

NBcore Co.,Ltd.

Is specializing in
secondary battery
electrode processing
systems

- Electrode processes(conventional, DBE*)
for Li secondary batteries
- Printed Electronic System
- Factory Automation

*DBE : Dry Battery Electrode



About Us

NBcore

History



2010.04.26

Company establishment



2018.09.21

Conversion to a corporation

Business Area

Electrode processing System for secondary batteries

- Wet - Coating System
- Dry - Roll Pressing(Calendering)

Printed electronic System

- Lab / Pilot / Mass production Printing and Coating System
- Gravure / Reverse Offset / Screen Printing
- 3D Printing System / Electrohydrodynamic Printing System
- Slot-die
- Bar Coater
- Micro Gravure

Measurement/Control System/System software and factory Automation

- Gravitational Acceleration Motion System (KOLAS Certificate)
- 3D Production Facility Control & Monitoring System (Digital Twin)
- Manufacturing System for Micro-needle Patch
- System Integration
- Electrode Thickness Measurement System
- Roll Deformation Measurement System
- Data Acquisition & Analysis System
- A.I Software
- Machine Vision

Delivery History

- System and Software Delivery - POSCO, Agency for Defense Development(ADD), Korea Institute of Machinery & Materials(KIMM), Electronics and Telecommunications Research Institute, LG Display, SAMSUNG, Doosan, etc.
- Development of Powder Bed Fusion(PBF), Binder Jet(BJ) and PolyJet 3D Printing System (Slicing Alg & EXOR alg, etc.)
- Gravitational Acceleration Motion System(KOLAS Certificate)
- Software Sourcing Group of POSCO(Measurement, Control and Vision System)

Products



Electrode processing System for secondary batteries

- Roll-to-Roll Coating (Wet)
- Roll Pressing (Dry)



Printed electronic System

- Gravure/Reverse/Screen Printing System



Measurement /Control System /System software

- Electrode Thickness Measurement System
- Roll Deformation Measurement System
- Data Acquisition and Analysis System
- System Control&Integration SW

