



**ESTALKI CORPORATION XXI**

SPECIALIST IN ORGANIC AND INORGANIC SURFACE TREATMENTS







**ESTALKI CORPORATION XXI S.L.** is a business group formed by the companies **MUGAPE, INNOMAT, ABBA PINTATS TÈCNICS, ST COATINGS, MEK&BOT and TUNCALYA.**

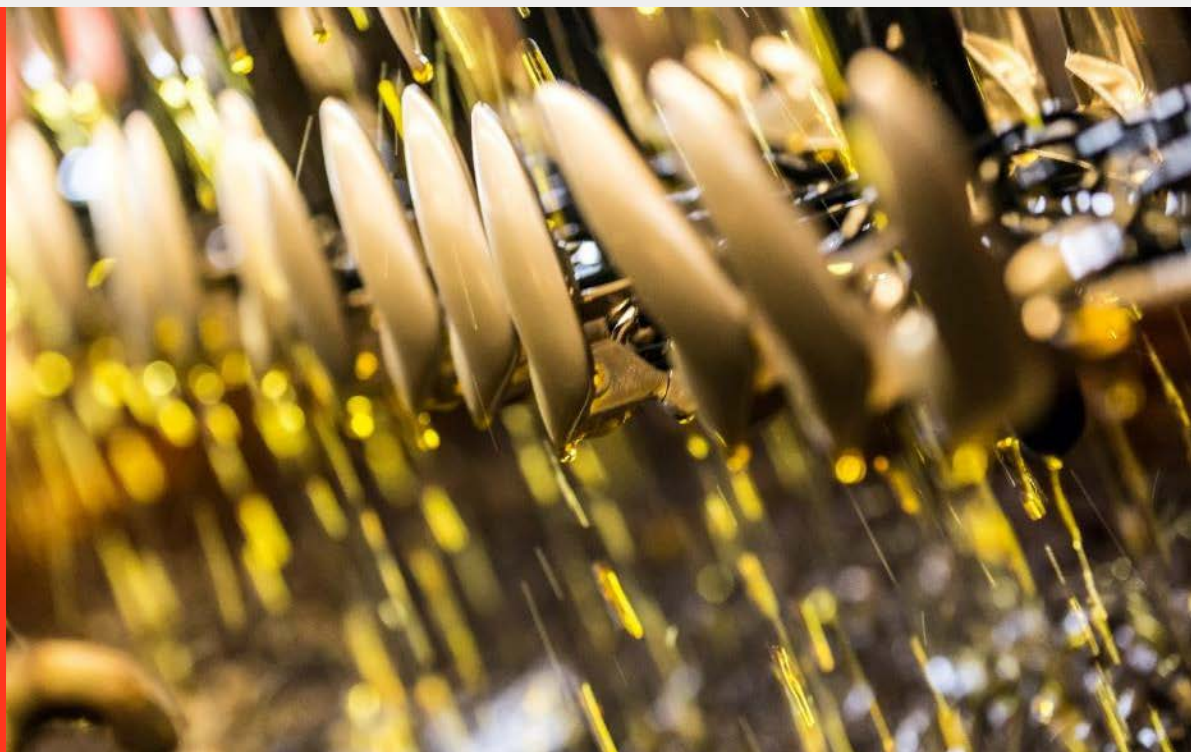


Our companies are **specialized in developing and performing all types of surface finishes**, both **organic and inorganic**, which allows us to offer a wide range of finishes **on all types of materials**.

- **Mugape** specialises in applying inorganic surface treatments.
- **Innomat**, our brain, **develops and implements** new process improvements and new treatments that **Mugape and Abba** integrate into their **production activity**.
- **Abba** is competent in applying organic surface treatments.
- **STM** sells **tailor-made products** to meet the specific needs of our customers.
- **Mek&Bot** is engaged in the **design and manufacture of robotic solutions** for all types of industrial activities.
- **Tuncalya** is specialized in **galvanic coatings and surface finishes** of the highest quality.







## MUGAPE

### SPECIALISTS IN INORGANIC TREATMENTS

In Mugape S.L. we have more than 25 years of experience and offer a wide range of **surface treatments**, being our **specialty the inorganic finishes**.

We have several accreditations from the **automotive sector**, which make us **authorized suppliers** in this field.

Although this sector focuses the bulk of our activity, we also offer our services to other industrial fields such **as household appliances, wind energy, decorative hardware, tools, bicycles and aeronautics**.

