

# CARBOZEN™-H SERIES



## Advanced Hybrid Coating System

Solution for high hardness and color coating



# CARBOZEN™ -H SERIES

Solution for high hardness and color coating

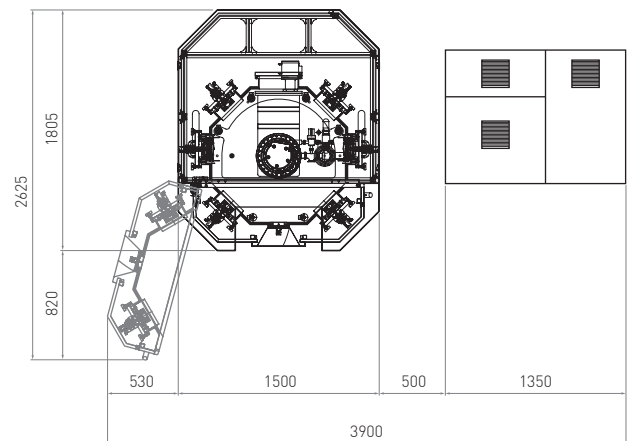


CARBOZEN™ -H (Hybrid PVD) is a coating equipment which satisfies the customer's variety needs through a combination of Linear Ion Source and UBM sputter.

## > System Specification

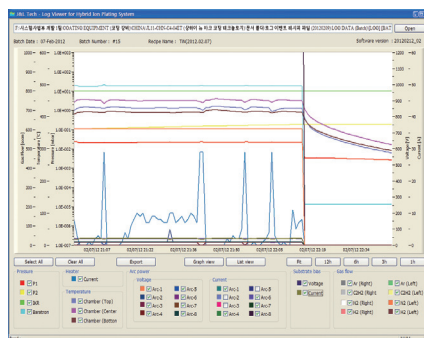
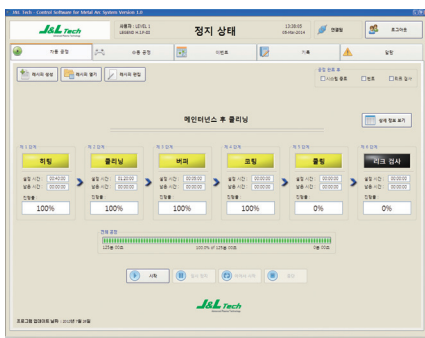
Chamber Size	ø600 x H600, ø700 x H900, ø800 x H1000, ø1000 x H1000, ø1000 x H1200, Custom-made
Jig System	Revolution and rotation with 2 fold or 3 fold
Working Gas	Mass flow control system Ar, N <sub>2</sub> , O <sub>2</sub> , C <sub>2</sub> H <sub>2</sub> , CH <sub>4</sub> , C <sub>6</sub> H <sub>6</sub> , etc
Plasma Source	Linear Ion Source, UBM Sputter
The Initial Vacuum Degree	~ 10 <sup>-6</sup> Torr
Bias Power	Pulsed DC
Heater	Max 250°C (Optional 450°C)
Device Operation	Automatic / Semi-automatic

## > System Lay-out



## > Software of System Operation

- Safety lock for the equipment and operator
- The process can be controlled easily by MS Windows
- Enables automatic recording of the work diary during the coating process
- The entire coating process can be made into data



## > Advantages of Linear Ion Source

- Provides stable ion energy during deposition
- Excellent coating layer forming even though large-area deposition
- Low maintenance costs
- Cleaning using Ar, O<sub>2</sub>, N<sub>2</sub> gas

Deposition Rate	30 nm/min
Residual Stress	~ 2.0 GPa
Hardness	~ 28 GPa
Friction Coefficient	~ 0.1



	LIS350	LIS650	LIS800	LIS1000	LIS1200
Size (mm)	W102 x H380	W102 x H680	W102 x H840	W102 x H1044	W102 x H1244
Type of Magnet	Permanent magnet				
Effective Area of Coating	340 mm	656 mm	790 mm	990 mm	1190 mm
Coating Uniformity	± 3%				
Discharge Voltage	500 ~ 3000 V				
Operative Pressure	0.7 ~ 3 mTorr				
Type of Gas	Ar, N <sub>2</sub> , O <sub>2</sub> , C <sub>2</sub> H <sub>2</sub> , CH <sub>4</sub> , etc				

※ Custom-made available

## > Advantages of UBM Sputter

- Able to deposit or alloys, compounds and insulating layers
- Possible to numerous reactive sputtering
- Uniformity of the deposition layer
- Possible to use on large target
- No macro-particles that cause matters to arc deposition
- Possible to use in low temperatures
- Easy to color coat a thin film of oxide and metal nitride



	UBM350	UBM650	UBM850	UBM1050	UBM1200
Size (mm)	W100 x H350	W100 x H680	W120 x H850	W120 x H1050	W120 x H1200
Type of Magnet	Permanent magnet				
Coating Uniformity	± 3%				
Operative Pressure	< 30 mTorr				

## > Specification of DLC Coating

Coating Thickness		2.5 ± 0.5 μm
Adhesion	Scratch Test	> 25 N
	Rockwell Test	< HF2
Hardness	Nano indenter	> 22 GPa
Friction Coefficient		< 0.2

## > Specification of Color Coating

Coating Thickness		1.0 ± 0.3 μm
Hardness	Nano indenter	> 10 GPa
Coating Colors		Gold, Silver, Blue, Purple, Violet, Black

## > Applications

• Vehicle component parts



• Injection molds



• Tools

