DLyte10,000_V.2ENG_07/2022

DLyte

DLyte 10,000

The Only Automated Surface Finishing System for Large and Complex Pieces

A brand of
GPAINNOVA

DLyte10,000 is the most powerful **DLyte** modular unit for polishing large pieces and complex geometries. Based on the patented dry electropolishing **DryLyte Technology**, the robot module allows to treat metals and alloys in a fast, cost-efficient way. To achieve the highest quality results in complex and heavy pieces, it combines the **DryLyte Technology** with a precise 6-axis mechanical movement, to remove the roughness from the workpieces.

This machine can be totally integrated in any production line requiring full automation of the workflow and an efficient treatment of heavy pieces and complex geometries. Compared to other dry electropolishing machines, **DLyte10,000** has been designed to polish large and heavy industrial parts.

DryLyte Technology delivers totally automated, high-quality surface finishing for high-value, delicate or complex work pieces with precise and targeted finishing requirements. It brings significant technical advantages over competing technologies such as abrasive finishing, robotic grinding and polishing, mechanical brush and grinding systems. The **DryLyte Technology** offers quality equivalent to manual grinding and fast and cost-effectively polishing.

FASTER · EASIER · COST-EFFICIENT · PRECISE

The metal surface finishing revolution

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DLYTE10,000.
DRYLYTE TECHNOLOGY FOR COMPLEX AND LARGER LOADS

DLyte10,000 is designed for finishing large and complex or heavy workpieces requiring high-quality finishing. **DLyte10,000** offers significant technical advantages over current metal surface finishing technologies on the market.

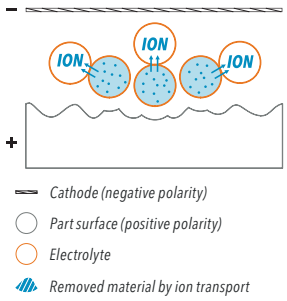
The unique dry electropolishing technology used obtains a quality equivalent to manual polishing quickly and affordably. The **DLyte10,000** system can be easily integrated into any manufacturing line, requiring highly complex grinding and polishing processes.

How it Works

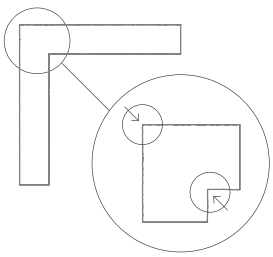
TECHNOLOGY INTRODUCTION

DryLyte TECHNOLOGY

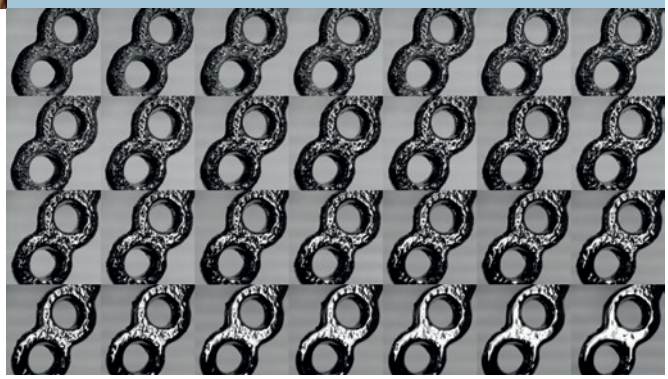
Powered by DryLyte Technology, DLyte10,000 works by combining the electrical flow created by the high precision rectifier with the movement of the pieces through the electropolishing media. This results in an ion exchange, removing material only from the peaks of roughness. The process does not round edges and can access internal corners that are not easily accessed mechanically.



The process removes material only from the peaks of the roughness.



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

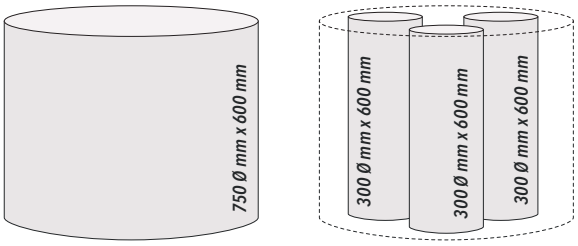


Macro sequence of a DryLyte Technology Polishing Process.