 [www.mugape.com](http://www.mugape.com)



## INNOMAT

### PROCESS AND PRODUCT DEVELOPMENT

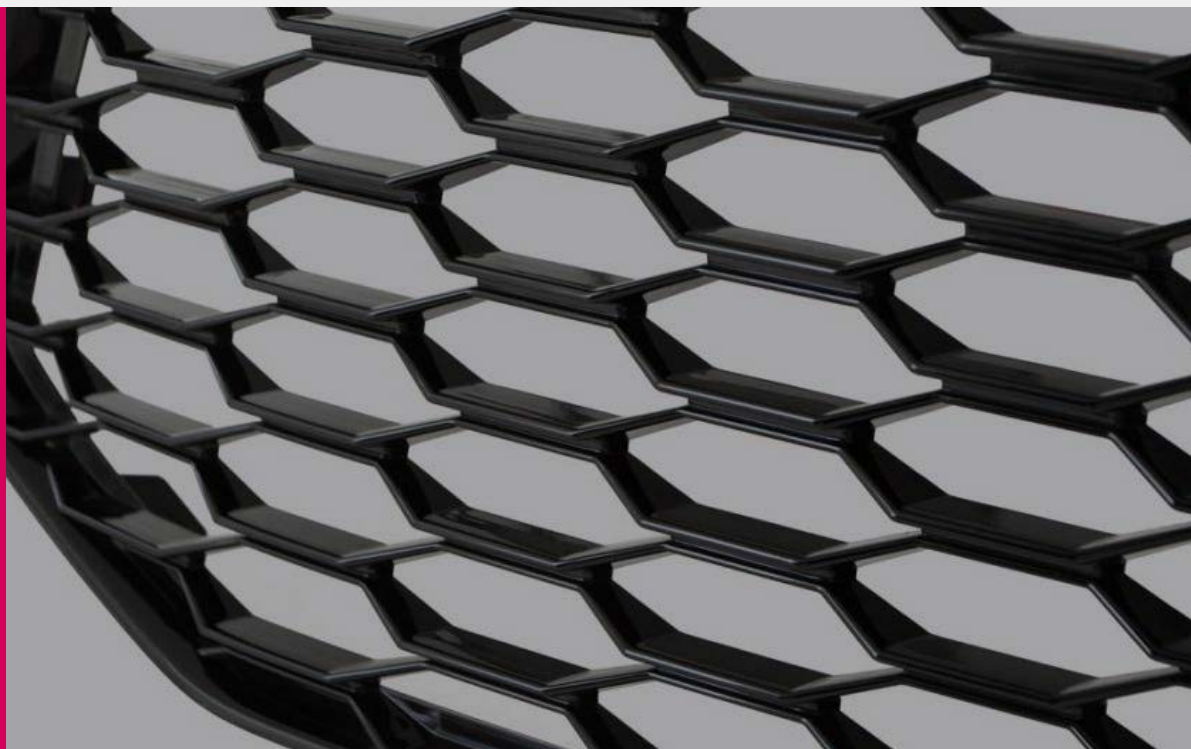
At Innomat we are **experts in the development of processes and products** in the field of surfaces through knowledge and technology.

Our objective is **to enable the fulfillment of any project that our clients entrust** to the Estalki Group, making it both viable and attractive.

To this end, we have a highly qualified human group and strategic partnerships that add value to our work.

 [www.innomat.net](http://www.innomat.net)





## ABBA

### SPECIALISTS IN ORGANIC TREATMENTS

Abba Pintats Tècnics we´re a company dedicated to **the painting of parts**, both plastic and metallic, mainly for the automotive sector.

We´re a professional organization with a long experience in this field, which has allowed us to quickly position ourselves in the competitive **auxiliary automotive industry**.

 [www.abba.cat](http://www.abba.cat)



## STM TAILOR-MADE PRODUCTS

At STM we offer **tailor-made products to clients** by a previous market study that allows to detect the necessities and provide the required products by clients.

This company is **the chemical branch of Innomat**. Products that we develop are incorporated into the industrial processes that Innomat develop and implement.





## MEK&BOT

### ROBOTICS SOLUTIONS

We **design and manufacture robotic solutions** for all kinds of industrial activities.

We coordinate and intermediate in the elaboration of projects and in the provision of **engineering services** for the development and improvement of industrial processes.