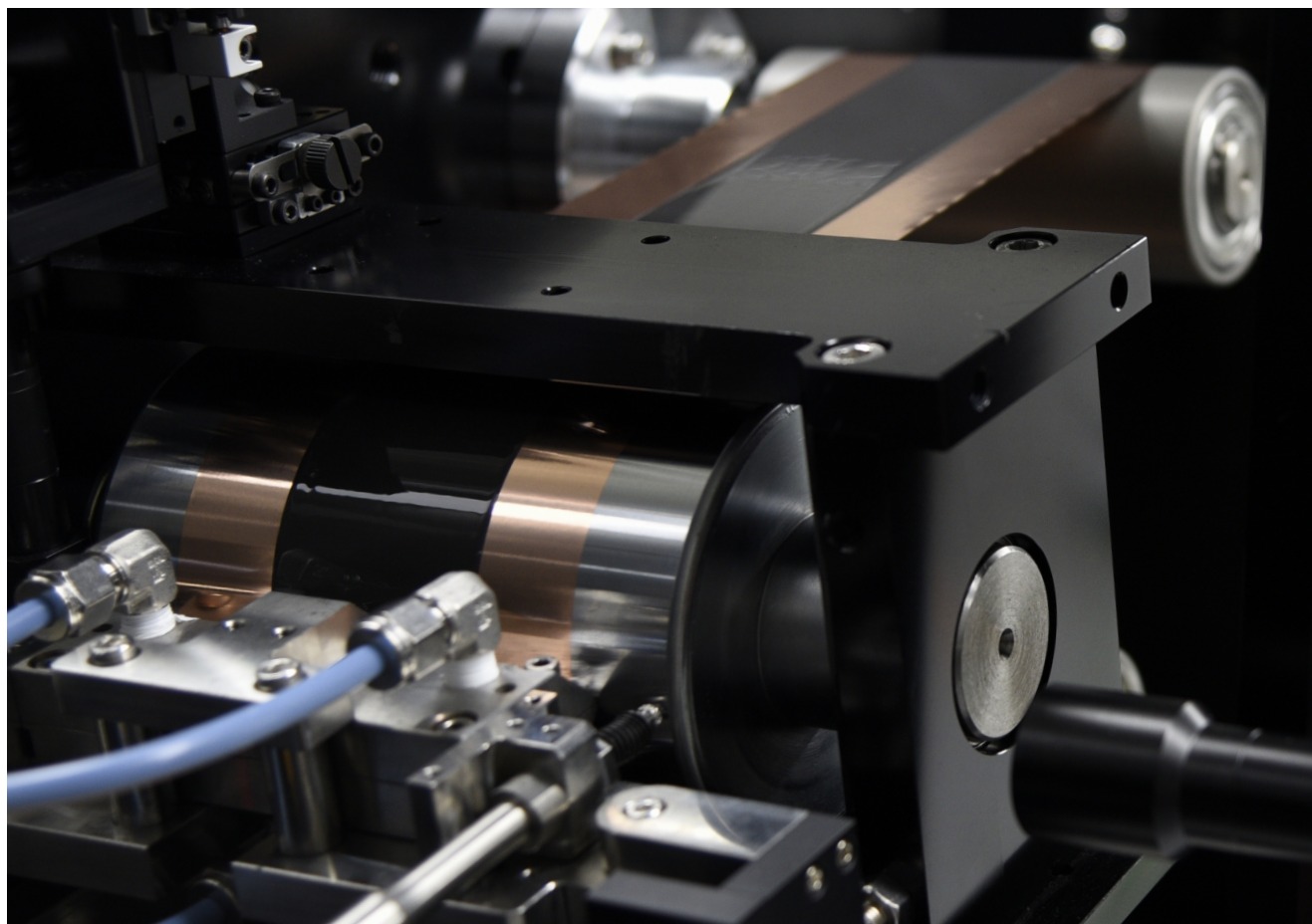
Wet Coating System

Roll to roll Slot-die Coater

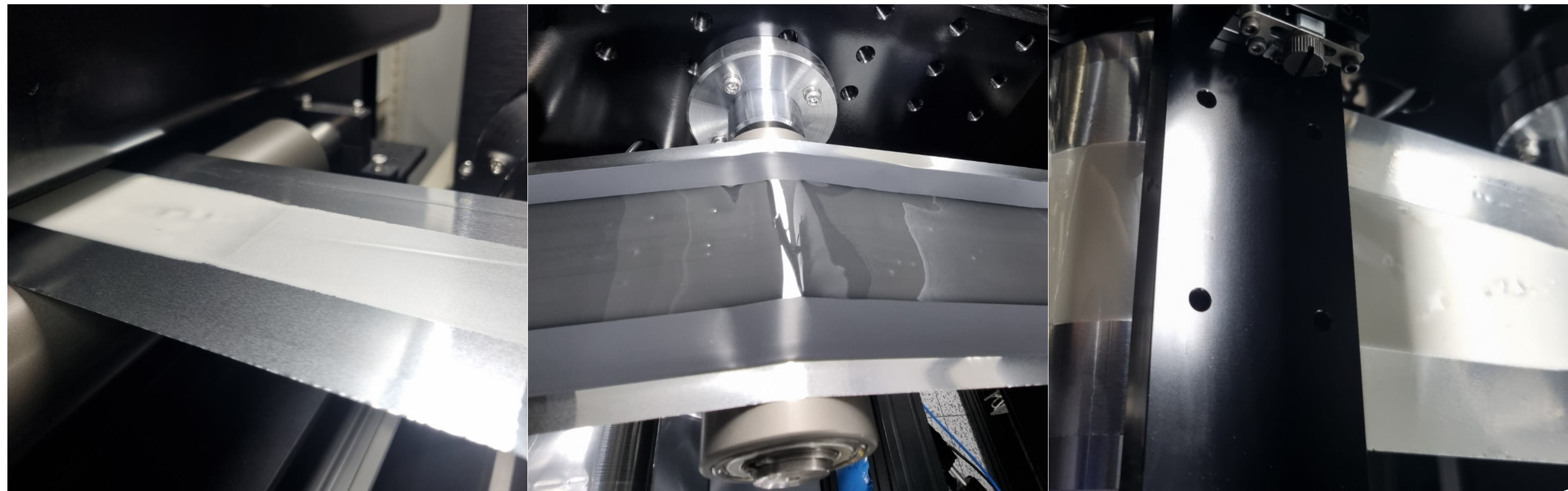
