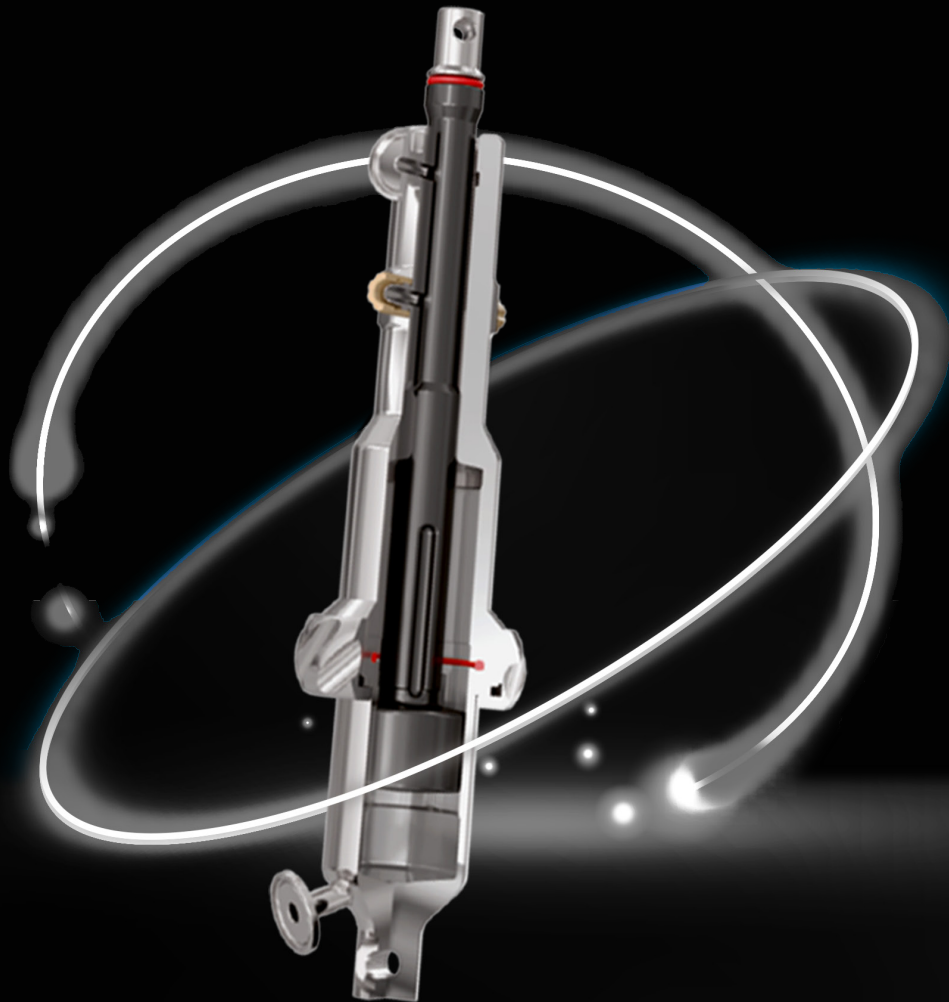


**MPA<sup>®</sup>**  
TECHNICAL DEVICES



**DLC-AM**

THE NEW GENERATION OF COATINGS  
FOR VOLUMETRIC PUMPS



At MPA, we believe that every detail can make a difference.

That is why we continuously invest in research, development, and ongoing improvement, with one clear goal: to provide our customers with solutions that ensure precision, reliability, and long-term repeatability. The new **DLC-AM** coating is the direct result of this philosophy — a tangible step forward in coating technology applied to stainless steel volumetric pumps.

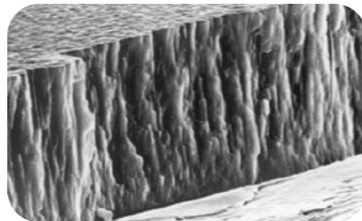
## What is DLC-AM

DLC-AM (Diamond-Like Carbon – Advanced MPA) is an exclusive coating developed by MPA, based on an internally optimized PVD technology and completely free of electroplated hard chrome. The result is an extremely smooth, chemically inert, and stable surface, with a significantly lower friction coefficient compared to traditional coatings.

