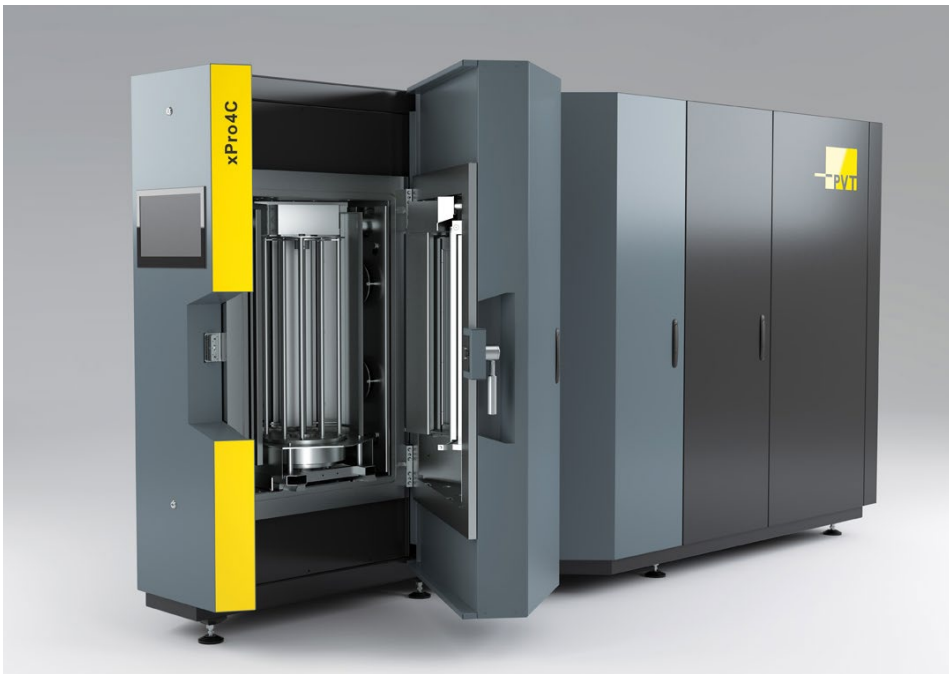
xPro4C

Vacuum Hard Coating System With HiPIMS and DC-Pulsed Magnetron Sputtering Technology

The **xPro4C** is the most advanced industrial small size DLC (diamond-like-carbon) coating system, which includes the N4E* positive pulse HiPIMS**-technology. It is specifically designed for the deposition of high performance DLC coatings, such as a-C, a-C:H, ta-C and a-C:Me and many others. Such coatings are sputtered in HiPIMS and dc-pulsed magnetron sputtering mode onto a variety of cutting tools, dies and moulds, components and consumer products for highly advantageous tribological purposes, i.e. extremely low cof (coefficient of friction) and high wear resistance.
Besides the DLC coatings, in the **xPro4C** system also high performance metallurgical coatings, such as AlCrSiN, AlTiSiN, AlCrN, AlTiN, CrN, TiC,N, TiN and many others can be deposited with extremely smooth surface structures.



xPro4C

The xPro4C is characterized by:

- Robust system designed for the rigorous production environment using sophisticated vacuum coating technologies.
- Rugged construction marked by an extremely advanced highly refined design.
- Extreme reliability based on intelligent straight-forward design and construction.
- The broadest spectrum of coatings and coating technology available in a single system at the lowest possible cost.
- Fully automatic, computer controlled, closed loop process control providing process repeatability, reliability and a user-friendly environment.
- The coating industry‘s broadest capabilities in the smallest footprint

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Technical Highlights of the xPro4C:

HiPIMS V+ technology***
- HiPIMS V+ positive pulsing technology by N4E*
- Increased deposition rate compared to standard HiPIMS
- Tailoring of ion energy distribution
- Reducing magnetron arcing

DC – pulsed V+ technology for carbon
- High hardness of DLC – films up to 40 GPa
- Excellent control of sp^3/sp^2 bonding ratio

Short process time
- Tailored heating capabilities
- Efficient cleaning and etching cycle

Improved software design
- Extreme ease of use
- Highly reproducible runs
- High level of flexibility for custom tailored coating solutions
- Remote control and diagnostics

Improved thermal management
- Intensive water cooling
- Double walled construction

Most reliable components
- Brand name components
- Clever integration

Improved coating properties
Advanced interface formation
Extremely clean process environment

Improved part handling and fixturing
- Safest most manoeuvrable transport carts
- Easy to load and use carts with high load capabilities

System Data

Size of vacuum chamber	**680 x 650 x 1150 mm (L × W × H)**
Coating volume	**Ø 350 x h 700 mm (Ø × H)**
No. of rotary platform (substrate carrier)	**1 pc (substrate carrier)**
Size of rotary platform (substrate carrier)	**480 x 430 x 1015 mm (L × W × H)**
Pumping	**2 pcs double stage rotary vane pump** **2 pcs turbo-molecular pump**
Sources	**4 pcs large area magnetron sputtering sources**
Power supplies	**1 pc HiPIMS power supply @ 10 kW** **1 pc 10 kW HiPIMS bias power supply** **3 pcs dc-pulsed power supplies @ 10 kW each**
Heater	**2 pcs, rated @ 5 kW each**
Overall size	**4.000 x 1.300 x 2.250 mm (L × B × H)**
Power	**75 kW, 400 V, 3 ph + N, 50/60 Hz**

System capacity

Plasma volume	**350 x 740 mm (Ø × H)**
End mills Ø 4 × 50 mm	**1,340 pcs**
End mills Ø 12 × 75 mm	**480 pcs**
Inserts ½″ x ½″ x 4 mm	**2,800 pcs**
Hobs Ø 80 × 80 mm	**72 pcs**
Hobs Ø 100 × 100 mm	**42 pcs**

* N4E Nano4Energy, Madrid, Spain
** HiPIMS High Power Impulse Magnetron Sputtering
*** V^+ HiPIMS with Positive Reverse Pulsing

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