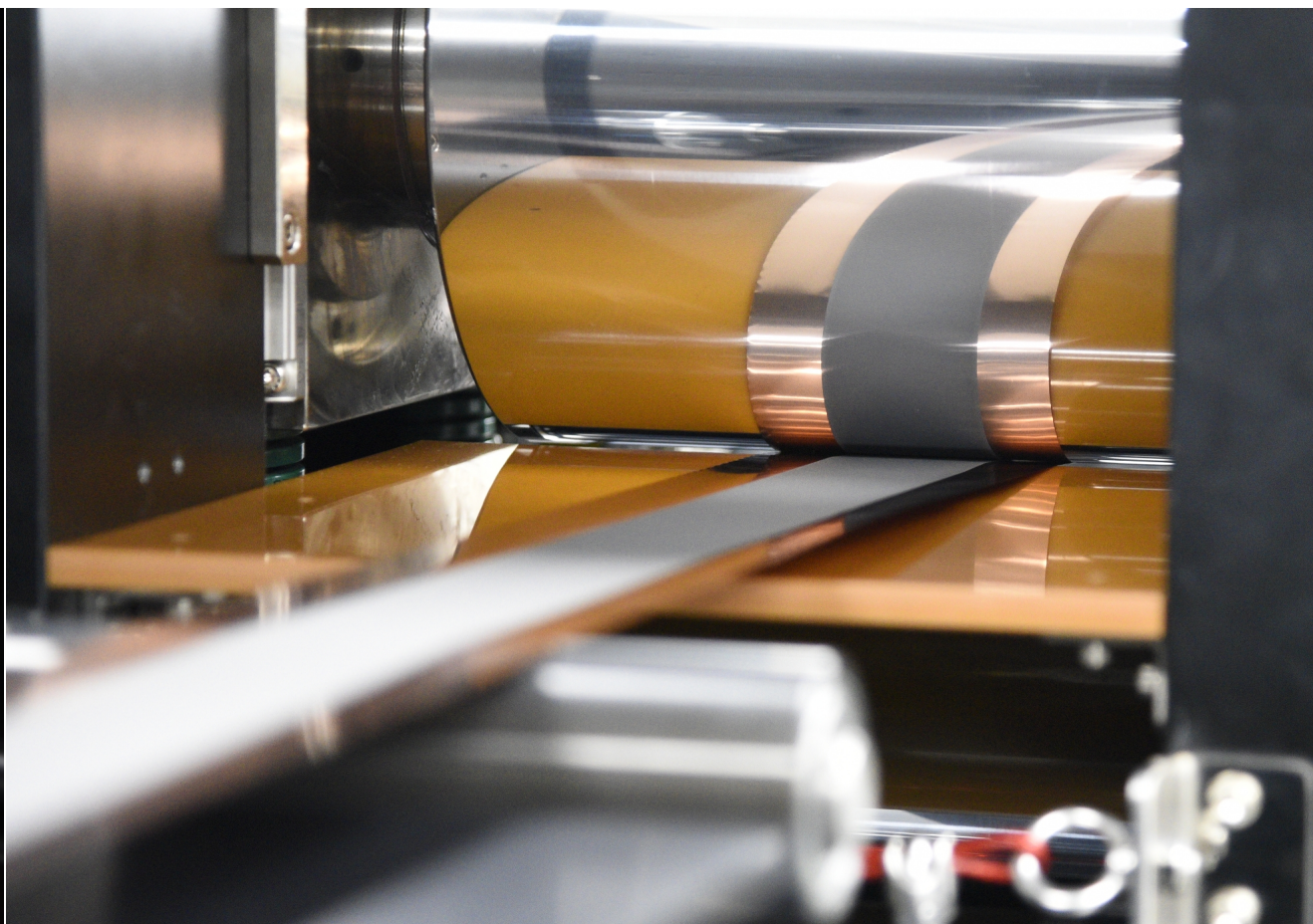
NB-RSC-150B Lithium Battery Electrode Coating System