 [www.mekandbot.com](http://www.mekandbot.com)



## TUNCALYA

### GALVANIC COATINGS

We are specialized in **galvanic coatings** in order to provide maximum corrosion protection and surface finishes of the highest quality.

We provide our services to a variety of sectors including automotive, luxury packaging, high-end household accessories, kitchenware and luxury desk accessories.





## INORGANIC TREATMENTS

- Chrome
- Anodized
- Phosphatic
- Passivates
- Electrolytic cleaning

+ INFORMATION



## ORGANIC TREATMENTS

- Anticorrosive
- Surface repair solutions
- Antacids
- Hydrophobics and hydrophilics

+ INFORMATION



## I+D SOLUTIONS

- Project development
- Process deployment

+ INFORMATION



## TAILOR-MADE PRODUCTS

- Paints
- Primer
- Varnishes
- Top Coat

+ INFORMATION



## ROBOTICS SOLUTIONS

- Design and manufacture of robotic solutions

+ INFORMATION



## GALVANIC COATINGS

- Maximum corrosion protection
- Surface finishes of the highest quality

+ INFORMATION

## INORGANIC TREATMENTS

# METALLIC AND CHROME

**Coating's made through the electroplating of metals** over the substrate to protect.

The applied coating is functional, giving the part resistance to corrosion, as well as aesthetic, as its able to apply a shiny or matt finishes.

MUGAPE has all necessary types of nickel to obtain the best resistances against corrosion, being able to make both the duplex system as well as the microporous.

In many cases it handles the previous preparation of these materials performing the vibration, polish or mechanization operations.





## INORGANIC TREATMENTS

# ANODIZED

### Anodized Aluminum

Anodized aluminum is a coating of alumina obtained through the oxidation of aluminum surfaces.

### Anodized Magnesium

Anodized magnesium is a coating of periclase and forsterite obtained through the oxidation of magnesium surfaces. The layer obtained stabilizes the magnesium, reducing notably its tendency to corrode.

### Application of ceramics to anodized metals

Elaboration of a proprietary technology for the application of decorative ceramic coatings to anodized parts.



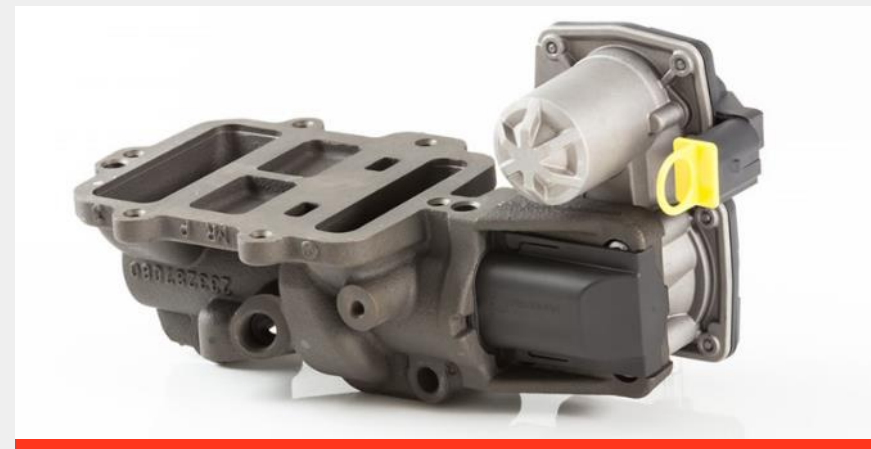
## INORGANIC TREATMENTS **PHOSPHATIC**

**Chemical conversion of the metallic (steel) part in a metallic phosphate.**

These processes are made as a general norm following the guidelines of the norm DIN-50942 and UNE-EN-12476, unless the client specifies its own norm.

**According to the application needed, this phosphate can be of several kinds:**

- Zinc: phosphate microcrystalline or zinc crystalline
- Calcium Zinc and Manganese Zinc
- Manganese
- Iron





## INORGANIC TREATMENTS **PASSIVATES**

### **Aluminum Passivate (Chromital)**

Chromital is a passivate without hexavalent chromium for aluminum and its alloys. It presents a similar behavior to the passivates with hexavalent chromium. The treatments comply with the specifications MIL-DTL-81706 and MIL-5541 of the aeronautical sector and it can be used as a base for the painting. The layering comes to be insignificant from 0,1 to 0,5 g/m<sup>2</sup> and the resistance to corrosion can be 300 hours in neutral saline fog.