LARGE AND HEAVY WORKPIECES

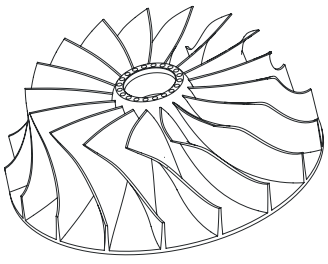
DLyte10,000 is the perfect system for large and heavy workpieces with a **diameter of up to 750 mm and length of up to 600.**

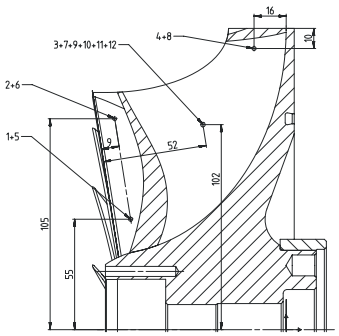
The range of applications for the **DLyte10,000** are workpieces from the aerospace, energy, oil and gas, shipbuilding, machinery and food industries.



COMPLEX GEOMETRIES

DLyte10,000's robot module is designed to polish complex geometries, which could not reach targeted surface finishing without a **6-axis movement.**





SINGLE AND MULTIPLE WORKPIECE HOLDERS

The work piece holders or fixtures containing the work pieces are specially designed to optimize the results based on the piece geometry and finishing requirements. The large adaptability of the holding systems ensures capacity optimization for several applications and versatility to use one machine for a wide range of pieces.

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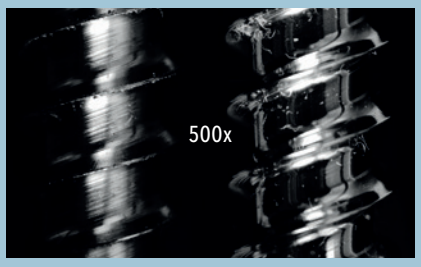
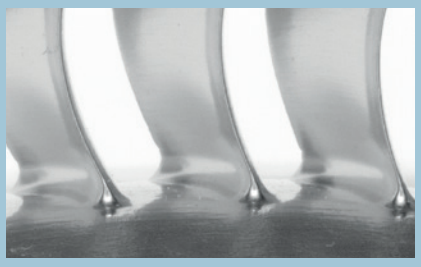
BENEFITS OF THE TECHNOLOGY

DryLyte® TECHNOLOGY





01. Achieves **homogeneous** results across the surface and eliminates micro-scratches. The system works efficiently at a micro and macroscopic level.

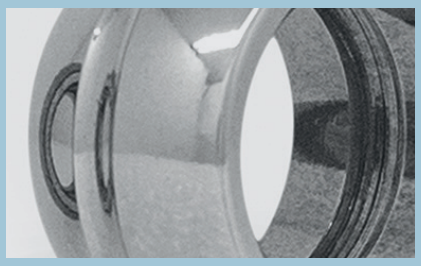
02. **Geometry preservation.** Respects the tolerances and preserves the initial shape, even the cutting edges. It is not rounding the edges as there is no abrasion of the surface.

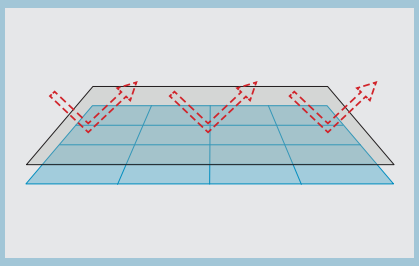
03. **Best in class surface roughness** (Ra under 0,01 micrometers).

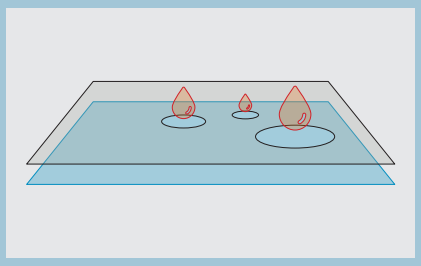
04. **Repeatability and homogeneity** guaranteed. The DLyte process process guarantees stable results among different batches within the electrolyte media lifespan. There is no wear as would typically occur with abrasive particles.

05. Up to **10x faster** than current processes, replaces multiple process steps and competitive cost per part.

06. **Biocompatibility proven.** **Clean, non-hazardous** and easy waste management. Alternative abrasive processes lead to extremely dusty and noisy environment.