※ **KIMM** Jointly developed with the process R&D team of the Department of Advanced Battery Manufacturing Systems of the Korea Institute of Machinery and Materials



Electrode Coating

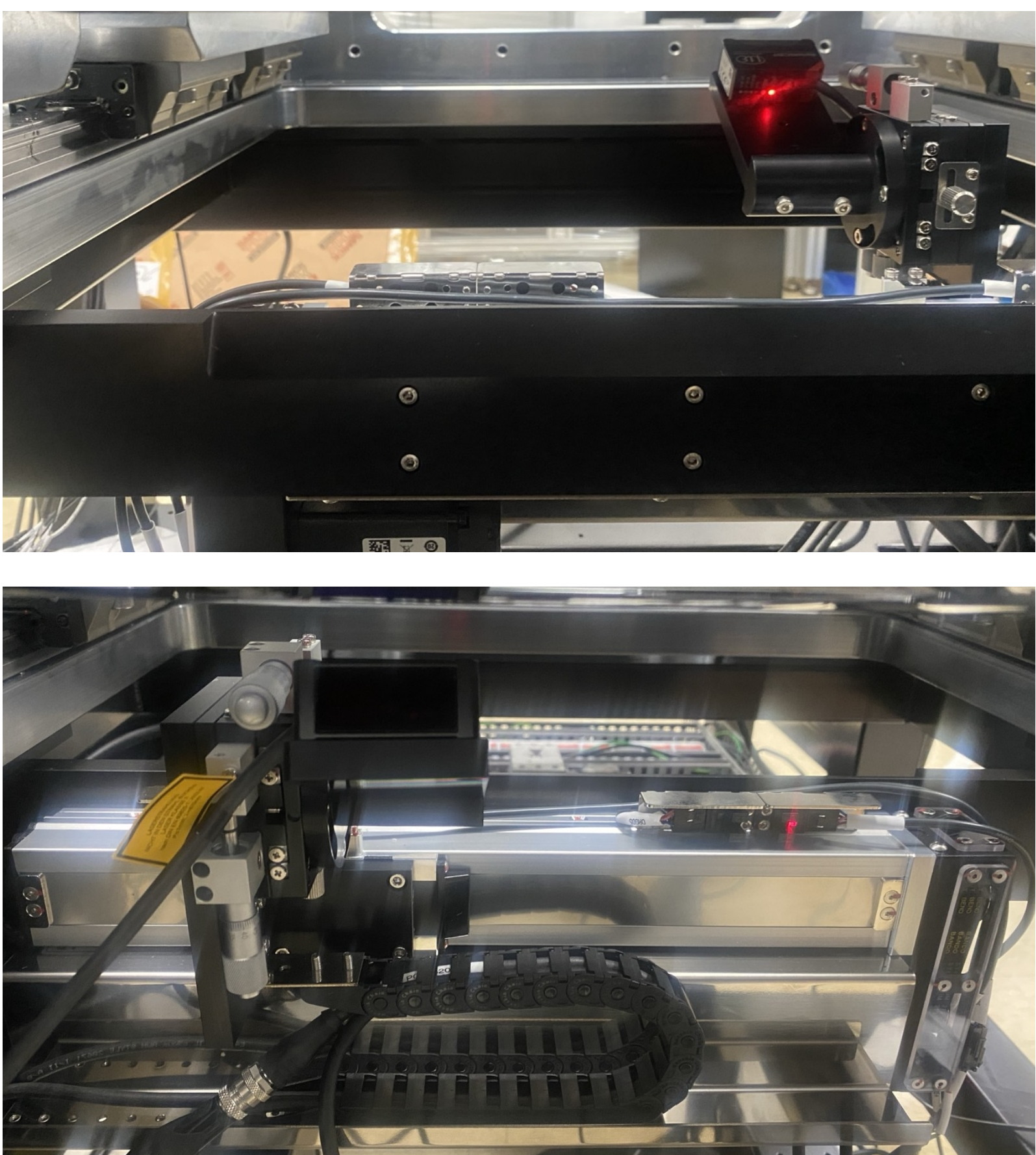


(Semi-) Solid Electrolyte (Separator) Coating

Machine	Size	2200 x 1500 x 900 (mm) ※ Capable of module expansion
	Weight	500kg
	Process	Slot-die Coating (for electrode slurry) / Heating die (Waxy solid or Gel polymer - separator of electrolyte coating, ~80℃)
Coating	Gap control	LVDT sensor
	Width	120mm
	Speed	700 mm/s (Max) - Depends on physical and rheological properties of solution
Slot-die	Material	SUS
	Width	160mm
Thickness	Shim	50 ~ 1000μm - Changeable depending on coating thickness
	Electrode measurement	Applying laser sensor
Drying	Process	Drying chamber(hot air and IR heater)
Flow	Control	Syringe pump
Power	Consumption	220V Single phase 30A

02

Dry Battery Electrode
Dry Electrode Process for Lithium Secondary Batteries
NB-RNH-200-03



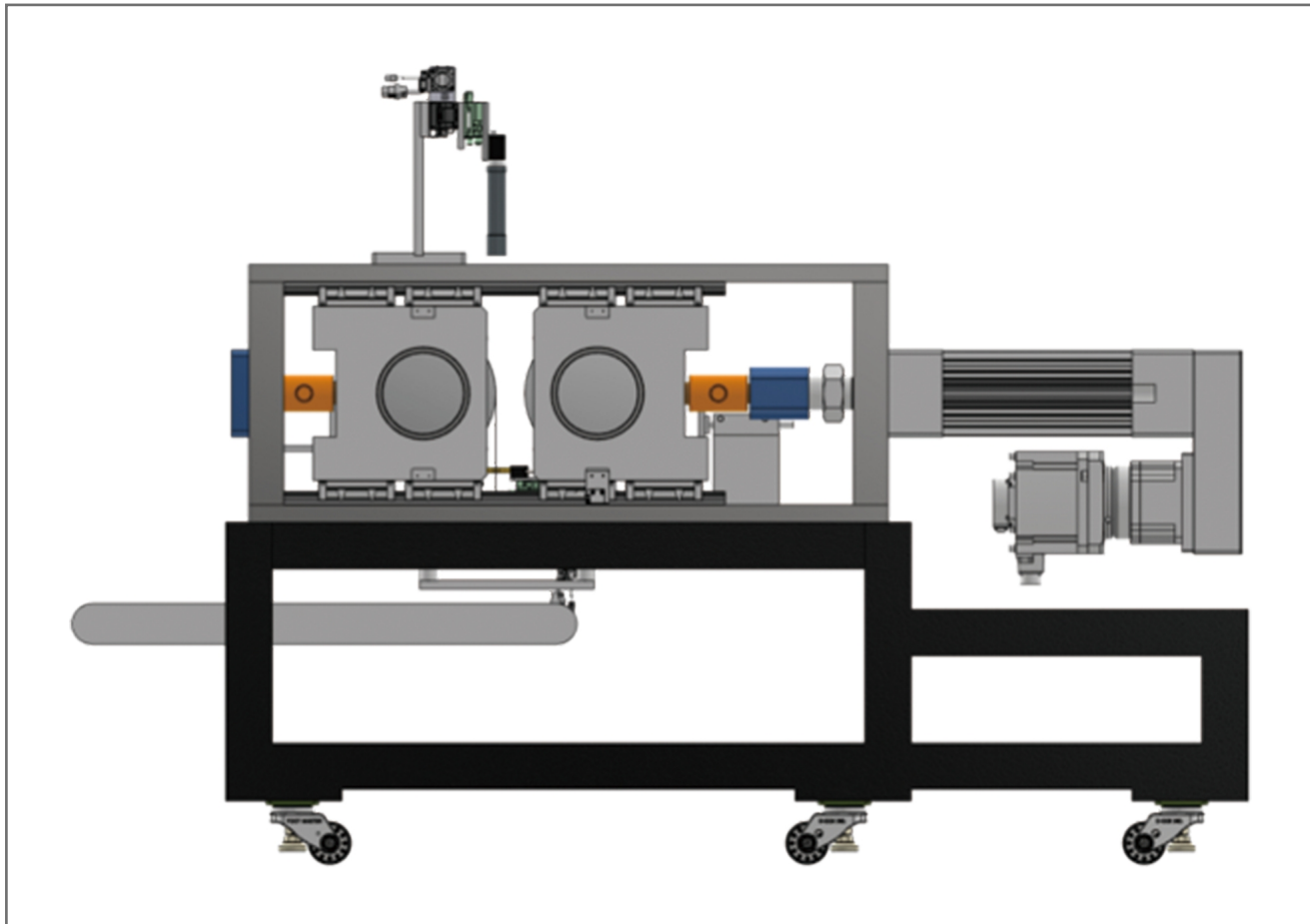
※ **KIMM** Jointly developed with the process R&D team of the Department of Advanced Battery Manufacturing Systems of the Korea Institute of Machinery and Materials