### **Stainless Steel Passivate**

The stainless steel passivate is used to improve its resistance to corrosion. In this process, it also improves its visual aspect since the husk remains are eliminated. It's a treatment that doesn't alter the dimensions of the piece. It can also be applied to the refractory alloys of nickel and cobalt.



## ORGANIC TREATMENTS ANTICORROSIVE

We have a wide range of products that increase the anti-corrosive properties of substrates.

### Primers or Primer

**Phosphating agents:** These are primers with a thickness between 8 and 12 microns which, due to their phosphating characteristic, is suitable for all types of metallic substrates since their reactivity with the substrate provides a very good adhesion.

**High content in Zn:** With a low thickness of the order of 10-25 microns, they provide a protection of 1800h CNS. This product can be applied directly on metal and provides anti-seize and lubricating characteristics to the piece according to needs.

**Wash first:** Product that at very low thicknesses provides a resistance of 850h. CNS with layers between 2 and 5 microns. It is a two-component product with rapid drying without the need for it to be forced as it can dry at room temperature.



**Sealed:** It is film-forming specially designed for application on treated surfaces or DTM, providing anti-corrosive properties. It has a sealing action closing the pores that facilitates the cleaning of the pieces and repelling the dust. This type of finishes can be either transparent or colored and can act as a decorative.

## Top Coat

**High thickness.** Coating of direct application to metal with some 200-250 microns of thickness providing a resistance to corrosion of 3000h CNS and 3500 h of immersion in salt water. Coating specially designed for wind applications both in Onshore and Offshore.

**Low thickness.** Coating that with 25-40 microns thickness with direct application on metal provides an anti-corrosion of 1500h..

**Aesthetics.** Finishes in both matt and glossy and available in any color with a corrosion resistance of 850 h CNS. It has a high layer closure which makes it a good choice for structures and profiles. In combination the first varnish has a resistance of 3000h CNS.





## ORGANIC TREATMENTS REPAIR SOLUTIONS

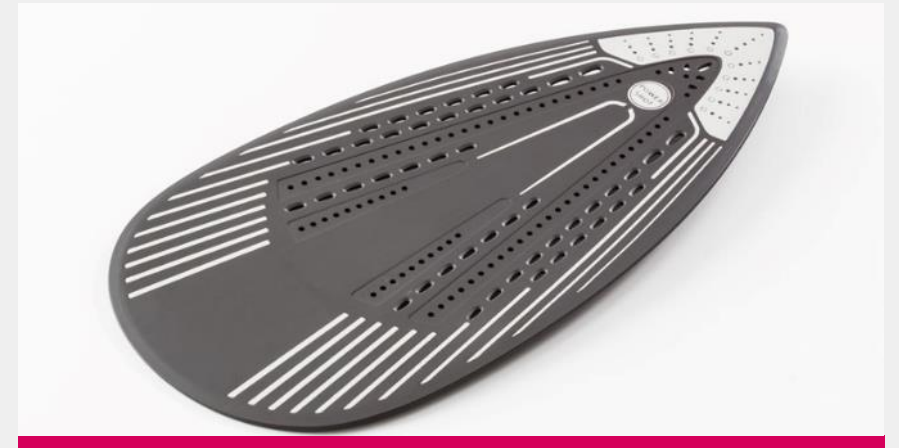
Product which allows surface repairs both in the substrate and in layers, giving a surface homogeneity and the characteristic of the product are achieved high quality finishes.

## ANTACIDS

Products with bases of phenolic and epoxy resins with a high inhibiting power to the attack of acids and acting as a protective barrier for corrosion, obtaining finishes with very high performance.

## VARIOUS SOLUTIONS

Solutions can be supplied that provide anti-fingerprint, anti-ice, antibacterial properties by varying the hydrophobic and hydrophilic properties of the surface.



