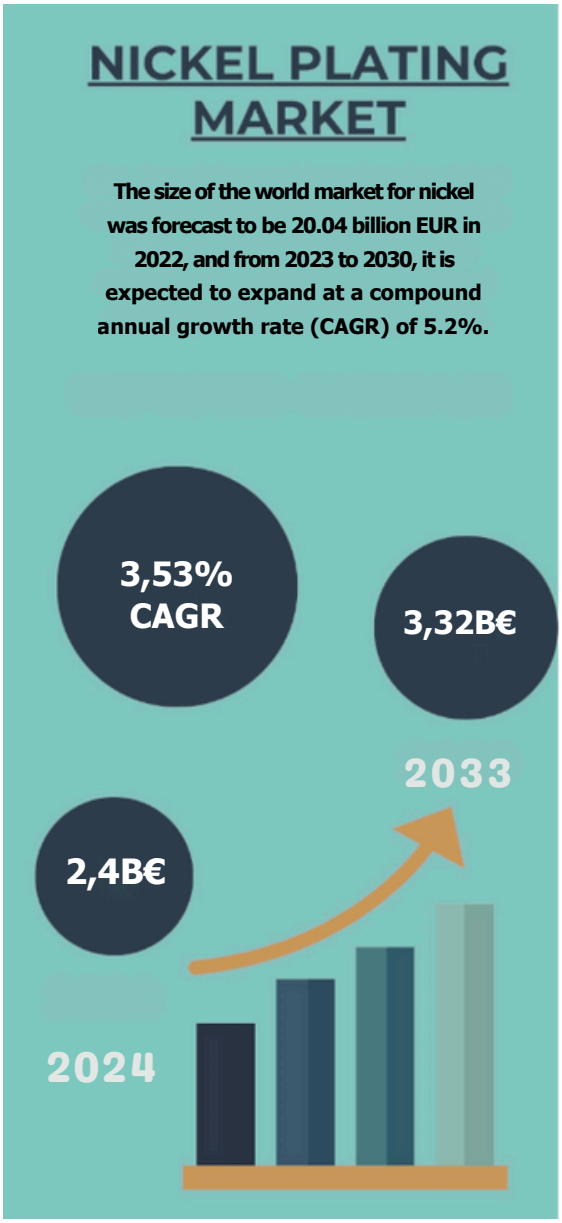
Key Players:

Key companies in the global hard chrome plating market include J&N Metal Products (US), Al Ashrafi Group (UAE), Sharretts Plating (US), Peninsula Metal Finishing (US), Pioneer Metal Finishing (US), Allied Finishing (US), Atotech Deutschland (Germany), Interplex Industries (US), Kuntz Electroplating Market (Canada), and Trinity Holdings (India).



Global Nickel Plating Market

The global nickel plating market was valued at USD 2.43B Euro in 2024 and is expected to grow at a CAGR of 3.53% from 2023 to 2033 reaching 3.32B Euro. Nickel plating improves corrosion resistance, durability, and aesthetics. The process can be electroplated (using an electric current) or electroless (chemical deposition), providing uniform coatings even on complex shapes. Key applications include automotive components, industrial machinery, aerospace parts, electronics, jewelry, medical devices, and household items [3].