Specification

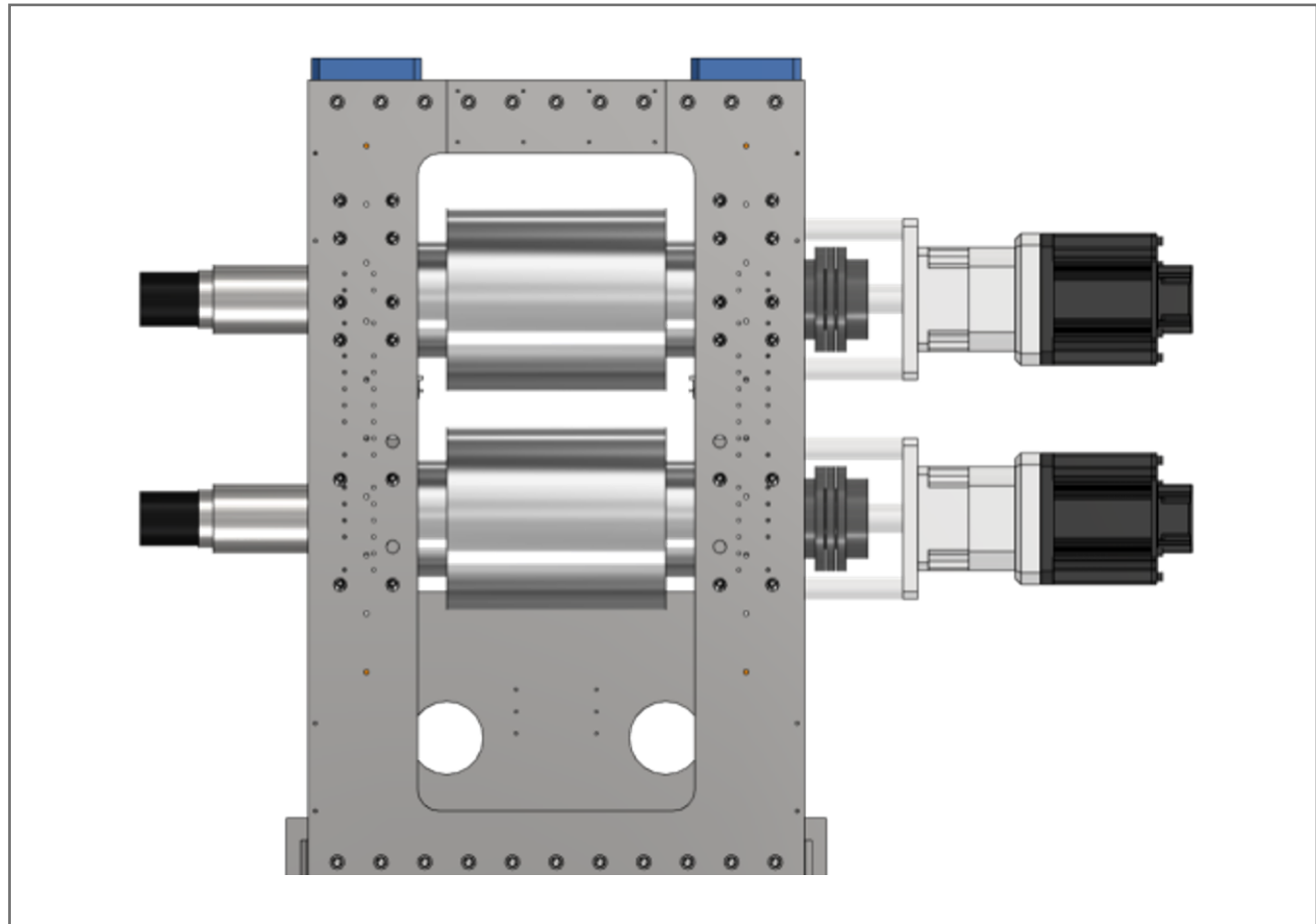
Machine	Size	1400 x 2100 x 1360 (mm)
	Weight	1500kg
	Module	Roll gap control
		Pressure measurement
		Roll deformation measurement
		Roll gap measurement(vision system)
		Electrode thickness measurement

