HAUZER

MANUFACTURING SOLUTIONS FOR EMERGING TECHNOLOGIES

INDUSTRIAL PLASMA SOLUTIONS

IHI GROUP

TODAY'S EMERGING TECHNOLOGIES NEED ROBUST INDUSTRIAL MANUFACTURING SOLUTIONS

"Hauzer has been the pioneer in vacuum plasma coatings since 1983. Creative solutions are part of our DNA. Our engineers have used the experience to develop a broad technology portfolio. We supply various deposition and etching technologies and integrate these in our industrial batch and inline equipment. Tailor-made machine concepts for our customers are created continuously. With IHI-Bernex joining the Hauzer group recently, CVD Technology has been added to our product portfolio. Visit ihi-bernex.com for more information."

"Hauzer is active in several emerging technology markets to work on the world's biggest challenges of today in the field of clean energy, environment and health. We are offering industrial manufacturing solutions to bring new key technology developments to the industry."

"The basics for our success are our people, our experience and joint development with our customers. Hauzer has 200 employees. In the future we will continue to expand our expertise, developing our technologies and material properties in line with our customers' sustainable goals. Combining these technologies with application knowledge, we can build the most efficient, highly productive equipment that markets need. Hauzer is your partner for industrial plasma solutions."

Dave Doerwald
CEO

CONTENT

ENERGY AND E-MOBILITY

Experts in Protective Coating

Hauzer is a technology leader for tribological coatings. In the 1990s automotive suppliers started to use plasma coatings to reduce wear and friction in their engines. From the beginning, Hauzer cooperated with the leaders in the market to develop the most productive coating concepts with the best performance. Nowadays Hauzer Flexicoat equipment produces the best carbon and nitride-based coatings for many applications.

New Battery Concepts

Battery technology is advancing at high speed. New materials and battery concepts are explored on a global scale to address the main challenges of Li-ion technology: energy density, costs and safety. For many new promising materials and battery designs, the industry can no longer stick to current production technologies, but needs to adopt dry processes using high productivity equipment, in line with Hauzer's core expertise.

Fuel Cells and Hydrogen

High quality coatings at low manufacturing cost are required for automotive fuel cell technology and for hydrogen-based energy storage. Hauzer is offering manufacturing solutions to equip millions of bipolar plates per year with the best protective coating. The coatings have been qualified by various institutes and OEM's.

3D PRINTING TO 3D COATING

Additive manufacturing technology is developing at high speed and the number of applications is increasing. Now that material quality of metal or plastic products is at a mature level, the demands for functional surface finish is increasing – a perfect match with Hauzer's core expertise.

Experts in Surface Finishing

Hauzer has a vast experience in coating small and large products, from decorative parts to engine components to tools. Our equipment produces coatings that provide chemical protection, wear protection, low friction, or appealing esthetics. Whatever finish is required for 3D printed parts, we can help to find affordable solutions.

Quality is Key

Customers are asking for quality: robust and durable coatings. Next to a variety of materials, Hauzer has expertise in the field of coating adhesion on different product materials like metals and plastics, and strong know-how to obtain the coating requirements in terms of colour and smoothness as defined by the customer.

MEDICAL COATINGS

Medical Implants

Many of today's medical implants have specific challenges in the field of biocompatibility and wear. Hauzer's coating equipment is used to apply protective coatings on implant devices to increase lifetime and to lower medical risks.

Surgical and Dental Instruments

Most of the medical stainless steel hand-held instruments do not maintain surface quality during frequent use. A hard coat provides a sharp cutting edge, clean cuts and long instrument lifetime. In addition, different coating appearances can be used for color coding and reduced reflection during surgery.

Anti-bacterial

Healthcare and personal hygiene are important aspects in today's society. There are many daily used products that can be equipped with protective coatings to prevent bacterial spreading. Hauzer is working on a coating production technology that will add durable anti-bacterial functionalities to decorative coatings for faucets and door handles that can be used in medical and public buildings.

Customer Solutions

Let us know what you need. We may have a solution close to your requirements to accelerate your developments.

AUTOMOTIVE NEEDS INNOVATIVE ALTERNATIVE FOR ELECTROPLATING

Cromatipic is the alternative production process for electroplating. Hauzer deposits chromium layers on plastics with Cromatipic technology. The new factory in Barcelona is the answer to a real need in the automotive market, now that the ban on electroplating comes closer.

Ban on Electroplating

Electroplating has been the conventional way of making chrome colours on plastic parts for years. But it will not last forever. The world is changing. People want safe and environmentally friendly production processes on lightweight materials, combined with a continuous call for beautiful chrome colours.

What is Cromatipic®?