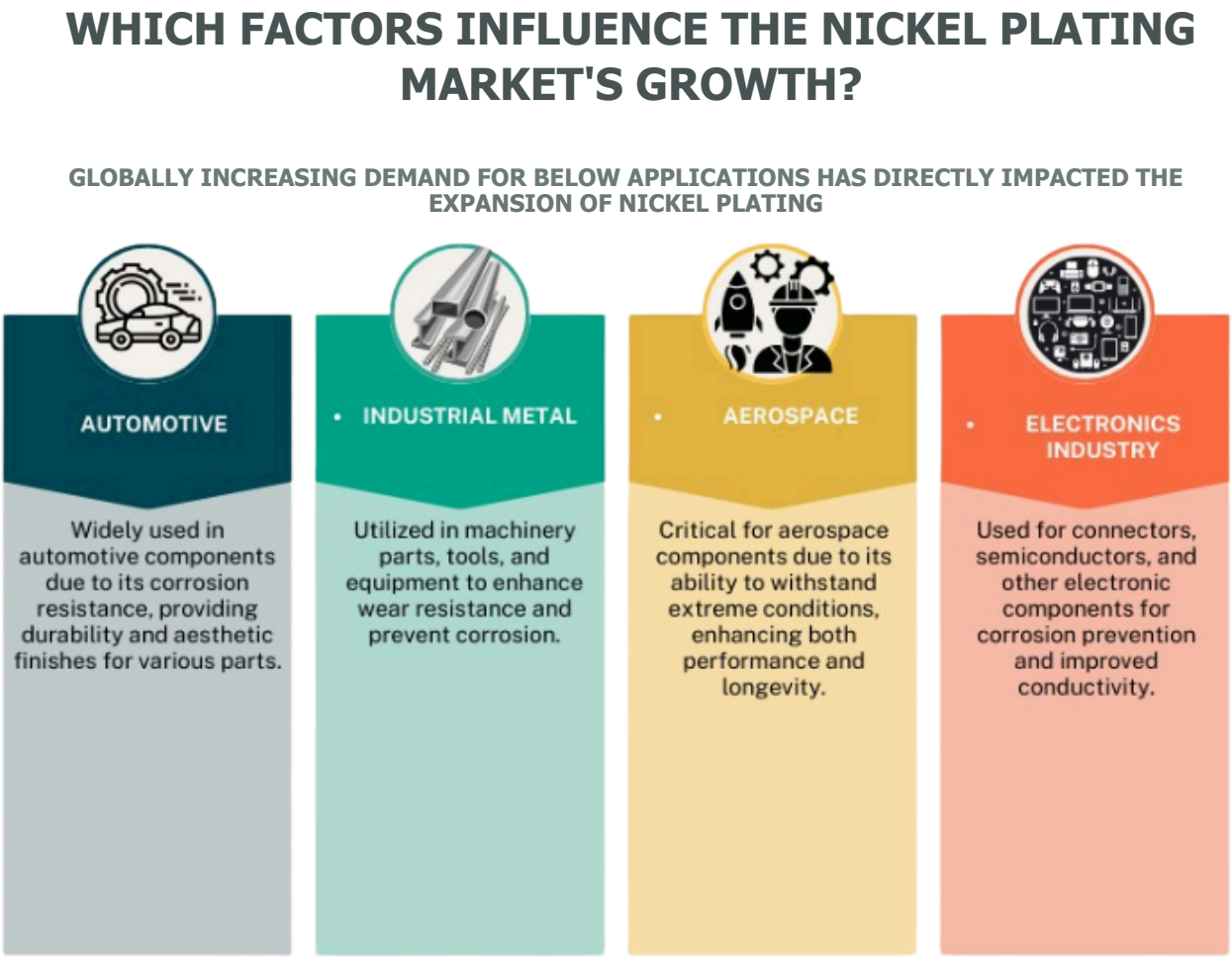
Regional Insights:

Asia-Pacific dominates the market, accounting for over 71% of revenue in 2022, driven by stainless-steel production, primarily in China, which represents 80% of the regional market. Middle East and Africa are emerging markets due to investments in nickel and lithium projects. Europe faces challenges from high energy costs and supply constraints affecting stainless-steel and nickel processing.

[3] https://www.verifiedmarketreports.com/product/nickel-plating-market-size-and-forecast/

Global Nickel Plating Market

Key Players:
Key companies are Anglo American Plc (UK/Europe), Eramet (France), Glencore (Switzerland), HP (Australia), IGO Ltd. (Australia), Rio Tinto (Australia), South32 Ltd. (Australia), Metallurgical Corporation of China Ltd. (China), Vale (Brazil).



2. Real-World Industrial Adoption

Leading the Way in Europe

European industry is already demonstrating the transition from hard chrome to safer, high-performance coatings. A standout example comes from Airbus, which has qualified Oerlikon Balzers' RS 50 PVD coating system for its BALINIT C (WC/C) coating — a tungsten-carbide/carbon solution that replaces traditional hard chromium on critical components. This coating has been approved for use on substrates such as steel, titanium, and copper alloys, delivering superior wear resistance, lower friction, and reduced surface fatigue — all while being fully compliant with EU REACH regulations.

Oerlikon's press release notes that the RS 50 system meets Airbus's specification AIPS 02-04-007, allowing BALINIT C to be applied on parts without the hazard concerns of hexavalent chromium.

Nano-coatings in Action: Hardide and Airbus

In another forward-looking move, Hardide Coatings has partnered with Gardner Aerospace to apply its nano-structured tungsten/tungsten-carbide CVD coating on Airbus A320 wing components, replacing hard chrome.
This coating improves corrosion resistance, fatigue life, and long-term serviceability. Importantly, this shift aligns with the European regulation set to ban hard chrome production under REACH, making the replacement not only performance-driven but also regulatory-motivated.

