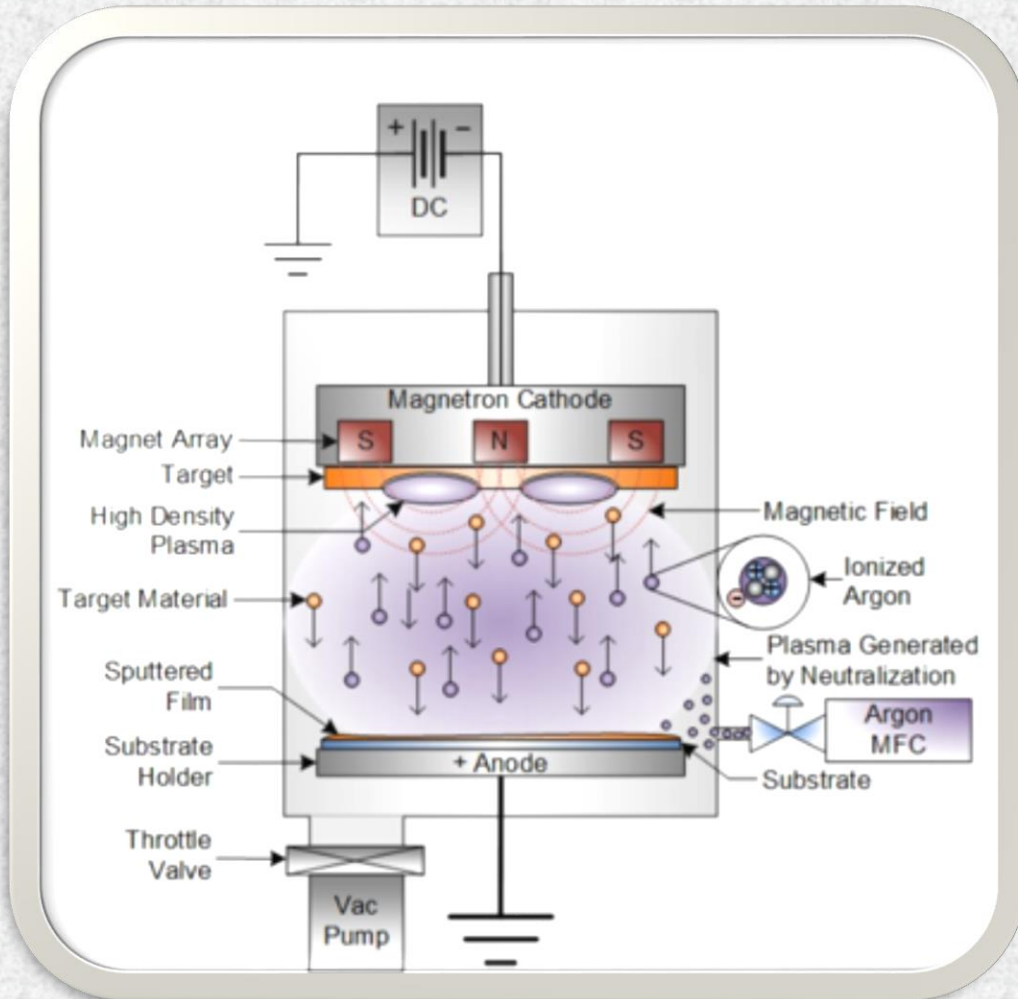


# Coating Machine Project

## Theory



**PVD = PHYSICAL VAPOR DEPOSITION**

**HPCVD= Hybrid Physical-Chemical Vapor Deposition or  
Reactive PVD**

# Coating Machine Project

*In our Workshop, we have experienced in :*

- PVD coating for Low Mass circuit in LHC detector  
Aluminium bus circuit (Alice) 12microns to 35microns thickness
- PVD coating for tribological characteristics  
TiN, TiCN, TiAlN, CrN, BN in machining application, molded plastic application
- PVD coating for decorative application  
TiO<sub>2</sub>, Cr, Au, Ni
- PECVD coating like DLC in automotive application
- Surface activation of polymer by Reactive Plasma RF
- Etching and reactive etching on polymer and metal
- Preparation by plasma  
Grafting molecule Polyvinyl-pyrrolidone on implant medical