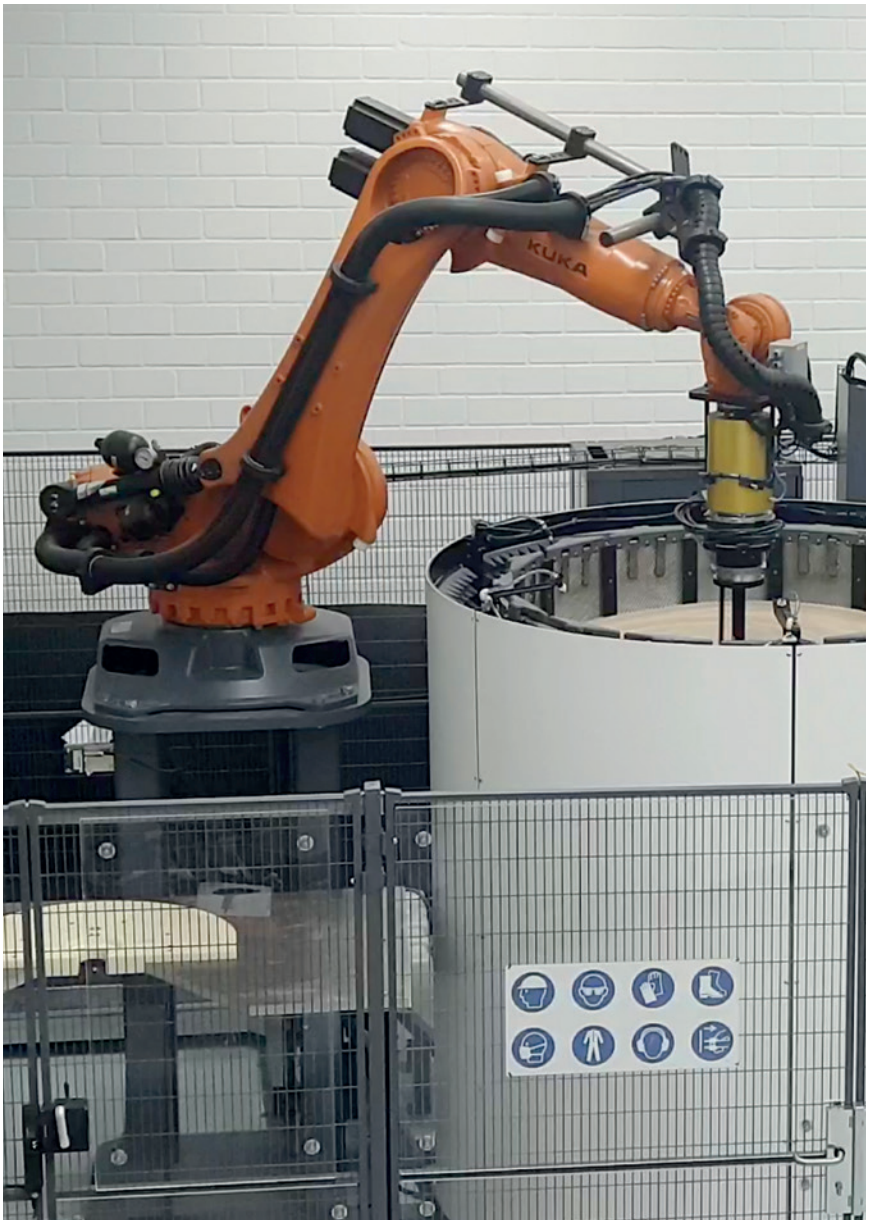
07. Enhances negative surface skewness (rsk) which increases the surface bearing contact area (allowing uniform lubricant film distribution) **improving the bearing ratio and reducing the friction** between the pieces.

08. Avoids generating grinding texture patterns, **improving wear and fracture resistance, and improving fatigue resistance.** Isotropic surfaces.

09. DLyte is the only system able to remove roughness and **improve the corrosion resistance** of the metal pieces at the same time reducing the number of processes required in the manufacturing process.

BEST-IN-CLASS REPEATABILITY, PERFORMANCE AND CAPACITY WITH THE LATEST TECHNOLOGY

Repeatability and high precision is achieved with innovative power electronics, using the new SIC Pulser technology, with 8 independent high-frequency rectifiers synchronized by fibre optic cables, delivering up to 55 kW. The new reliable electronics provide better surface finishes, more homogeneous results and shorter cycle times. This is achieved by optimizing the parameters, applying asymmetric pulses and creating multiple movements. The system is capable of a wide range of parameters and process combinations.



WIDE RANGE OF MATERIALS

DLyte 10,000 delivers the full range of electrical parameters, from low to high frequency, parameter concatenation and asymmetric voltage. In addition, it allows the user to search the ideal parameters for its pieces in the library of processes in the Polishing Manager APP.