Leading the Way in Europe

These industrial-scale adoptions highlight a growing pattern: advanced coatings are moving out of labs and into real manufacturing lines. MOZART's nano-composite, REACH-compliant coatings follow exactly this path — offering:

- Safer alternatives to toxic chromium plating, improving both environmental and workplace safety.
- High performance (wear, friction, fatigue) that meets or exceeds legacy coatings.
- Compatibility with existing production infrastructure, reducing the need for costly retooling.
- A European supply chain for coating solutions, reducing reliance on hazardous imports.

Pilot trials within MOZART are already underway, with industrial demonstration (TRL 5). The success stories from Airbus and Hardide validate the direction and urgency of this work — and make it clear that techno-regulatory readiness is no longer a barrier, but a reality.

Sources & References

- Airbus approves Oerlikon Balzers RS 50 / BALINIT C system (Oerlikon Balzers)
- Hardide Coatings & Gardner Aerospace wing-component partnership (ASM Int'l)
- REACH-driven shift from hard chrome to nano coatings (Coatings World)
- Technical details on BALINIT C and Airbus qualification (SME.org)

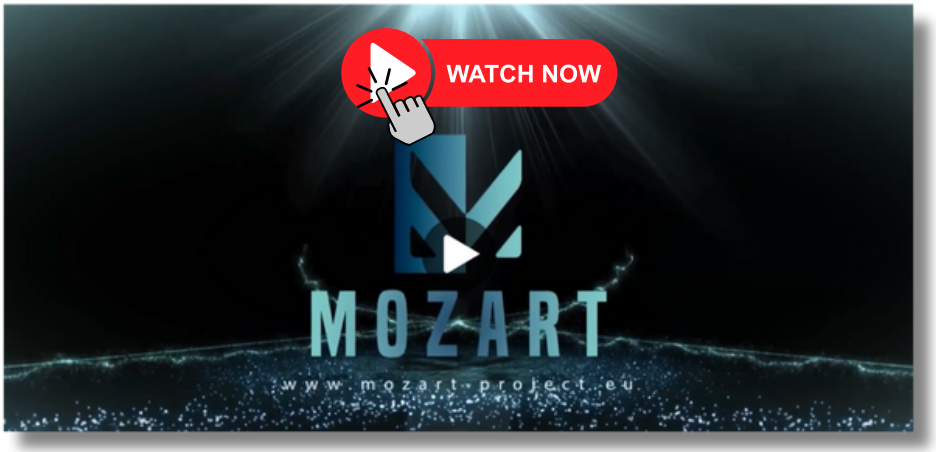
3. MOZART Technology Achievements: Lab to Pilot

Advancing Coating Technology – From Lab to Industry

Cnano and FALEX are driving MOZART's progress in innovative coating technologies. Their combined expertise in electroplating, nanocomposites, and tribology is helping bridge the gap between laboratory research and full-scale industrial adoption.

Creative Nano (Cnano) has achieved a major milestone by completing pilot-scale electroplating of forged piston rods using its newly developed Ni/SiC nanocomposite electrolyte. This process integrates real-time nanoparticle dispersion monitoring through the OF2i system, ensuring consistent coating quality and scalable production. These pilots provide essential data on performance, durability, and cost-efficiency, allowing industrial partners to evaluate the feasibility of adopting the technology.

In addition, Cnano plays a crucial role in MOZART's technology roadmap, advancing from lab-scale validation (TRL 3) to industrial demonstration (TRL 5) across aerospace, automotive, and machinery sectors. By providing concrete pilot results and performance metrics, Cnano enables manufacturers to implement cutting-edge coatings with minimal risk, accelerating the transition from research to practical application.



3. MOZART Technology Achievements: Lab to Pilot

Advancing Coating Technology – From Lab to Industry

FALEX has expanded its laboratory capabilities in the first half of 2025, significantly boosting tribological testing and material characterization within MOZART. The lab now features a High-Frequency Reciprocating Rig (HFRR), capable of evaluating diesel and biofuel lubricity under real operating conditions and fully compliant with ASTM D6079, ASTM D7688, and ISO 12156-1 standards. This testing supports innovation in cleaner and more efficient energy and mobility systems.

Furthermore, FALEX's enhanced facilities enable more extensive collaboration within the MOZART consortium, supporting SMEs, OEMs, and research institutes. By combining advanced testing capabilities with knowledge transfer, FALEX ensures that novel coating technologies can be rapidly adopted by European manufacturers, improving workplace safety, environmental compliance, and component performance.