Technical Specification

Pressing module	Pressure	3ton / 1 Shaft (2EA)
	Roller gap control	Driving shaft control(motor control)
Measurement	Pressure measurement	Load cell - 10ton (R/L)
	Electrode thickness	Applying laser displacement sensor
Roll	Roll Electrode thickness	Pencil probe & laser displacement sensor
	Roll Gap	Measurement of roller gap under no load using vision system
	Press Roll	Heatin roll (Max 250℃) *The application temperature range depends on the surface treatment of the roll



RNH(Horizontal)



RNV(Vertical)

NB - RNH - 200 - 03

Horizontal

Maximum pressing width

Pressure force(rated)

RNV : Vertical

※ Heating roll size may vary depending on specifications
※ Equipment with a pressure of 6 tons or more → applying hydraulic cylinder

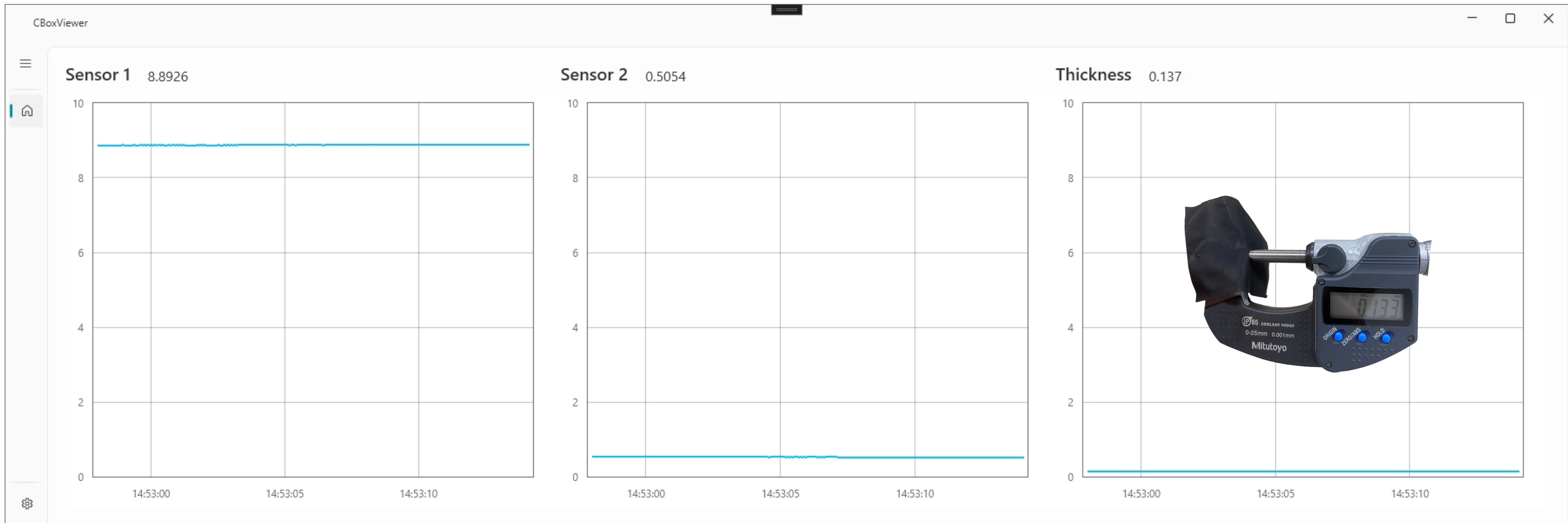
Model	Pressure(rated)	Heating roll dimension	Temperature
NB-RNH-150-01	1ton	Ø200mm x 200mm(Roll width) x 600mm(Module length)	220℃ (Max.)
NB-RNH-200-03	3ton	Ø250mm x 300mm(Roll width) x 600mm(Module length)	220℃ (Max.)
NB-RNH-200-06	6ton	※ Specification discussion required	220℃ (Max.)
NB-RNV-150-01	1ton	Ø200mm x 300mm(Roll width) x 600mm(Module length)	220℃ (Max.)
NB-RNV-200-03	3ton	Ø250mm x 300mm(Roll width) x 600mm(Module length)	220℃ (Max.)
NB-RNV-200-06	6ton	※ Specification discussion required	220℃ (Max.)