Cromatipic is a combination of lacquer with a thin layer of metal, that transforms all kinds of plastics into stylish chrome products. After the pre-treatment, an environmentally friendly spray UV base coat is applied, followed by a sputtered chrome physical vapour deposition (PVD) coating. No top coat is needed. There is no corrosion risk because of the absence of Ni and Cu, excellent adhesion is proven, the thermal stability and resistance to humidity are outstanding and the process complies with the European directives. Cromatipic is available in the colours bright chrome and matt/satin chrome. On request a hydrophobic silicon oxide (SiOx) layer for easy cleaning could be deposited on top.

Automated Production Plant

Hauzer has been supplying Cromatipic technology for years already, and the inline platform making the PVD layers was introduced in 2012. After having developed and acquired the full technology, Hauzer decided to build an automated production plant in Barcelona, Spain, as a demonstration site to show customers the advantages of the technology.

FIVE REASONS FOR CHANGING A STATUS QUO

- Eco-friendly alternative for electroplating
- Many plastics possible
- Two layers, no top coat needed
- Flexible coating due to thin layer
- Ultimate design freedom

INTERNET OF THINGS

Sensors and Automotive

Sensor integration, autonomous driving, Internet Of Things – a fast evolution that cannot be stopped. The automotive industry needs new technologies in these fields to stay competitive. Hauzer is bringing in its know-how to coat small components with metallic and dielectric coatings and is working with the automotive industry on sensor integration in next generation car engines.

New Developments for Sensor Applications

Material development is an ongoing activity. Many materials like metal compounds, metal oxides and nitrides are explored using a variety of deposition technologies. Active materials, and conductive and dielectric materials can be added to support new developments in the field of advanced sensors. We are offering our expertise on high volume coating equipment for layers and multilayers on many small components with high precision.

COATING DEVELOPMENT

Material Development & Competence Centres

A variety of materials can be applied, ranging from carbon-based, diamond-like, to metals, metal compounds and oxides and nitrides. Hauzer has active programs on coatings development for new applications at competence centres in Venlo, Barcelona and Shanghai.

Low Friction Coatings

Engine components, moving parts: typical products from our customers in the automotive, aerospace, off-shore, oil and gas industry, who use Hauzer tools to apply low friction coatings, mostly based on carbon, doped carbon and CrN.

Wear-resistive Coatings

PVD coatings are applied on cutting and forming tools to extend the lifespan many times over. Materials are mostly based on metal nitrides and carbon.

Decorative Coatings

As the market is driven by design and fashion, a wide range of colours is required to meet the expectations of the customers. The equipment and processes are designed to apply high quality finishes on a wide range of substrate materials, such as stainless steel, titanium and electro-plated brass, die cast zinc and plastics. All coatings come with excellent hardness, scratch and wear-resistance properties.

Anti-corrosive Coatings

Anti-corrosive properties can be realized in several ways. Carbon-based coatings with special adhesion coatings are used for bipolar plates of fuel cells. Transparent top coats can improve several existing coatings.

Optical Coatings & Transparent Coatings

Optical coatings like SiO_2, ZrO_2 and Al_2O_3 are used for many applications. Transparent top coats can improve several existing coatings.

Active Coatings for Sensors and Medical

Active coatings based on metal compounds are explored for electronic and opto-electronic sensors, and temperature and pressure gauges. Development in the field of anti-bacterial coatings is based on metal doping of a variety of existing materials.

KEY COATING TECHNOLOGIES

Technologies are the foundation of every effective coating, whether it is on a tool, a component or a decorative product. Hauzer offers a broad range of technologies, which can all be combined.

CARC+

CARC+ is a circular arc evaporation, PVD technology. It produces very smooth coatings, including TiAlN, AlCrN and Si-containing nanocomposite coatings and state-of-the-art hydrogen-free carbon coatings at very high deposition speeds and low cost of ownership.

CARC+ Flex

CARC+ Flex gives increased flexibility in magnetic field design. This gives more control over ionization and coating properties. It also offers uniform target erosion, thicker coatings for special applications and the possibility to program parameters during the coating process, so you will have adequate parameters for different steps in your coating design.

Advanced Controlled Arc

Advanced controlled arc evaporation technology uses rectangular arc cathodes to produce metal nitride, carbonitride and oxide coatings. It is used for coating temperature sensitive products and when a range of attractive colours is required.

Focussed Ion Rapid Etch (FIR Etch)

FIR Etch is based on Hauzer's plasma source etching technology. The ion beam is enhanced and steered in the chamber, resulting in higher etch rates, perfect adhesion and an increased productivity.

Magnetron Sputtering

Magnetron sputtering technology is used to produce smooth and well-adhering coatings for applications where friction needs to be reduced. It can also be used for materials with poor electrical conductivity of for special colour requirements. It is often used in combination with PACVD technology for diamond like carbon (DLC) coatings.