# Coating Machine Project

## Expected capabilities

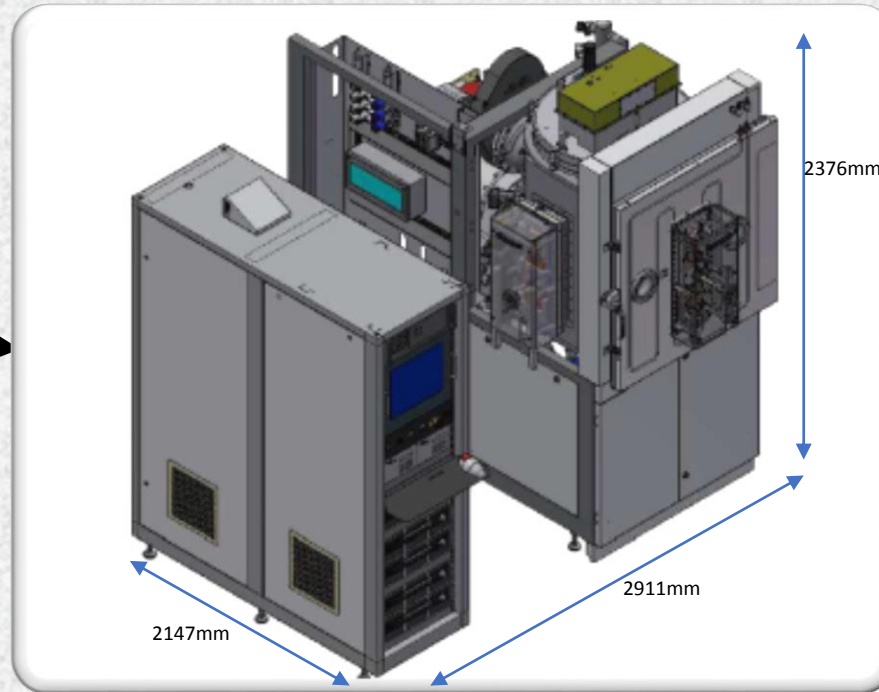
- ❖ - Deposition by HPCVD DC magnetron
  - DLC , Cu, Cr , Al, B4C
- ❖ -Backing
- ❖ -Cleaning
  - reverse sputtering of the substrate (RF plasma for dielectrics)
  
- ❖ - Sputtering / Co-sputtering
  - adjustable gradient of material or layer by layer coating
- ❖ -Reactive sputtering
  - adding H<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, C<sub>4</sub>H<sub>10</sub>, Ne to Argon
- ❖ -Large coating area
  - with a good homogeneity of thickness to garanty resistance homogeneity
- ❖ -due to Cost restriction we have selected an existing machine

