

DLyte



**The metal surface
finishing revolution**



DLyte, based on the DryLyte Technology, is a global leader in automated surface finishing equipment for metal parts that require high-quality finishing. Since its launch, DLyte has aimed to revolutionize the industry by introducing cost-effective, resource-efficient, and timely production systems.

The DLyte system differs from conventional polishing methods in its ability to achieve a uniform, mark-free finish on any surface and geometry, without causing micro scratches, and deliver a mirror finish while respecting the tolerances on the piece being processed.

In addition, it reduces the number of surface finishing processes, and space required for manufacturing, significantly cutting the carbon footprint and waste generation linked to traditional metal treatments.



+800

Over 800 satisfied
customers

+950

More than 950
machines installed

61

61 distributors
worldwide

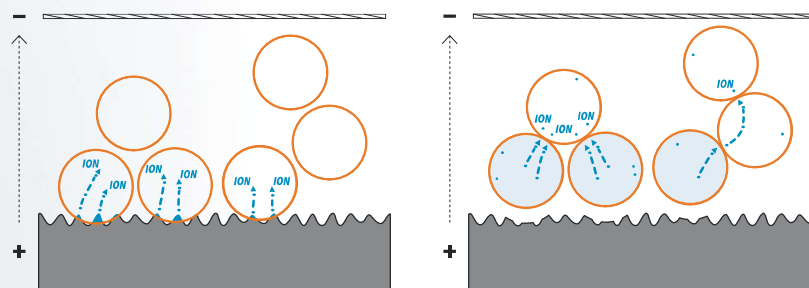
+10

Over 10 years of expertise
in metal surface finishing

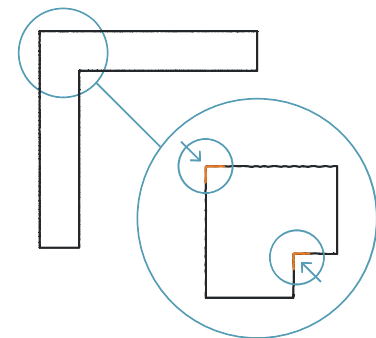
DryLyte Technology Process

The DryLyte Technology used in the dry electropolishing machinery DLyte, is a patented technology for grinding and polishing metals by ion transport using free solid bodies. In DryLyte the liquid acids are replaced with a set of tiny solid spheres of a non-conductive polymeric material capable of retaining liquid electrolyte and conducting electricity while removing the oxides produced during the electropolishing process.

It works by combining the electrical flow created by a high-precision rectifier with the movement of the pieces through the dry media. This results in an ion exchange and **removal of material only from the peaks of roughness. The process does not round edges** and can access corners that are not easily accessed mechanically.



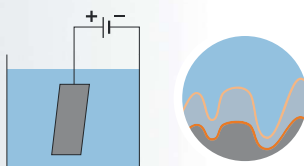
-  Cathode (negative polarity)
-  Metal surface (positive polarity)
-  Electrolyte particles
-  Removed material by ion transport



The process does not round edges and can penetrate the internal cavities of the piece.

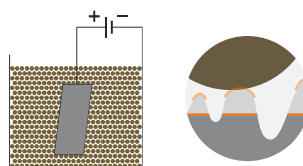
Comparison with traditional processes

LIQUID ELECTROPOLISHING



- + All surfaces contact liquid
- + General oxidation
- + Low discrimination

DRYLYTE TECHNOLOGY



- + Spheres contact on roughness peaks
- + Localized oxidation
- + Selective removal of metal
- + Geometry preservation
- + Improved corrosion resistance

ABRASIVE FINISHING



- + Plastic deformation of roughness peaks
- + Inclusion of broken abrasive
- + No improved resistance to corrosion
- + Rounding of peaks and geometry harm

Dry electropolishing equipment for high performance and superior finishing applications

DLyte offers a wide range of dry electropolishing machinery and electrolyte to meet various surface finishing requirements of the industry, production quantities, and piece dimensions, ensuring a highly scalable, consistent, and homogeneous production.

The following finishing processes and range of materials can be processed in our machinery ensuring production performance, and achieving target cost, lead time, and quality.

FINISHING PROCESSES

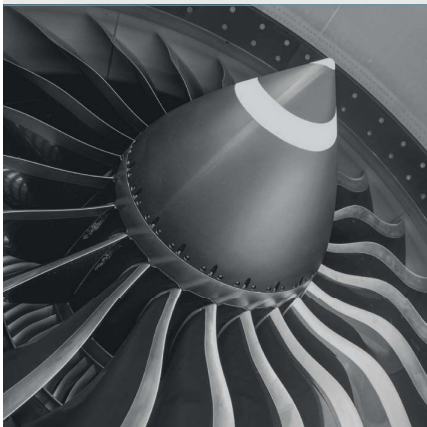
- + Precision finishing
- + Smoothing
- + Mirror finishing
- + Deburring
- + Rounding
- + Corrosion resistance
- + AM post-processing
- + Inner channels

RANGE OF MATERIALS

- + Cobalt Chrome
- + Stainless Steel
- + Carbon Steel
- + Carbides
- + Nickel Alloys
- + Aluminium Alloys
- + Copper Alloys
- + Titanium Alloys

Fields of application

A variety of industries use dry electropolishing to meet the unique surface requirements of their components. DLyte is a key leader in different sectors ensuring the highest surface finishing quality and performance.



