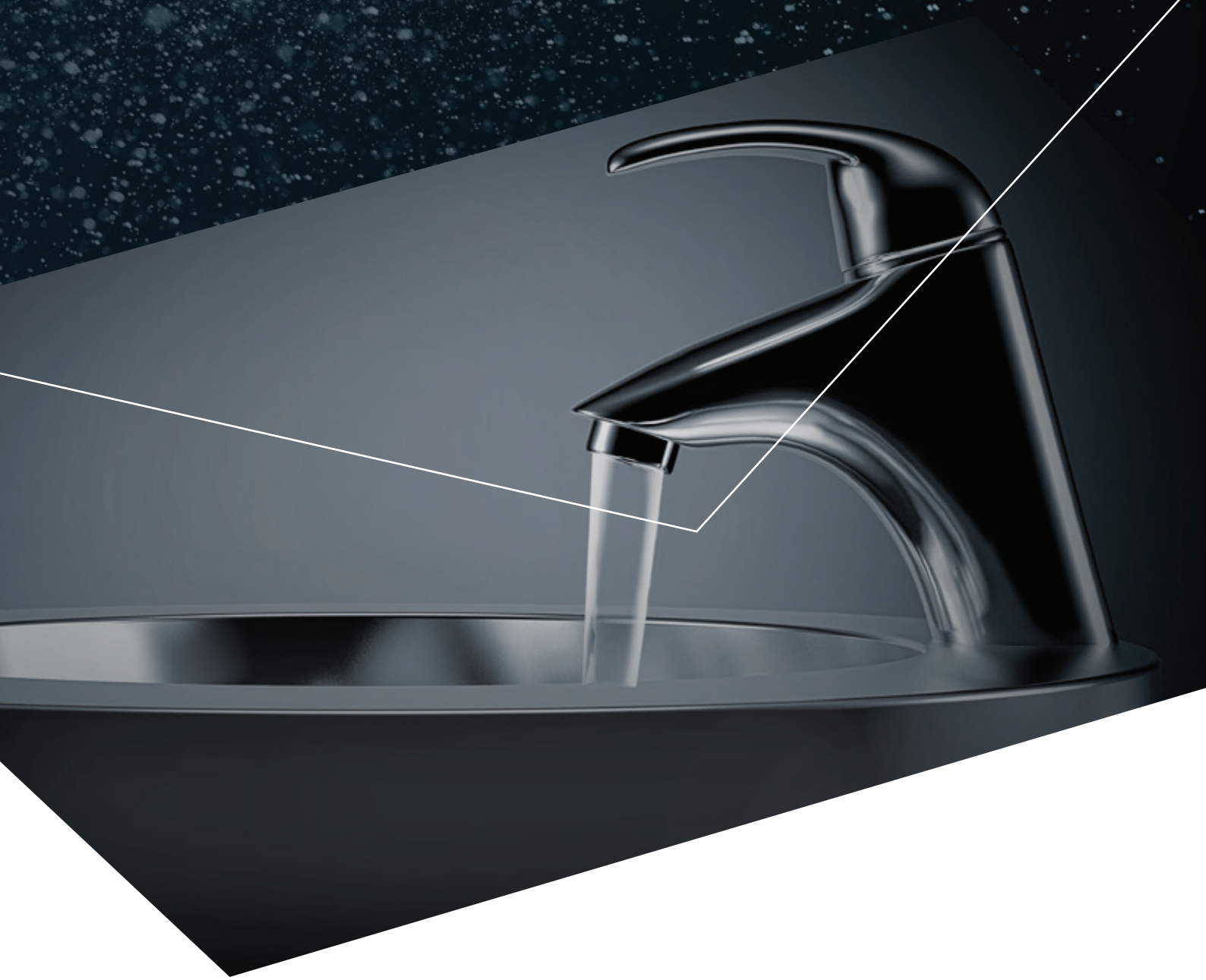


HAUZER

DECORATIVE COATINGS



INDUSTRIAL PLASMA SOLUTIONS

IHI GROUP

INDUSTRIAL PLASMA 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 to deposit Physical Vapour Deposition (PVD), Plasma Assisted Chemical Vapour Deposition (PACVD) and nitriding layers. We 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.”