Plasma Assisted Chemical Vapour Deposition (PACVD)

Different from PVD, PACVD does not use metallic targets. With PACVD, a plasma is used to crack pre-cursor gasses at relatively low temperatures. The technology is mainly used in combination with hydrocarbon gasses to produce highly wear resistant carbon coatings. DLC coatings can be doped with Si or other elements to tune the coating properties.

High Power Impulse Magnetron Sputtering (HiPIMS)

HiPIMS combines the advantages of high ionization like arc evaporation with the smoothness of magnetron sputtering. This technology opens up extra possibilities to fine-tune the coating properties, such as internal stress and coating structure, of layers that cannot be produced with other existing technologies.

Dual Magnetron Sputtering (DMS) and T-mode

DMS technology is used for the deposition of materials that show very low electrical conductivity. Together with Hauzer's T-mode technology for fast control of reactive gas flow, this enables the deposition of metal oxide coatings like Al_2O_3.

Microwave Technology

PACVD can be further enhanced by using a microwave plasma source for more tuneable properties, higher deposition rates and therefore lower coating cost.

Automation

Hauzer has strong engineering skills to provide dedicated handling solutions to enable a perfect fit into the customers production chain.

Hybrid Technologies

Because the Hauzer Flexicoat equipment can combine many technologies in one machine, highly effective combination layers can be produced. An example of a hybrid technology is Nitrocoat, a combination of plasma nitriding and coating. Because the technology can be combined in one batch, the typical white layer can be avoided and a strong adhesion is the result. Other examples are CARC+ and DMS or nitride coatings and DLC. Please discuss with us the best combination for your application!

Spray Coating

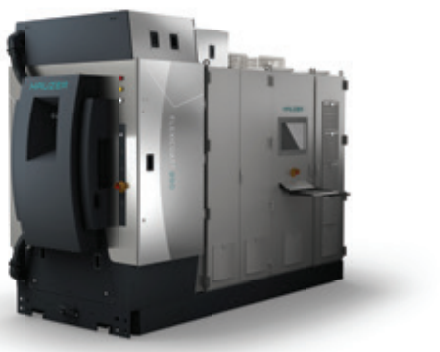
Thin functional PVD coatings onto low cost, low weight plastic products can be realized by using initial spray coating – it is a key technology in our Cromatipic® lines.

Factory Solutions

Customers that go for a one-stop shop do not have to seek any further – Hauzer can provide a complete solution for their factory, including automation, processing and quality control according to Industry 4.0 standard.

INDUSTRIAL EQUIPMENT SOLUTIONS

Hauzer's production solutions are used worldwide for 24/7 production for many applications, and many different products – from small to large, from flat to 3D. By discussing your needs we will match our system configuration to your future success. Our turn-key solutions offer integration of pre-and post-processing, full automation and quality control according to Industry 4.0 standards.



Batch tools for 3D coating

Inline tools for 2D and 3D coating

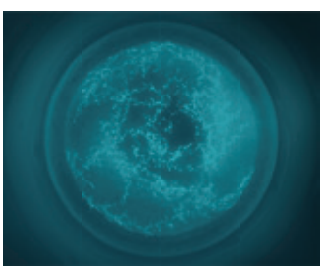
TURN-KEY SOLUTIONS

PRODUCTION SOLUTIONS

INDUSTRY 4.0 STANDARDS

Turn-key solutions

Substrate cleaning



Post-processing

Factory solutions

GROW YOUR BUSINESS WITH HAUZER

Cooperation is essential for Hauzer. A broad technology portfolio and mass production equipment are most valuable when combined with our customers' application knowledge. Some customers use our ready-made recipes for coatings that surpass the competition. Other customers use our industrial plasma solutions to develop their own unique products. Their success is our triumph.

Global Leader

Partnerships make Hauzer strong. They give us the position of global leader in tribological coatings for the automotive market, they provide the competitive edge in tool coating technology and they ensure that we build sustainable factories for decorative coatings, such as Cromatipic. Due to its large installed base of hundreds of machines, Hauzer offers an extensive customer support package, including upgrades with new technologies and consumables.

Global Presence

From our competence centres and offices in the Netherlands, Spain, China and Japan, we offer our customers the support necessary to be a real partner. Our engineers will provide local assistance in process development, maintenance, training, trouble shooting and delivery of spare parts and consumables.

Research Collaboration

Due to Hauzer's pioneering position and the consecutive decades of technology development and equipment building, we have built a close relationship with many research departments in industrial companies and scientific institutes. Our research, combined with our engineering experience guarantees excellent industrial plasma solutions.

Development for Future

Plasma technology and robust mass production equipment will be needed in many more markets. Hauzer will be your partner to develop the industrial solutions for the future and to help you bring your products and prototypes into successful mass manufacturing.

HAUZER

IHI HAUZER TECHNO COATING B.V.
Van Heemskerckweg 22, 5928 LL Venlo, The Netherlands
T +31 77 355 97 77 info@hauzer.nl

HAUZER.NL

IHI GROUP