# DECORA 760+

Standard configuration



Upgrade configuration

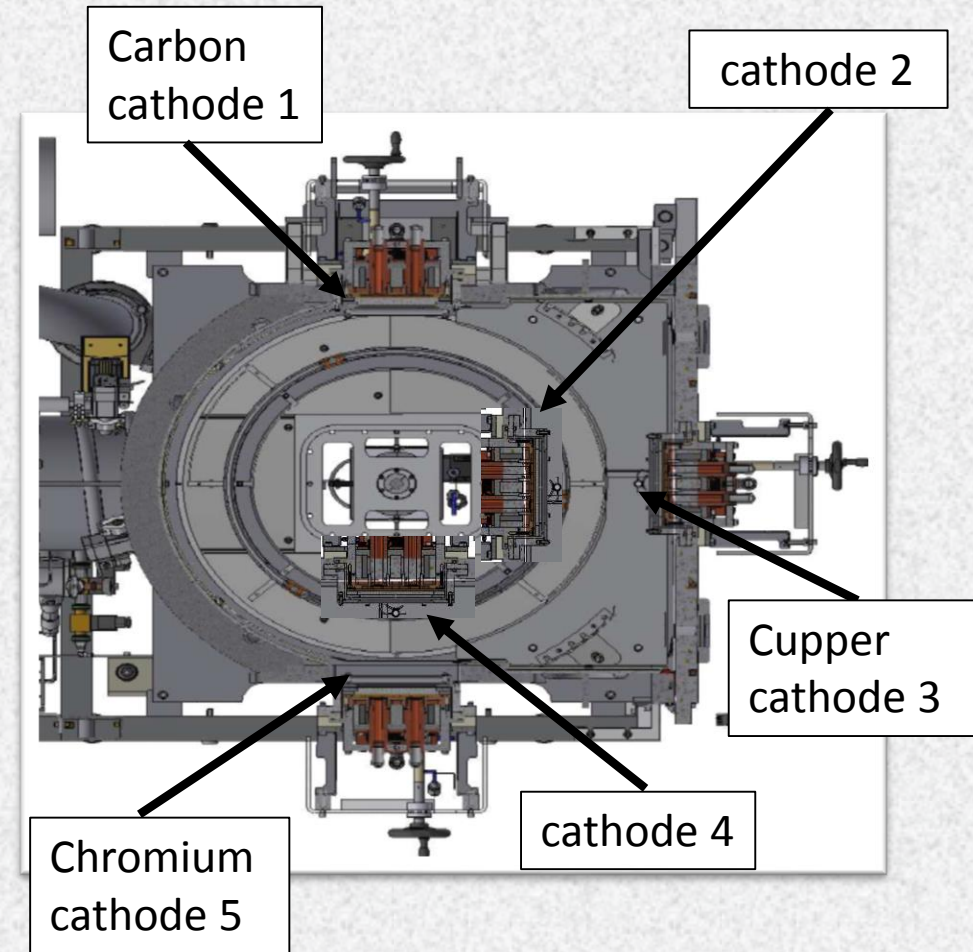


Chamber treatment:  
800mm x diam 760mm



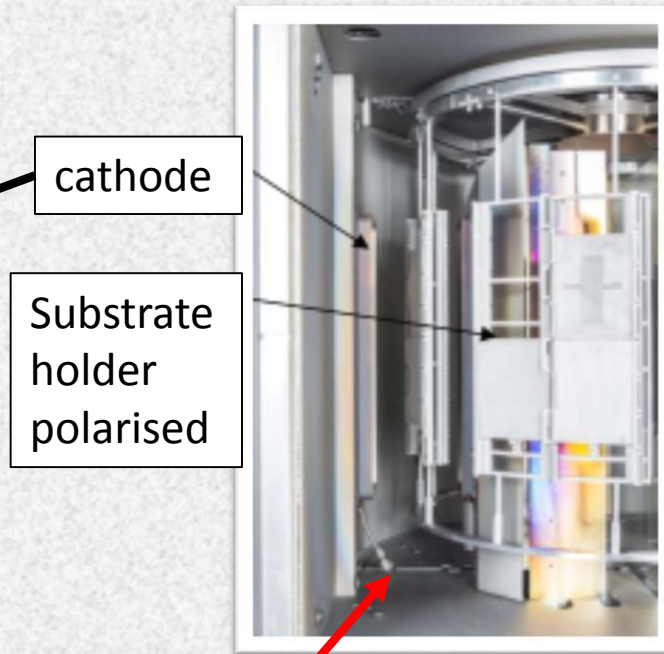
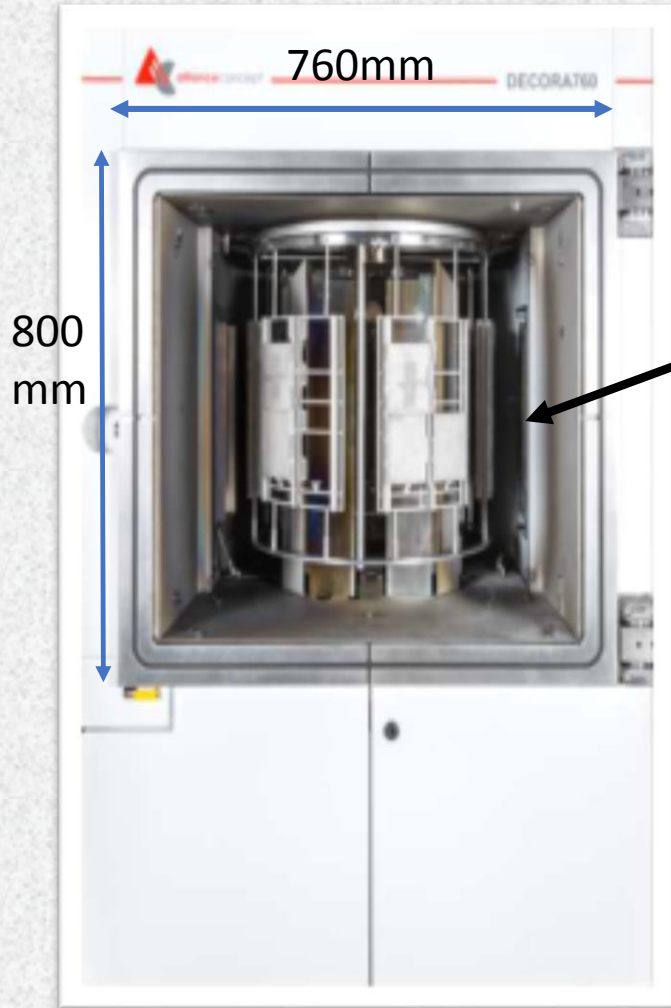
Pumping system :  
-1 dry pump  
-2 turbomolecular pump