## I+D SOLUTIONS

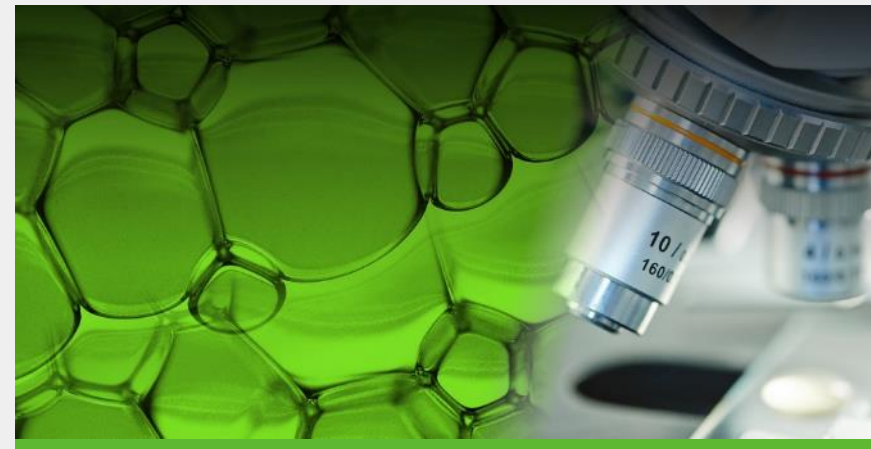
# PROJECT DEVELOPMENT AND PROCESS DEPLOYMENT

### Integrated Product Management

- Product deployment.
- Implantation of products in ongoing or newly created processes.
- Development of integral projects from the development of the part, design and process implementation up to the layout.

### Injection of plastics and metals

We are able to design moulds for both plastic and metal injection. We have the means to carry out the mass production of these moulds regardless of the technology used, which can be either extrusion, injection, blowing, stamping, etc...



## TAILOR-MADE PRODUCTS PROVIDE THE REQUIRED PRODUCTS

We supply existing products in the market that are adapted to the client's requirements or, otherwise, those specifically designed to meet the needs.







## ROBOTICS SOLUTIONS

# DESIGN AND MANUFACTURE OF ROBOTIC SOLUTIONS

We design and manufacture robotic solutions for all kinds of industrial activities.

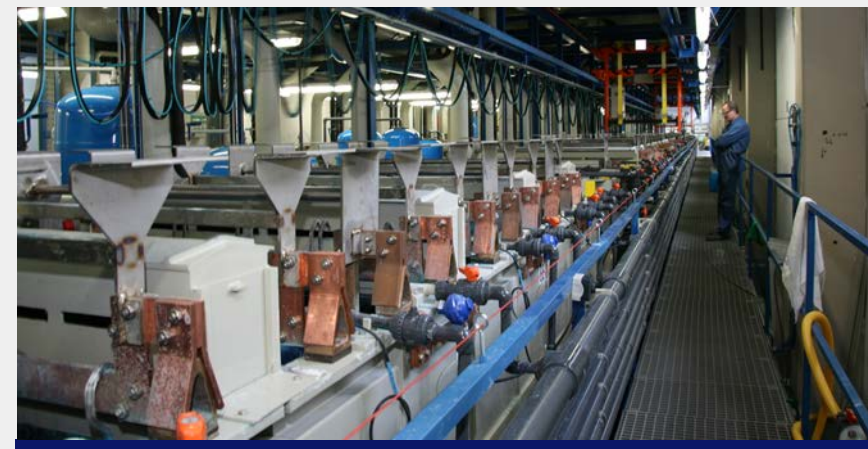
We coordinate and intermediate in the elaboration of projects and regarding the provision of engineering services for the development and improvement of industrial processes.



## GALVANIC COATINGS

**MAXIMUM CORROSION PROTECTION  
AND SURFACE FINISHES**

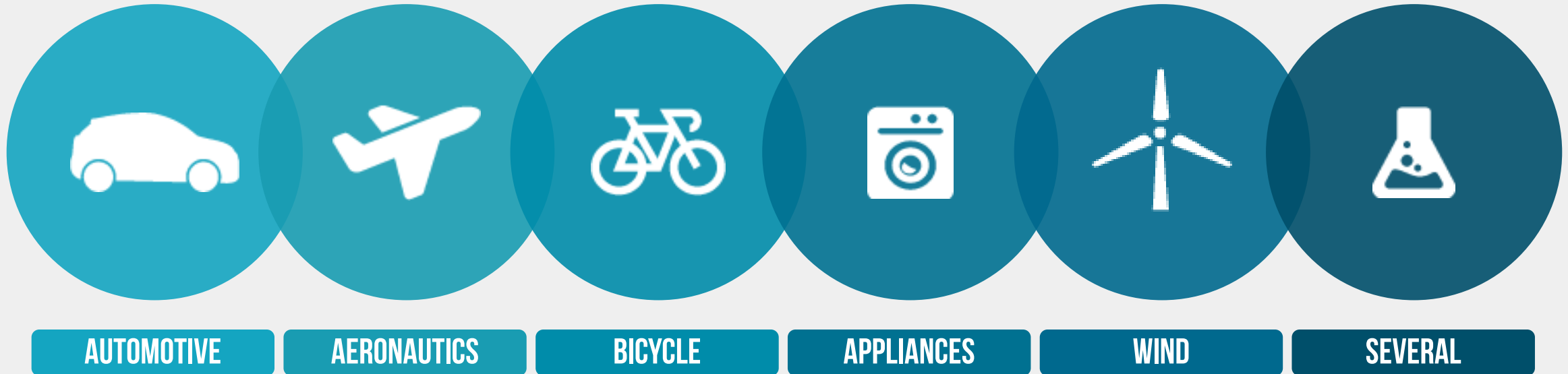
We have specialized personnel with extensive experience in galvanic coating and a laboratory equipped for continuous supervision of the galvanic line and analysis of the pieces.