RANGE OF MATERIALS

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

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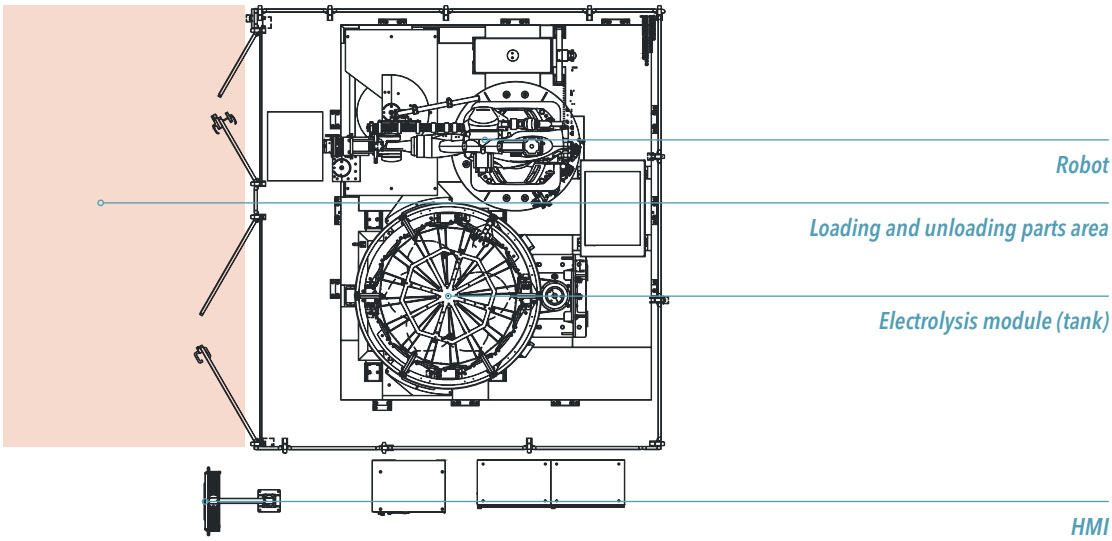
DLYTE 10,000'S MODULES

This cell has been created to obtain the highest quality results and cost efficiency in massive manufacturing processes. The design of all its modules is focused on the user experience, effectiveness and safety.



01. HMI

The Human-Machine Interface (HMI) allows the user to control the polishing cycles.

02. CONTROL CABINET

This module contains a safety PLC which manages all the modules.

03. POWER CABINET

Manages the power required during the electropolishing process.

04. GUARDING

It prevents personnel from entering the polishing area during operation.

05. ELECTROLYSIS MODULE (TANK)

It contains the electrolyte and it is where the electrolysis process is carried out.

06. ROBOT MODULE

It has been designed to polish big and/or complex parts. This robot can be configured by the user to define the movement of the angles. The user can define the gripper and the table support design according to each project.

07. WATER SYSTEM

This module stores the demineralized water to be used during the electropolishing process. This water will be sprinkled in the electrolysis module.

08. PNEUMATIC SYSTEM (AIR)

This system manages the robot's compression supply and electrolysis tank requirements of it.

MULTIPLE MOVEMENT COMBINATIONS WITH A ROBUST DESIGN

The mechanical systems of the DLyte10,000 are robust, precise and reliable, designed for mass production. They enable the perfect combination of multiple movements and vibrations, maximizing performance. It provides freedom of movement ensuring media flow optimization during the process. A 6-axis movement is combined with a core vibration and a rotation and vibration of the tank, thus reducing the friction with the electrolyte particles. The intuitive software allows to select the movement combinations easily based on a range of sizes and geometries.

The machine offers different presetting robot movements for three size ranges:

_ Large parts

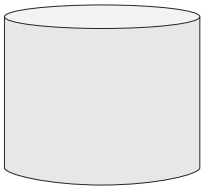
Cylinder with 750 mm in diameter and 600 mm high

_ Middle-size parts

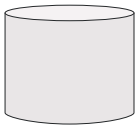
Cylinder with 400 mm in diameter and 350 mm high

_ Small parts

Cylinder with 250 mm in diameter and 200 mm high



Large parts
750 Ø mm x 600 mm



Middle-size parts
400 Ø mm x 350 mm

Small parts
250 Ø mm x 200 mm

AUTOMATIC WORKPIECE LOADING AND UNLOADING

The integrated automatic loading system ensures ergonomic workpiece loading and unloading with a safety size tool.