03

Measure and Control Systems

Thickness Measurement System

NB-TM-L200



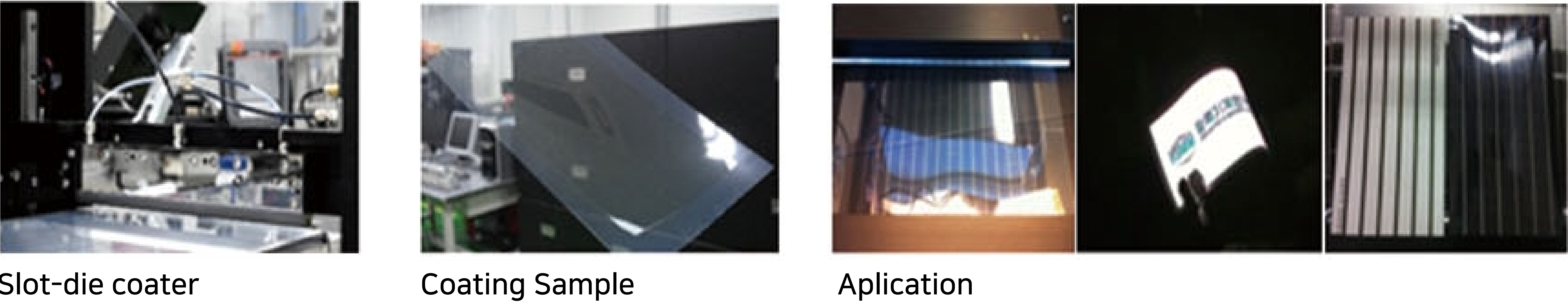
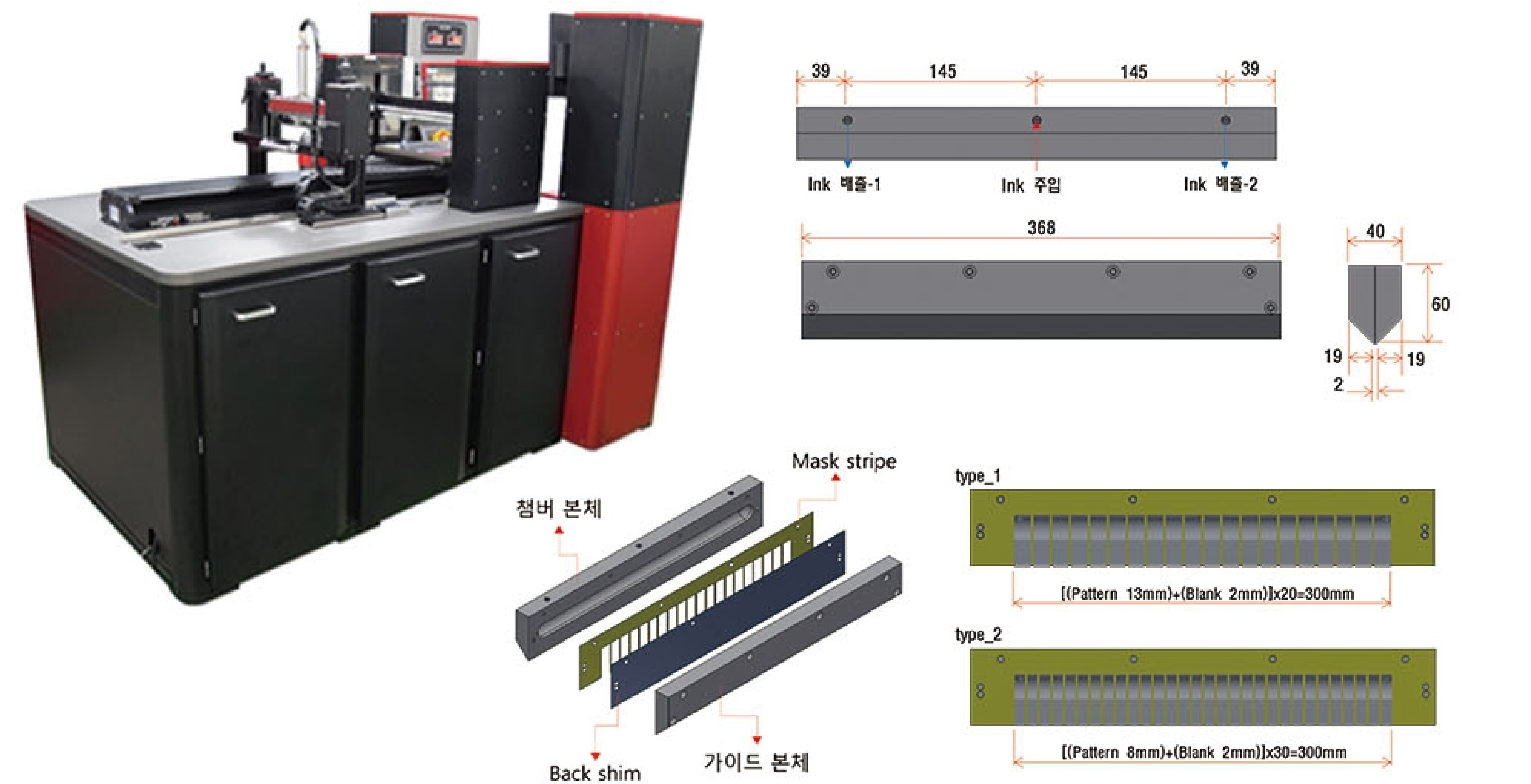
※ This is the result of the measurement in an ideal environment.