01. Aerospace



02. Automotive



03. Dentistry



04. Food & Beverage

Customized surface finishing solutions

Throughout the project implementation, our surface finishing experts provide guidance and assistance in determining the most suitable equipment, fixturing, and electrolyte for your surface finishing needs. The following factors are key to identifying the solution needed:

01. MATERIAL

The material to be treated determines the combination of electrolyte formulation and process parameters. Both play a key role in the results achieved. The consumables, designed and developed in our test lab, allow us to precisely meet our customers' requirements.

02. SURFACE FINISHING REQUIRED, INITIAL STATE OF THE PART AND MANUFACTURING PROCESS

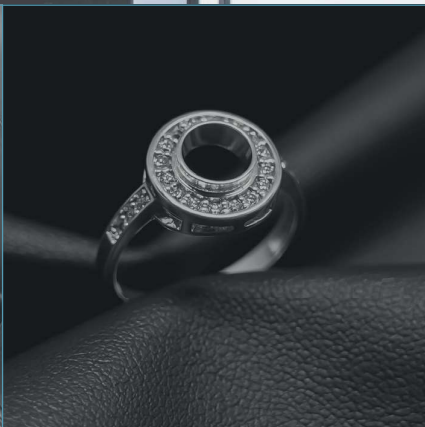
The process is perfectly defined with parameters, process time and media formula, size and geometry, based on the required surface finishing goal, the initial state of the parts and its manufacturing process.

03. SHAPE, COMPLEXITY AND SIZE OF THE PIECE

Our equipment precisely applies mechanical movements and electrical parameters to allow an optimal flow of media and electricity across the surface, while achieving homogeneity on the part. The DLyte immersion and projection systems can process parts with various geometries, shapes, and sizes.



& pharma



05. Jewelry & fashion



06. Medical device



07. Toolmaking

Technical benefits

01. HOMOGENEOUS RESULTS WITH CONSISTANT REPEATABILITY

DLyte delivers consistent results across the surface, eliminating micro scratches, unlike abrasive polishing. This system operates effectively on both micro and macro levels and provides stable outcomes for multiple batches throughout the life of the electrolyte media. Additionally, there is no physical wear, as seen in abrasive particle methods.



03. BEST-IN-CLASS SURFACE ROUGHNESS

DLyte significantly reduces roughness by 80%, while avoiding negative effects. Liquid electropolishing only reduces roughness by 50% with the risk of unwanted side effects like orange peel or pitting.

05. BIOCOMPATIBILITY PROVEN

DLyte only uses a combination of polymeric particles and acids to enhance surfaces. It has proven the biocompatibility of the products processed with its technology.



Biocompatibility of the Process Test Study

DLyte has proven the Biocompatibility of the products processed with DLyte System. The product can be considered non-cytotoxic. The study has been made according to the specifications of standard UwNE-EN-ISO 10993-5:2009.

QR - Download the Cytotoxicity Study

02. GEOMETRY PRESERVATION

It respects the tolerances and preserves the initial shape, even the cutting edges. It does not round the edges as there is no mechanical abrasion of the surface.



04. LOW MATERIAL REMOVAL IN COMPARISON TO OTHER POLISHING PROCESSES

The DLyte process removes material only from roughness peaks as the diameter of the particles is bigger than the roughness profile.

06. IMPROVE THE CORROSION RESISTANCE

DLyte is the only technology that drastically **removes roughness, and enhances the corrosion resistance of metal pieces**, while reducing the number of manufacturing processes required.



Corrosion Resistance Test Study

The results of the study show that DLyte achieves better corrosion resistance than liquid electropolishing. The dry EP sample corrodes slower than the traditional EP sample.

QR - Download the Corrosion Resistance Study



Operational Benefits

07. NO NEED FOR OUTSOURCING OR MULTISTEP PROCESSES

Dlyte replaces several finishing steps and the need for outsourcing processes that require special environmental licenses. This reduces lead time, improves quality outcome, and results in control over internal processes.

08. COST REDUCTION

Achieves over 50% reduction in production costs through streamlined processes, logistics optimization, and improved quality, etc.

09. REDUCED FOOTPRINT

The Dlyte process has a high output in a very compact design. There is no need for peripheral devices as wastewater or sludge treatment machinery.

10. EASY WASTE MANAGEMENT & LOW WATER CONSUMPTION

The Dlyte system does not require a closed-up system to recycle water and sludge waste treatment machinery decreasing space, labor, water and environmental license costs savings.

11. IMPROVEMENT OF THE WORKING ENVIRONMENT

Clean, non-hazardous and easy waste management. Alternative abrasive processes lead to an extremely dusty and noisy environment.



Powered by  Technology

The patented DryLyte Technology, electrochemical polishing which uses active solid particles, is protected by patents owned by DryLyte S.L. GPAINNOVA owns the exclusive right to sell the DryLyte Technology, and only companies authorized by GPAINNOVA have the right to utilize or distribute the equipment and consumables using the DryLyte Technology.

The Products included in this document may be protected by one or more patents and patent applications detailed at:
<https://www.dlyte.com/patents/>



Founded in Barcelona in 2013 and settled in Sunrise (Florida, USA), Hong Kong and Shenzhen (Mainland China), GPAINNOVA specializes in surface finishing solutions for metal and alloy parts through Dlyte. The group develops, manufactures and markets advanced surface finishing machinery, accessories and consumables based on the patented, disruptive dry electropolishing technology (DryLyte).

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