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D-yte
10.000
KUKA

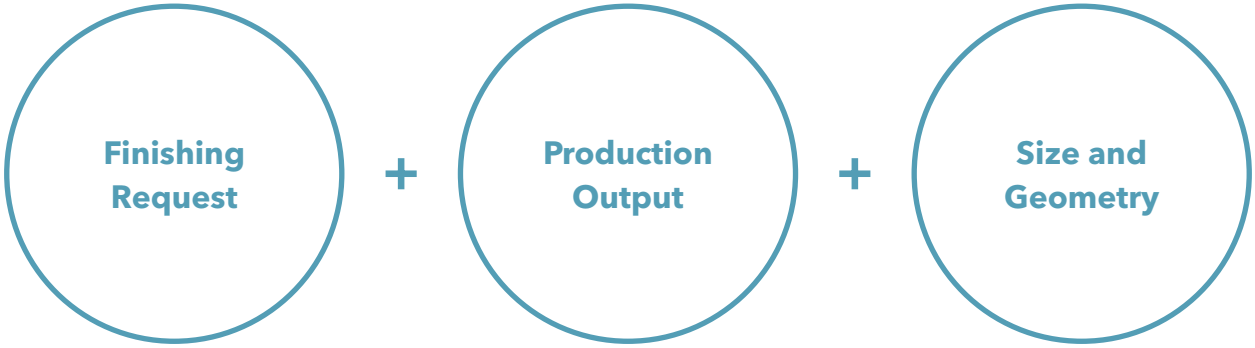
The company supports you onboard your DLyte experience to assure a success with its unique surface finishing technology.

CUSTOM PROJECT DEVELOPMENT

We suit our DLyte Technology to cover your needs.

+ **Polishing constraints won't be your limitation anymore.**

+ **Just contact us, we'll do the rest.**



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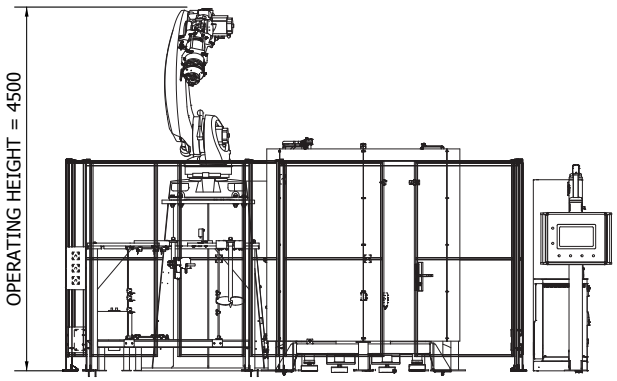
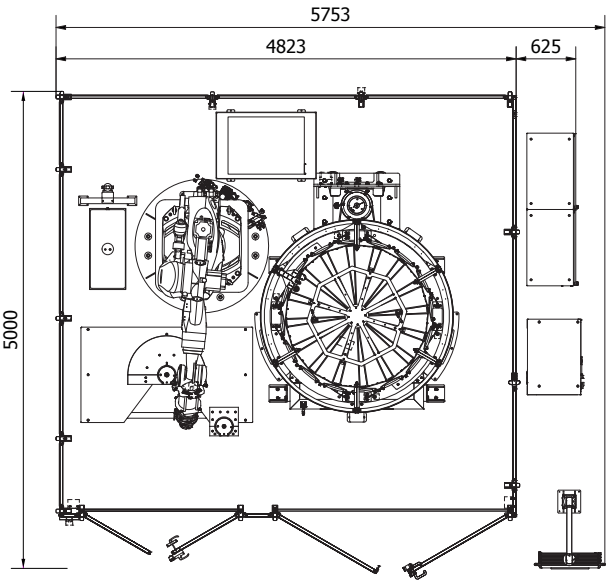
TECHNICAL DATA





MAIN DATA	
Capacity (per cycle)	750 Ø x 600 mm (one piece centered to the robot axis).
Operating height	4,500 mm
Operating layout	5,718 (front) mm x 4,507 (side) mm. (Recommended safety area: 8,110 mm x 9,307mm)
Floor requirements	It is recommended that the quality of the concrete must meet the requirements of the following standard: C20/25 according to DIN EN 206-1:2001/DIN 1045-2:2001 for a weight machine of 7,450 km without the scaffold (950 kg).
Power consumption	55 kw (125A)
Power supply	380 - 400 VAC / 50-60 Hz / 3P + N + GND
Air pressure main	Main line: 6–8 bar (air connector: 16 mm Ø) Consumption of 3,000 l/min. Air quality must be 1.5.1 according to ISO 8573.
Distilled water	70 l. demineralized water tank with conductivity properties < 5 µS/cm according to ISO 3696.
Ventilation	The unit must be installed in a well-ventilated area. Otherwise, a forced ventilation system must be installed on top of the unit.

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