The art of precise surfaces

Your global premium partner for electroforms and complete tools
Electroforming is one of the most important processes in industrial production. From 1956 until the present time GALVANOFORM has developed into the largest European manufacturer of precision tools for a multitude of processes and technologies.

With more than 160 employees GALVANOFORM supplies customers from the automotive industry, aviation industry, plumbing sector and other industrial fields with first-class electroforms, electroformed cavities and complete tools for efficient, high-precision production. GALVANOFORM supports you from product development to series production — from pens to airplane wings, from kitchen sinks to instrument panels.

All our molds are produced economically efficiently and friendly to the environment — ranging from micro-precision parts to large tools with a length up to 9,000 mm.

**Rely on world-class services and special process knowledge.**
We never stand still in our quest for new production opportunities to create better moldings.

GALVANOFORM operates an in-mold graining test facility to develop new molds and tools. This facility enables the testing of new materials and the production of prototype and initial sample parts.

GALVANOFORM constantly expands your options.
Always one step ahead
A trendsetter from the beginning

At GALVANOFORM precision molds have been our guiding principle for over 60 years. We develop and manufacture nickel or nickel-copper tools for plastic moldings in close collaboration with our customers. In doing so we have continuously improved the method and also the quality of our processes.

In 1968 this enabled us to undertake pioneering work in the aerospace industry with the first large nickel molds for the autoclave process. GALVANOFORM embarked on slush technology in the mid-1980s. This has since developed into the mainstay of our production. 1992 saw the expansion of our tool construction capacity to supply complete tools, such as for the spray process. One year later saw a license agreement with KTX Corporation in the field of negative vacuum molding, today this process is known as the IMG process – In-Mold Graining. In 2013 GALVANOFORM developed the innovative GaNiFe tool based on a nickel-iron alloy with a low coefficient of thermal expansion.

Which process can we optimize in collaboration with you?
Close to the customer, close to the market

Our values. Our vision.

We have developed into a reliable partner predominantly in the automotive and aircraft industries as an international tool supplier for electroforms. Our success is due to our distinct orientation towards quality and customer satisfaction. Innovative products and professional services ensure our competitiveness.

We are aware of our diverse responsibilities to our customers, employees and the environment. That is why we have retained our fundamental beliefs in a management system – and act accordingly.

That’s something you can rely on.

GALVANOFORM customers are assured of our finest work in perfect quality. All of our products and services are orientated towards the highest customer-specific quality standards. We listen to your needs and provide precise, personal advice. We handle your secrets, confidential data and models securely and safely. We achieve this by applying sophisticated security concepts – from IT security to access control.

Our employees are given everything they need to be there for our customers. This includes continuous training and modern means of communication and operating facilities. We look after the health and safety of our employees. Our personnel management is focused on the demographic challenges that we face and place great value in the in-house training of our young men and women of diverse origins to offer as many as possible permanent employment in the company.

We protect our environment, act responsibly with natural resources and recycle our waste. We actively participate in the energy revolution and support the development of renewable energies.
Precision from persuasion
Because we know what you expect from us

In demanding production areas such as ours the need for efficient quality management is self-evident. In our company we place special emphasis on the sophisticated control and continuous monitoring of product quality, process quality and environmental quality. We also ensure continued development at the highest level through cooperation with our external partners.

We live up to our standards – in all areas.

Product quality – for precise and reproducible results.
Naturally we apply meticulous control and use modern measurement technology from the construction of the model through to final assembly. We rely on a high-precision optical measuring process for determining the exact surface grain. This ensures that the depth of the grain and pattern is calculated to the smallest detail. Comparative measurements from the wrapping model through to the finished component ensure the consistent quality of the pattern.

Process and environmental quality – handling resources responsibly.
The technical characteristics of electrodeposited nickel and copper are essentially dependent on the deposition parameters such as current density, bath additives, pH and bath temperature. Our laboratory ensures the optimum setting of the various parameters, analyzes in particular the organic bath component and monitors the treatment and minimization of waste water as well as other waste.

Our quality and environmental management systems comply with ISO EN 9001: 2008 and certified to the Baden-Wuerttemberg ECOfit Standard.
Cooperation for enhanced quality and continuous improvement

We are in regular contact with the partners listed below to ensure and further optimize product quality, process quality and environmental quality:

- **IWM** Fraunhofer Institute for Mechanics of Materials, Freiburg
- **IPA** Fraunhofer Institute for production process and automation, Stuttgart
- **OFG** – Analytik GmbH Oberflächen – Festkörper – Grenzflächen, Analytik Münster
- **ACL** Analytical Chemical Laboratory Environmental, Teningen
- **GIU** Industrial Institute for Environmental Analysis, Teningen
The diverse variety of molds

GALVANOFORM manufactures high precision molds

Electroforming can always keep pace with the desire for ever more complex plastic parts. The process gives the product designers the possibility to combine complex geometries and patterns in one component. Detailed surface shapes can be precisely reproduced in various metallic and non-metallic modeling materials. This makes the process so successful in various different industries and applications:

- **Automotive**
- **Aerospace**
- **Kitchen and bathroom products**
  - Plastic kitchen sinks  |  Plastic bathtubs and shower trays
- **Medicine**
  - Outer gloves for prostheses  |  skeletons  |  tooth shapes  |  pipette tips
- **Commodities**
  - Ball-point pens  |  reflectors
- **Stereolithography**
  - Prototype and pre-series parts

Which of your design ideas can we bring to life by electroforming?
Tool for movable fairings on the Airbus A350
Whether large or small components, automotive, aerospace or other applications: GALVANOFORM has the expertise and the right tool for each method to ensure that together we can achieve the very best results.