Pressure limit 5.10-7mbar  
Getter effect if necessary  
by metal emission

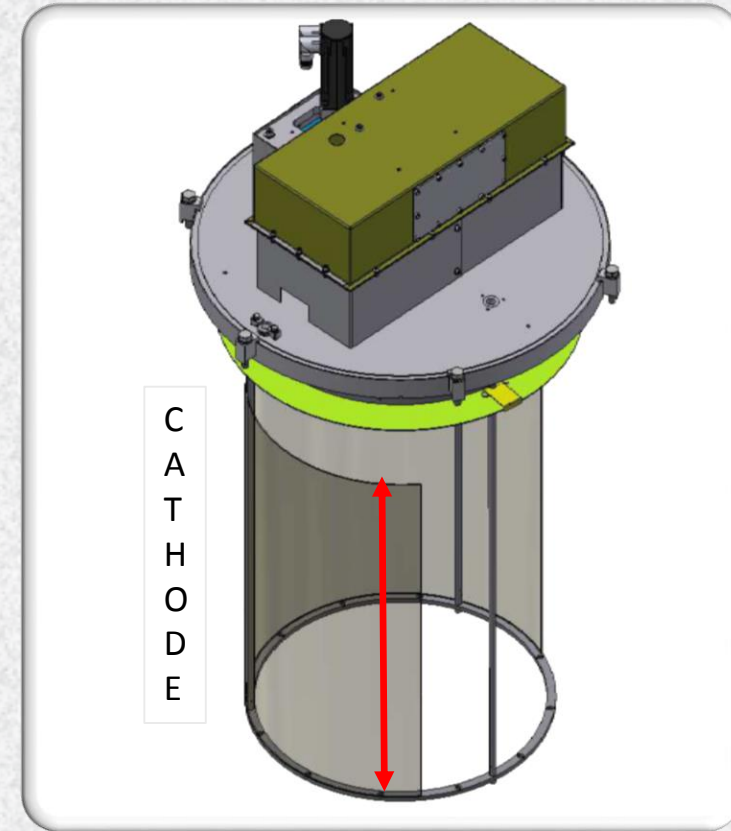


- ❑ 5 Cathodes for SPUTTERING :  
usable with all material ,like carbon, metallic, alloy, B4C or segmented cathode...
- ❑ Different configurations, step by step layer, co-sputtering and without machine output
- ❑ Heater : 300 deg maximum, degazing material

# INTERNAL VIEW



Gas injector close up of each cathode, mono pur gases or mixed gases (H<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>....)



-Surface treatment of foil :  
external face = 1,7m x 0,6m  
Internal face = 3 segments of 0.5m x 0,6m

# Homogeneity

Homogeneity with cathode 500mm length x 127mm width

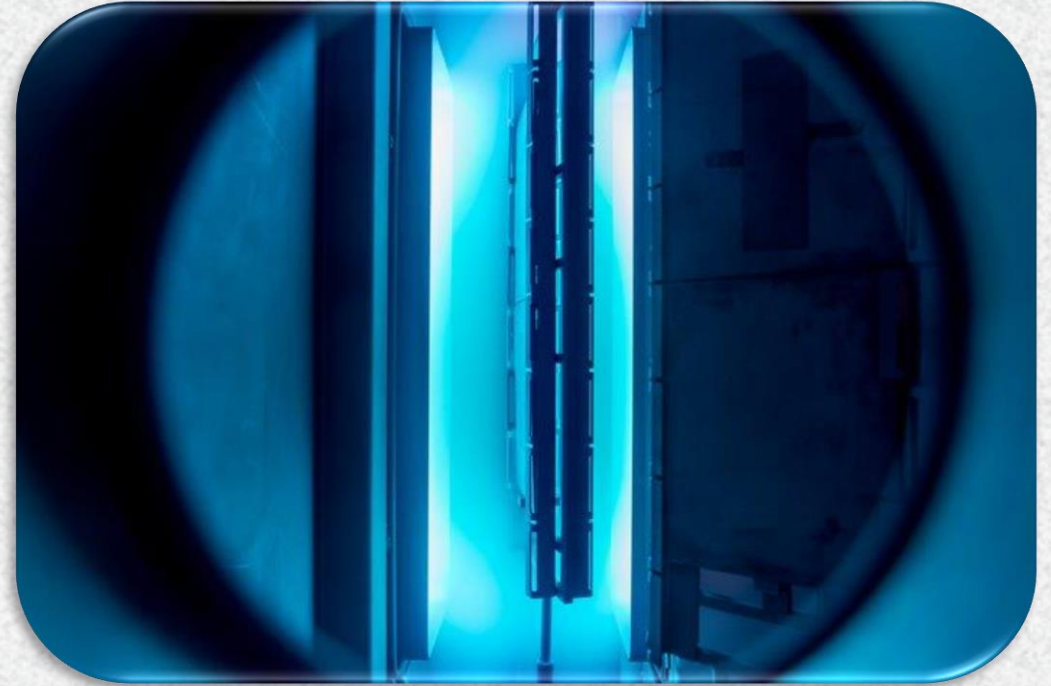
+/-4% = 360mm width

+/-30% = 450mm width

+/-50% = 470mm width

Theoretical capacity of coating : 1 foil 1.7mx 0.6m per batch

Cost : around 500kEuro







# Coating Machine Project

*Experiences*



*Machine*



*Implementation*



*Funding*