# COMPLETED PROJECTS

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## SPECIALIST AREAS







## AUTOMOTIVE

### Process of pickling and passivate for AISI 304 Mecamax parts forged as an alternative to the mechanization for automobile injectors

In the engine field, the use of forged stainless steel has begun to potentiate. Said process generates a lower superficial quality than the mechanization, and therefore the superficial treatments are more critical.

In this sense, ESTALKI has worked in the development of a **process that uniformly eliminates the superficial ferrite the forge leaves**, allowing it to reach 720 hours in the neutral saline fog test.

### Phosphatic process for Si-Mo cast iron parts used in the gas manifold of the automobile

The gas manifold of an engine is the zone of the vehicle that suffers most from the effects of corrosion, since in it the corrosive gases concentrate at high temperatures. Commonly, the phosphates have oily films that notably improve the resistance to corrosion. However, said films are not usable in parts that need to be joined to others through welding.

In this sense, ESTALKI has developed **a system of passivates exempt of oil that give the part the protection required by the manufacturer.**

## Process of decorative chromium plating with high resistance to corrosion

Despite the fact that decorative chromium plating is a mature technology, ESTALKI has achieved **the development of a multilayer system that doubles the resistance to corrosion of the chrome zamak parts in neutral saline fog**, even getting to improve the results obtained through the use of duplex or triplex nickel.

## Treatments of anodization and painting for magnesium

Magnesium is the lightest structural metal that exists, but at the same time it's the one that more rapidly corrodes; therefore the corrosion protection is an aspect of vital importance.

In this sense, ESTALKI has developed several treatments, both **inorganic** based in the technology denominated **plasmaelectrolytic anodized**, as well as organic where **formulations of high reactivity** have been used to achieve an excellent adherence between paint and magnesium.

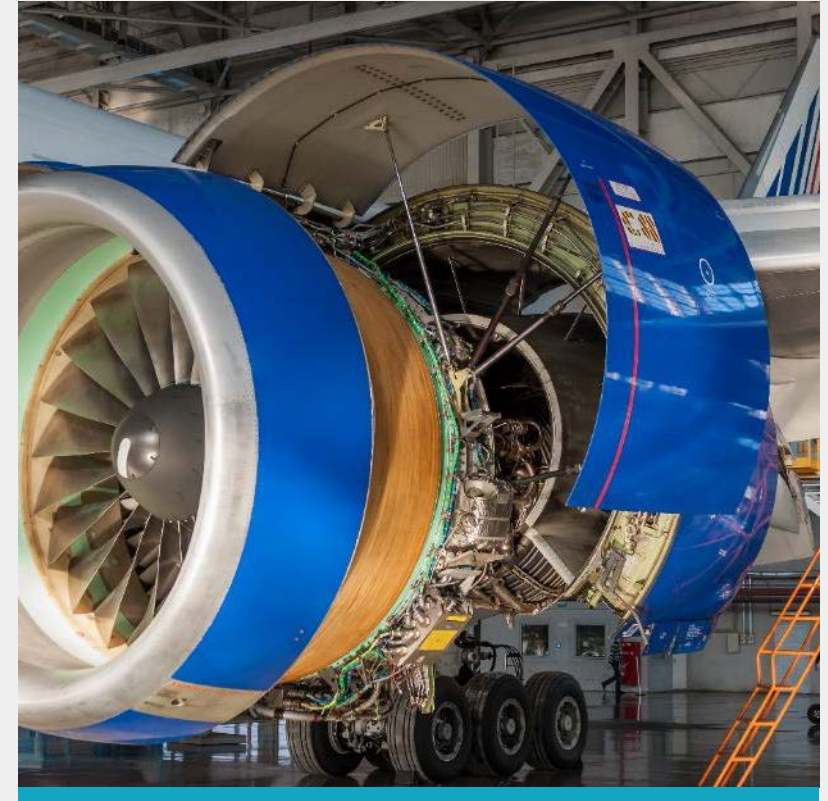
## Development of a paint for Audi alternative to the layers of chromic conversion