Tell us about your ideas – we will provide the perfect tool.
From the CAD model to the tool

Using component data provided by our customer we individually produce the CAD designs for the shrinkage model and the tool using the most advanced CAD software. Optical measurement data from quality assurance also flows directly into the CAD development to enable further optimization of the molds.
In our approx. 10,000 m² production area there are more than 30 bath installations ranging from 50-50,000 liters available for the manufacture of molds and mold shells of all sizes. They allow us to manufacture molds and mold shells for many different industries and production processes.

In principle there are three tool manufacturing processes to choose from:
- Electroforming with hard nickel, sulphamate nickel, copper and acid copper
- TPN (technical porous nickel)
- GalNiFe

All of the processes work on the same basic principle: Models are plated that correspond to the required tools in terms of geometry, surface structure and dimensional stability.
You can rely on GALVANOFORM for the following tools:

- Slush tools
- Spray tools
- IMG tools
- RIM/ROM tools
- Laminating tools
- Casting tools
- Exterior tools
- Injection molding tools
- Copper electrodes for spark erosion
Quality you can feel

Precise molds create sophisticated interiors

The tools must meet different requirements depending on the particular process. This is the only way to achieve consistent results. The manufacture and the construction of the electroforms therefore differ correspondingly. Here are a few examples of the most common tools:
Spray tools
Spray-tools geometries with an unfavorable depth to width ratio can also be produced by electroplating. The tools are equipped with a temperature control and are mounted on a covered frame. The tools can be directly used in production.

In-mold graining tools (IMG Tools)
Grain structures or patterns stretch during normal vacuum molding. The negative vacuum molding process using porous nickel tools offers an ideal alternative solution to prevent this happening: This process perfectly reproduces grain structures and patterns without distortion. IMG tools are used for the processing of untextured TPO, PVC and other foils, for example in the manufacture of door panels, glove box lids and instrument panels. Different methods can be applied here:
- Thermoforming + doubling: Deep drawing of a film at simultaneous doubling of a carrier
- Thermoforming + foam backing: Deep drawing of a film and separate foam backing in a foaming mold
- Thermoforming + injection molding: Deep drawing a film of max. 0.3 mm - 0.6 mm at simultaneous injection molding

The use of nickel with a surface hardness of approximately 45 HRC, which enables it to be cleaned with dry ice, certainly makes our IMG tool impressive. Their service life is approx. 500,000 molding cycles. Special pores formed by electroplating result in excellent vacuum performance.

Slush tools
With slush process the electroforms are heated to production temperature by different processes and after a short cycle are cooled down to demolding temperature. They are particularly suitable for the production of PVC or TPO/TPU skins.

Silicone tools – for fast results at low volume
If speed is of the essence, then the spray process can be used with tools referred to as silicone tools. In this process a heated shell is prepared, into which silicone is poured. A silicone tool can be manufactured using either a wrapping model or master model. The number of molded skins is, however, limited to 50-100 pieces.
RIM / ROM tools are a tool system consisting of a grained hardened nickel tool and an upper tool made of steel or aluminum. They are especially suitable for smaller interior components as the component is manufactured directly with the support (the support is over-molded).

The electroforms for the showface and the backface are fitted to a base frame at the customer’s premises and provided with a temperature control. They are used in the manufacture of composite sinks.

RIM / ROM tools

The laminating tool consists of a nickel shell and a steel substructure. These tools are used to produce CFRP or GFRP components at temperatures of between 130°C and 180°C and pressures of up to 7 bar. The advantages are excellent temperature behavior in the autoclave, perfect tightness (vacuum bag), not to mention the ability to adjust the geometry (spring-back). Other customer-specific features such as drilling templates, pressure plate, loose parts and positioning elements can also be implemented.
The future of molding
Research and development: With CAD and new materials

Milestone 1: Coating of stereolithography parts
GALVANOFORM has developed an improved method for stabilizing stereolithography parts. This enables parts made of different materials to be metalized. The parts can then be used in development vehicles at a very early stage.

Milestone 2: GalNiFe, our own in-house material
GalNiFe is a nickel-iron alloy developed by GALVANOFORM. Its low coefficient of thermal expansion is particularly suitable for the processing of carbon fiber materials. The GalNiFe tools are usually mounted in steel frame structures. They enable compensation for the effects of spring back.

Milestone 3: Continuous development of laser micro-welding
The classic galvanic process is supplemented by the introduction of welded reinforcements. This allows new degrees of freedom in increasingly complex geometries.
We are your reliable partner when you rely on your molds. From development to production, we accompany your process work together to ensure success. Our customer-orientated service is always ready to provide assistance even during operation.

We keep your electroforms running at your premises.
- Precise welding
  Our specialists and service partners who do laser and micro welding work are present all over the world.
- Expertise down to the finest detail
  Our highly skilled engravers can correct damage on models with textured surfaces.

We repair your tools:
We also provide laser, micro and engraving works in our plant in Lahr or at your premises for existing molds of different base materials, for example injection molding tools.

Our goal is a long-term successful partnership with you. Let’s talk about it.
Electroplating tools in use all over the world

Rely on the perfect combination of high tech and expertise that GALVANOFORM can provide.
All around the globe
Used for the best of molds

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