“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



PARTNERSHIPS, RECIPE FOR SUCCESS

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 plasma solutions for the future.

MACHINE PORTFOLIO BATCH

Hauzer Flexicoat batch machines are built in mature modules that combine a high degree of flexibility with a reliable production output. Multiple plasma technologies can be combined in one machine. The design makes upgrading of existing equipment with new technologies always possible. Mass customization enables the supply of unique equipment with proven plasma concepts. The flexible design gives you to the opportunity to adapt your machine to future needs of the market. By discussing your market, applications and requirements we create an understanding how to match our system configuration with your future success.

GENERAL ADVANTAGES OF THIS MODULAR APPROACH



COMPETITIVE
COST OF OWNERSHIP



CUSTOMIZED
EQUIPMENT SOLUTIONS



MULTIPLE PLASMA
TECHNOLOGIES IN ONE MACHINE



QUICK TROUBLE
SHOOTING

HAUZER FLEXICOAT® 850

Technical Specifications:

Effective coating volume

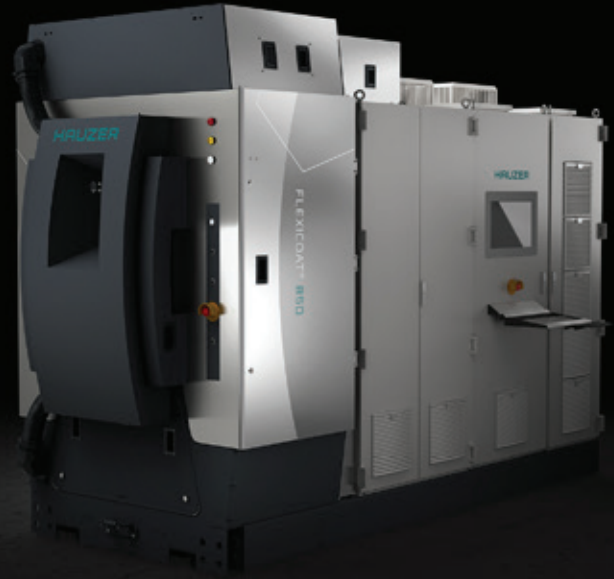
ø 500 mm x 500 mm height

Number of cathode positions

4

Maximum load mass

400 kg



HAUZER FLEXICOAT® 1000

Technical Specifications:

Effective coating volume

ø 650 mm x 650 mm height

Number of cathode positions

6

Maximum load mass

1000 kg



HAUZER FLEXICOAT® 1250

Technical Specifications:

Effective coating volume

ø 810 mm x 850 mm height

Number of cathode positions

7

Maximum load mass

1000 kg



HAUZER FLEXICOAT® 1500

Technical Specifications:

Effective coating volume

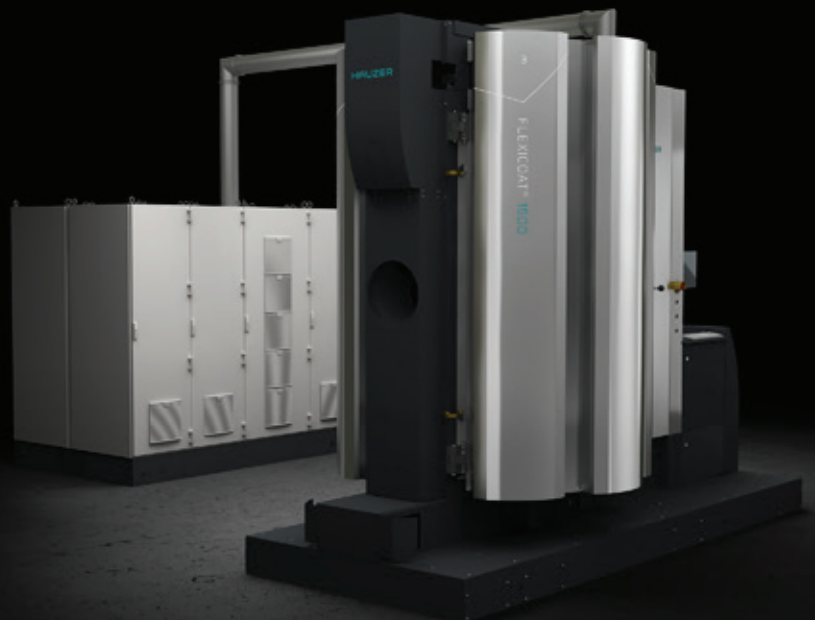
ø 900 mm x 1500 mm height

Number of cathode positions

6

Maximum load mass

3000 kg



MACHINE PORTFOLIO INLINE

Hauzer inline machines coat millions of components every day. They are built for 24/7 mass production of three dimensional components and can easily be integrated in highly automated factories. Modular design enables the equipment to be expanded whenever production growth is needed.



GENERAL ADVANTAGES



LOW COST OF OWNERSHIP



INTEGRATION IN HIGHLY AUTOMATED FACTORY



HIGH UPTIME, HIGH YIELD



TRACEABILITY OF PRODUCTS

HAUZER Inline Concepts

The inline solutions can be built with or without rotating vertical or horizontal fixturing concepts passing the cathodes. Some of them are supplied with fixtures on a rack with dimensions of 1.5 m height, 1.2 m width, 0.2 m depth. Some of the inline platforms are built for coating bulk products. We challenge

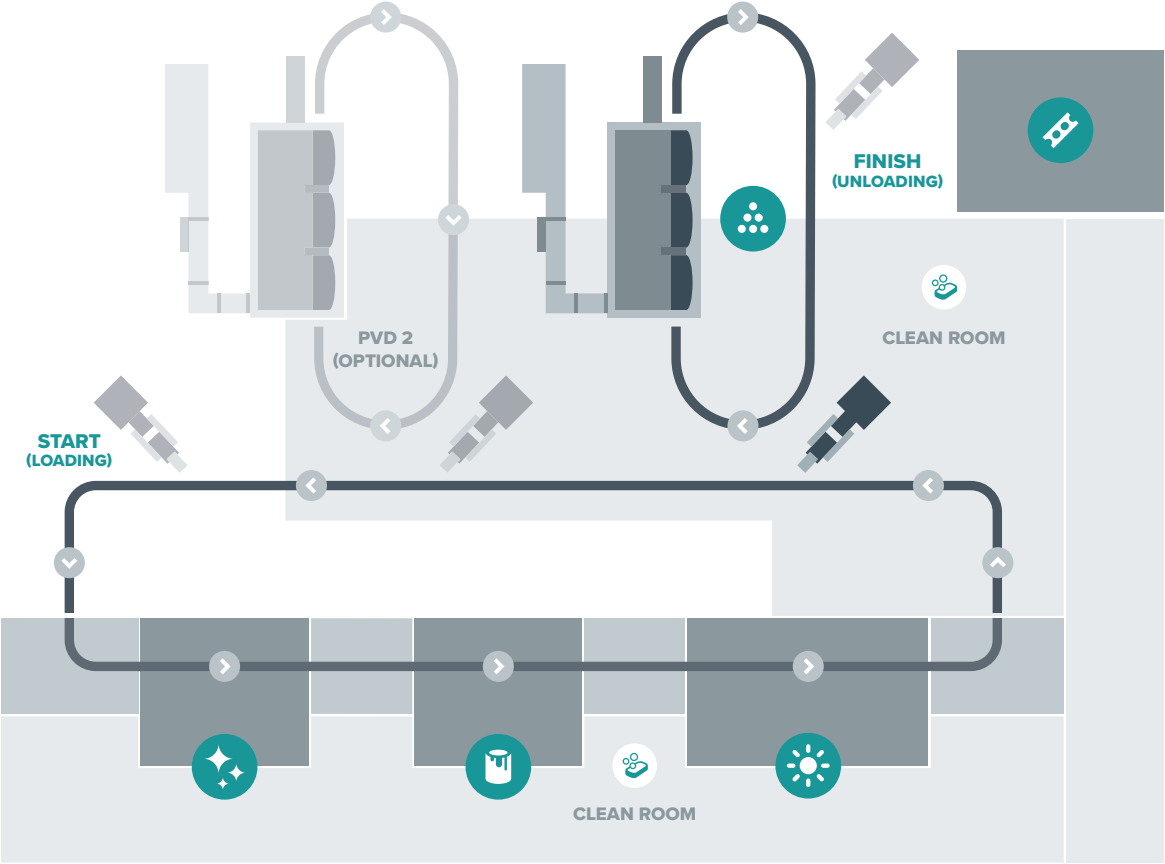
you to tell us about your products and coating issues, so we can produce tailor-made, highly productive inline machines for your specific requirements.