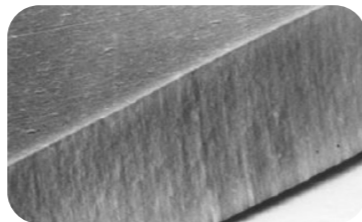
### Why coating matters in volumetric pumps

Components in contact with the fluid — especially the **piston and cylinder** — play a critical role in determining pump lifespan, process stability, and dosing accuracy. The choice of coating directly affects:

- Wear and service life of moving parts
- Behavior when exposed to chemical agents
- Risk of seizure
- Maintenance requirements and downtime
- Dosing quality and repeatability



Enlarged section of Galvanic Chrome



Enlarged section of DLC-AM

## Comparison of the three coating systems

### 1. Hard Chrome Plating - the traditional solution

Hard chrome plating is the most widely used traditional coating for stainless steel volumetric pumps and remains a reliable solution. It consists of the electrolytic deposition of a hard chrome layer on the piston and, in some cases, on the inner cylinder surface.

**Advantages:** A well-established technology, validated in GMP processes and suitable for most standard applications.

**Limitations:** The presence of electroplated chrome, which is sensitive to aggressive chemicals and may be subject to delamination when applied beyond certain thicknesses.

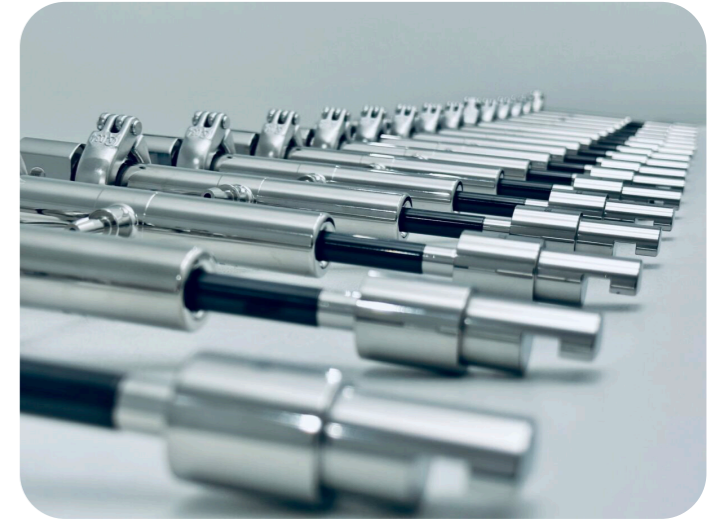


### 2. Standard DLC (DLC-PVD) - the evolution

An ultra-thin layer of highly resistant amorphous carbon deposited on top of a hard chrome substrate.

**Advantages:** Higher hardness, smoother surface, and improved wear resistance.

**Limitations:** The electroplated chrome layer is still present as the base layer.



### MPA's exclusive innovation

The only coating that completely eliminates electroplated hard chrome while maintaining maximum hardness, smoothness, and chemical resistance.

Thanks to MPA's proprietary technology, the DLC coating is applied directly onto the component, ensuring structural continuity and total absence of delamination.

### The concrete advantages of DLC-AM

#### No electroplated chrome

No fragile or acid-sensitive layers. Perfect compatibility with hydrogen peroxide and aggressive cleaning agents.

#### Extended service life

Extremely low friction coefficient → reduced wear → longer lifespan.

#### Maximum process stability

Smooth, inert surfaces that remain consistent over time, even after repeated CIP/SIP cycles.

#### Improved seizure resistance

In the event of piston-cylinder contact, DLC-AM significantly reduces damage and the risk of machine downtime.

#### Lower maintenance costs

Less wear and fewer damages translate into reduced long-term maintenance costs.



## Why choose **MPA**

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Exclusive technology not available through third parties

In-house expertise in both pump design and coating processes

Solutions tested and validated in pharmaceutical, cosmetic, and food applications

Over 30 years of experience in high-precision pump manufacturing



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