4. Future Outlook, Events and Coatings 2026 Conference

Looking forward, MOZART is preparing to bridge the gap between lab success and full industrial deployment. Policy alignment ensures coatings are compliant with REACH and other environmental regulations, meeting the growing demand for safer, sustainable alternatives. Pilot demonstrations and industrial trials planned for 2025–2026 will provide validated evidence on performance, retrofitability, and cost-benefit, enabling confident industrial adoption.

Looking ahead, the project will host technology-transfer sessions, pilot-line demonstrations, and partner matchmaking events, offering companies the chance to explore retrofit options and licensing opportunities before full market adoption. By combining market growth, regulatory alignment, industrial readiness, and collaborative networks, MOZART is not just an academic exercise it is a practical driver of Europe's green and competitive manufacturing future.
The message is clear: European industry is moving toward safer, high-performance coatings, and MOZART is at the forefront of this transformation, providing solutions that meet today's performance, regulatory, and sustainability requirements while preparing the industry for tomorrow's challenges.

AIFM at WME Conference & Exhibition

As part of MOZART's engagement with the industrial and innovation community, AIFM participated in the WME Conference & Exhibition in 2025. Their presence highlights MOZART's ongoing efforts to connect with industry leaders and showcase advances in sustainable coating technologies.

MOZART Consortium 36-Month Meeting in Graz

The MOZART consortium held its 36-month project meeting in Graz, Austria, hosted by Brave Analytics. Over two days, partners reviewed progress from the previous period and coordinated the remaining activities as the project approaches its final phase.
Discussions focused on key technical updates, ongoing work packages, and planning for the project's closure. The meeting offered a productive space to align on next steps and ensure a smooth completion of all remaining tasks.
We thank Brave Analytics for their warm welcome and excellent organization, which provided an ideal setting for efficient and constructive work.

AIFM Joins the MOZART Project: Advancing Research & Innovation in Surface Engineering 2025

AIFM participated as a contributor to the next wave of Research and Innovation in Surface Engineering (RISE 2025), positioning the organisation at the forefront of technological advancements that are reshaping the future of materials, coatings, and sustainable manufacturing. As a partner of the MOZART consortium, AIFM brings its expertise, industry insight, and innovation-driven mindset to advance cleaner, smarter, and more effective surface engineering technologies. This collaboration reinforces AIFM's commitment to supporting the technological transformation of European industry and driving forward sustainability and competitiveness across the sector.

4. Future Outlook, Events and Coatings 2026 Conference

Coatings 2026 — Safe and Sustainable Surface Treatment and Coatings

Coatings 2026: Safe and Sustainable by Design Surface Treatment and Coatings will take place in Athens, Greece, from 20–22 April 2026. With increasing environmental regulations and demand for cleaner technologies, the event will focus on advancing eco-friendly coatings, circular economy practices, and smart materials. Keynote talks, oral presentations, and poster sessions will provide a dynamic platform for collaboration and knowledge exchange.

Prof. Dr. Luca Magagnin
"Giulio Natta" Department of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy

Prof. Dr. Eugenia Valsami-Jones
School of Geography, Earth and Environmental Sciences, University of Birmingham, UK

Dr. Alexandros Zoikis Karathanasis
CEO of Creative Nano, Greece

4. Future Outlook, Events and Coatings 2026 Conference

Coatings 2026 — Safe and Sustainable Surface Treatment and Coatings

Conference Themes & Sessions

- Advances in metallic and metal matrix composite coatings
- Advances in organic and hybrid coatings
- Advances in methods and equipment
- Surface finishing for additive manufacturing
- Application of the SSbD framework in the surface finishing industry
- Advances in thermal spraying
- Thin film technologies and applications
- Anodizing of light alloys
- AI tools and simulations
- Phasing out substances of concern from the surface finishing industry

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Deadlines
Abstract Submission:
22 December 2025
Early Bird Registration:
20 February 2026

Awards
Best Oral Presentation
Number of Awards: 1 | Prize: EUR 500
Best Poster
Number of Awards: 2 | Prize: EUR 200
Early Career Researcher Award
Number of Awards: 2

2026 Coatings 2026 Conference | Contact: info@coatings2026.org

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METAL MATRIX NANO-COMPOSITE COATINGS UTILIZATION AS ALTERNATIVETO HARD CHROMIUM

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Project Coordinator
PoliMi
Politecnico di Milano
Piazza Leonardo da Vinci, 32
20133 Milano

info@mozart-project.eu

www.mozart-project.eu

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