Seeing that the current alternatives to the layers of chromic conversion don't match the anti-corrosive properties of these, ESTALKI has developed for Audi **a phosphatic primer exempt from chrome with good anti-corrosive properties**. Said primer is of easy application and presents a good aesthetic finish, so it can be used as a topcoat in diverse uses.

## AERONAUTICS

Process optimization of a chromium-free sealing process for sulfuric acid anodizing treatments as a more environmentally friendly alternative to chromic anodizing (CAA) for unpainted aluminum parts

Although CAA has been widely used due to its excellent performance, European regulations consider it potentially harmful due to the use of chemicals, which has led to the **need to develop a product that complies with the European Union regulation REACH.**





## BICYCLE

### Mate anodization through micro-blast for bicycle reels

In the high end bicycle sector, aesthetics are closely linked to functionality. Therefore, **combinations of shine/matte are sought after in order to enhance the finishes when the bicycle is in movement.**

That's why ESTALKI has developed an anodized mate that improves the **aesthetic of the traditional mate through chemical means.**





## APPLIANCES

### Process of selective enamel for anodized aluminum

ESTALKI has been able to **directly enamel the anodized aluminum through a sophisticated system** that joins the **use of the latest generation inks with the use of a curing technology unique to Europe.**

**The result** of said development is ceramic layers that can be applied in a selective way with a **wide fan of decorations and with hardness and resistance to deterioration** similar to anodized aluminum.





## **Anodization alternative to the chromic for the adhesive union of aluminum with composite materials**

Before the need of eliminating the chromic anodization by the manufacturers of wind turbines as a consequence of the negative effects that the hexavalent chrome has on health, ESTALKI has proposed an alternative based on the sulfuric anodization. Said alternative has been built based on the modification of the work conditions, both of the anodization as well as the posterior sealing.

Through this development it has been able to even improve the adherence between the anodized aluminum and the structural adhesives epoxi used in this industry.

## **Development of a paint for metallic components of wind turbines**

The wind industry has witnessed an increase in its anti-corrosive requirements with the irruption of the offshore wind. The wind turbines located at sea present serious corrosion problems, especially in the area affected by the tides.

To minimize this problem, ESTALKI has developed a paint that with a lower thickness improves the resistance to corrosion of the formulas it commercializes.





## Optimization and industrial development of treatment ALODINE EC2

In collaboration with the multinational HENKEL, the **first European line for the application of the Plasmaelectrolytic Alodine EC2** treatment was installed in ESTALKI.

Said treatment presents a **high resistance to corrosion**, by incorporating titanium dioxide to the traditional layer of alumina of the anodized.



## QUALITY CERTIFICATES

ISO 9001



ISO TS 16949 (IATF)



ISO 14001



 TIER 2



**cidetec** >

CIDETEC



MEKATAR GROUP



MEKATAR



MEKATECH  
At the cutting edge of machining



GUERINDA



TRAITTECH



NORDCASTING

NORDCASTING





CIDETEC is an **applied research organization** which integrates three international benchmark technology centers in Energy Storage, **Surface Engineering** and Nanomedicine.

Since 2003, Estalki Corporation XXI has been part of the **CIDETEC Foundation's Board of Trustees**, a technology center with a specialized unit for surface treatments.

 [www.cidetec.es](http://www.cidetec.es)





**Mekatar Group** The Mekatar Group are a group of companies who develop integrated mechanization and surface treatment processes for industrial components of various materials and sizes.

The Group combines the productive capacity of the machining companies **Mekatar**, **Mekatech**, **Mecanizados Guerinda** and **Traittech** who specialize in surface treatments.

The main activity of these companies is the manufacture of components for the emerging wind industry within the aerospace and aeronautical sectors.

 [www.mekatargroup.com](http://www.mekatargroup.com)





Mekatar focuses on **the development of complex machining processes** with critical precision requirements for parts **as large as 65 tons**, and which are comprised of various **materials including wrought iron, cast iron, sheet metal and oxyacetylene sheets**.