Cromatipic® Factory

The alternative for electroplating in the automotive industry is called Cromatipic. Beautiful, high performance

Cromatipic coatings can be made safely and environmentally-friendly in a cost-effective way. The state-of-the-art plant and competence centre is located in Barcelona. Hauser supplies the complete factories for this technology.

More information can be found in the separate Cromatipic brochure.



PLASMA 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 or 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 is a specific kind of sputtering that 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.

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!

CROSS-OVER DEVELOPMENT

Hauzer is developing its technologies and coatings for several markets, in which we are recognized as technology leaders. This provides advantages for our customers. For example in the tool and decorative markets our customers can benefit from the fact that we have developed our DLC and ta-C coatings for years for tribological applications. Using effective technologies and building deep knowledge about the coating characteristics makes tuning for new applications much easier.

Another example is the development of CARC[®] technology for the tool market. Now that we have become supplier of benchmark coatings in this field, other markets can benefit and find the coatings that fit their needs, developed and produced with our broad technology portfolio.

A strong focus on technology development gives our customers their competitive edge!

Photo in courtesy of Dörrenberg

DECORATIVE APPLICATIONS

Hauzer has been a pioneer in decorative PVD coatings. For over 20 years, our customers in North and South America, Europe and Asia have been using our equipment and turn-key solutions to apply decorative coatings on sanitary and door hardware, watches, spectacle frames and jewellery. Decorative finishes are also used by customers active in consumer electronics, like mobile phones and in automotive interior and exterior parts.

Fashion and Design

As the market is driven by design and fashion, a wide range of colours is required to meet the expectations of the customers. Our equipment and processes are designed to apply high-quality finishes on a wide range of substrate materials, such as stainless steel, titanium and electroplated brass, die cast zinc and plastic. The reproducibility of the coating quality is excellent.

With the flexibility of the equipment and technology and the ease of the operating system, all colours can be produced in the same system simply by selecting the desired process. This results in optimized cost of ownership and the possibility to react to fast changing fashion market requirements.

Durability

Besides the attractive colour range, the added value of the decorative PVD coating is the increased hardness, scratch and wear resistance and a finish that does not change over time.





DECORATIVE COATINGS

The Hauzer Flexicoat and Metalliner system platform with the broad range of technologies enables you to choose the configuration that matches with the colour and productivity you need for your customers.



Technologies

The colour of a PVD coating is determined by its composition and structure. The amount and type of evaporated metal and the flow and nature of the process gases will determine the coating composition.

The combination of arc evaporation and sputtering technologies gives additional freedom to modify the structure of the coatings. Our broad experience with these technologies and the understanding of the effect of composition on colours leads to the widest colour range in the market.

Colours and Finishes

As decorative coatings are quite thin (typically less than one micrometre), the surface texture of the product will not be changed. This gives the possibility to apply the coatings in polished, brushed and satin varieties adding even more freedom in design.

The final range of available PVD colours in the different finishes includes:

- Steel
- Nickel
- Brass
- Gold
- Bronze
- Copper
- Grey
- Anthracite
- Black
- Rainbow

HAUZER



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IHI GROUP