The company primarily works on the component manufacturing processes for the **wind, aerospace, and aeronautics industries**.

 [www.mekatar.com](http://www.mekatar.com)







Mekatech was founded in 2014 by the development managers of Mekatar and Mecanizados Guerinda.

The company focuses its activities on **machining large parts with critical precision requirements up to 65**, which are comprised of tons of various **materials including cast iron, wrought iron, and sheet metal**, within the component **manufacturing processes field of the wind, aeronautics, and aerospace industries**.

**Quality and reliability assurance in the development** of manufacturing processes is also a **strategic aspect of Mekatech's activities**.

 [www.mekatech.es](http://www.mekatech.es)





Mecanizados Guerinda focuses on **performing machining processes in small and medium parts of up to 2 tons and of various material types**, primarily for the customers in the **wind and automobile industry**.

**Quality assurance** constitutes an integral part of Mecanizados Guerinda's activities, which is undertaken using a three-dimensional CNC Mitutoyo machine and a portable three-dimensional machine.

 [www.guerinda.es](http://www.guerinda.es)



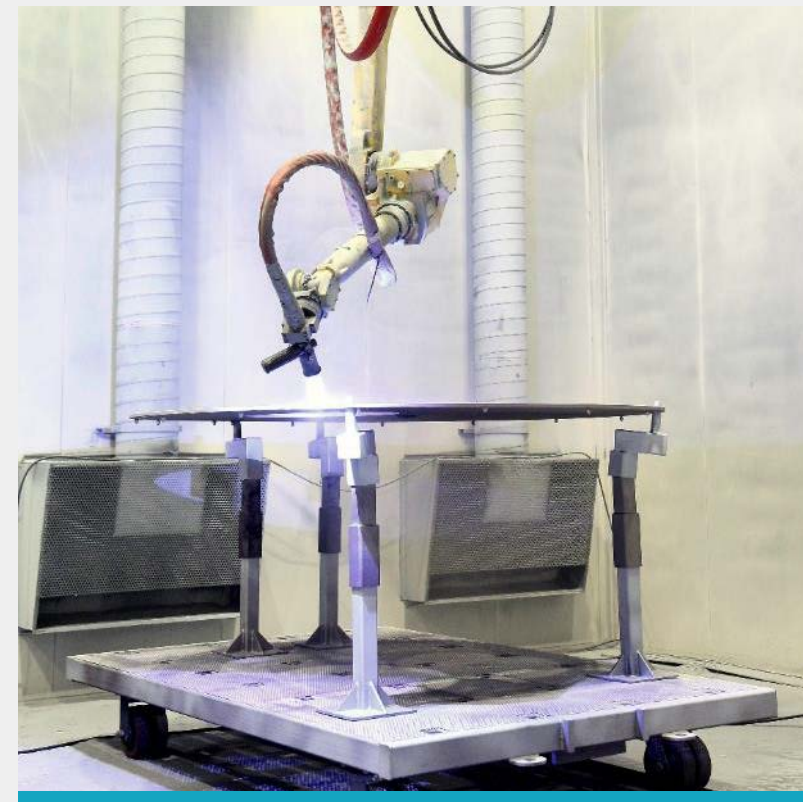


Traittech is dedicated to **performing surface treatments using shot blasting, metalizing and painting the metallic pieces** of various materials, particularly those of a **large size and in a critical condition of quality**.

It uses advanced technology in the application of treatments through **the robotization of the shot blasting and metalizing processes**.

**The industrial process** is organized through **the online realization of parts preparation and the cleaning, shot blasting, metalizing, and painting treatments**.

- **Pre-cleaning** of the parts to be treated.
- **Shot Blasting:** robotization is carried out by means of an auto-directional arm system that incorporates the hoses for shot blasting and 3D programming.





- **Metallised:** Projection of zinc material by means of an electric arc system launched by an electric-pneumatic equipment onto a shot-blasted surface to ensure optimum corrosion protection.
- **Painting:** Airless machines with manual application of high density paint. Cabin heating system by means of gas burners with a power of 5.000Kc to ensure the drying processes of the pieces.

 [www.traitech.es](http://www.traitech.es)





It specializes in the **manufacture of large foundry parts** in cast iron weighing 5 to 50 tons and in carbon steel weighing 5 to 30 tons.

Nord Casting's main market is the **wind**, through the manufacturing of **Cast iron wind turbine parts**.

 [www.nordcasting.es](http://www.nordcasting.es)





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