Technical Data	Measuring Range	Machine	10mm
		Start	20mm
		Mid	25mm
		End	30mm
	Digital Interface	EtherCAT / EtherNet/IP	
	Linearity	< ±8μm	
	Repeatability	0.5μm	
	Light source	Semiconductor laser < 1mW, 670nm (red)	
	Stroke	250mm	

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Printed Electronic System

Plate Multi Coater NB-PMC-300



Slot-die coater

Coating Sample

Aplication

Specification	Mask shim	Thickness	50~300micro
	Coating	Width	450mm (Max) / 18inch
	Mounting	Mounting	700mm (Max) / 28inch

Technical Specification	Coating	Type	Slot-die, D-bar
		Speed	300mm/sec
	Machine	Size	1640(L) x 1120(W) x 1145(H)
		Weight	400kg

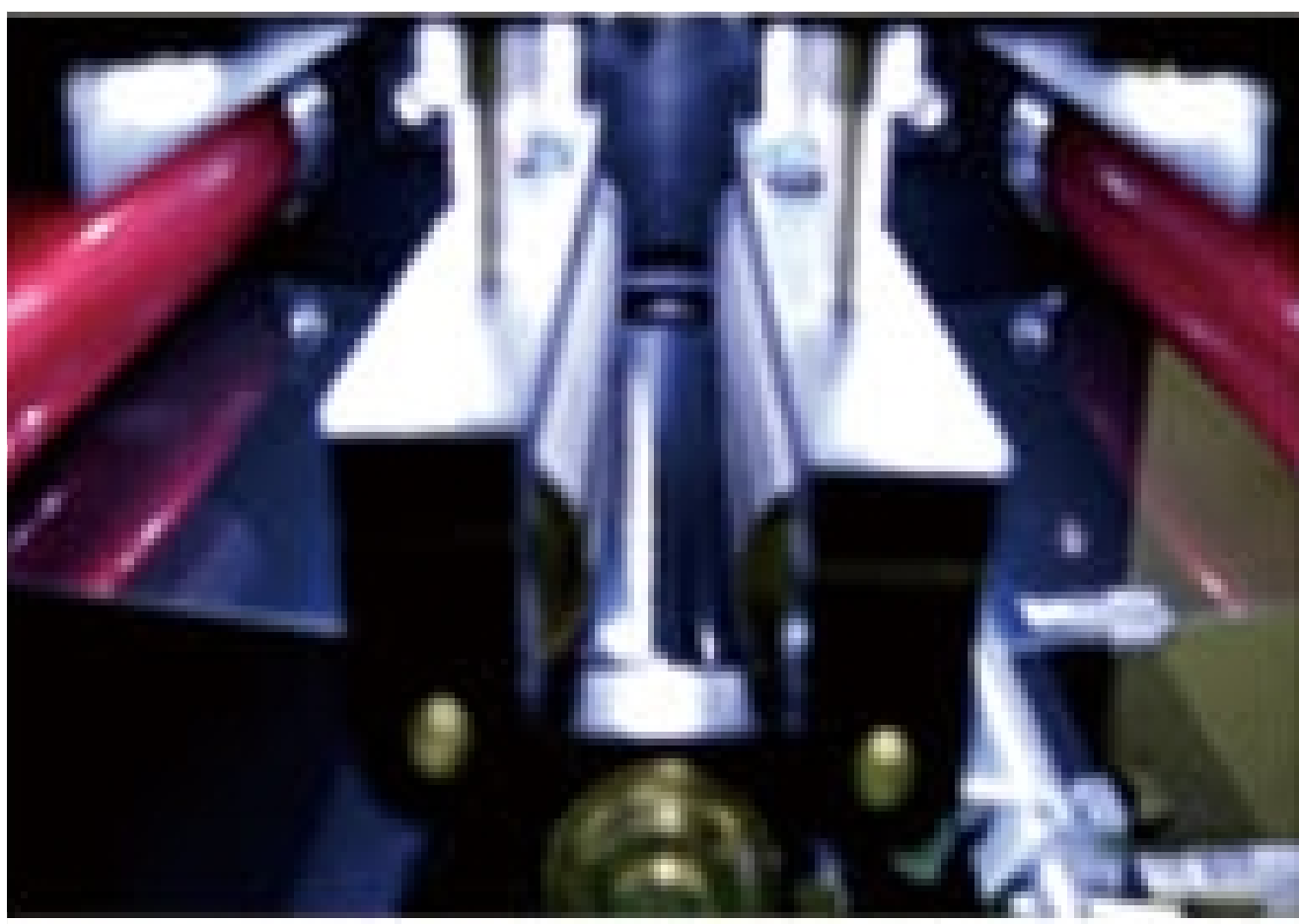
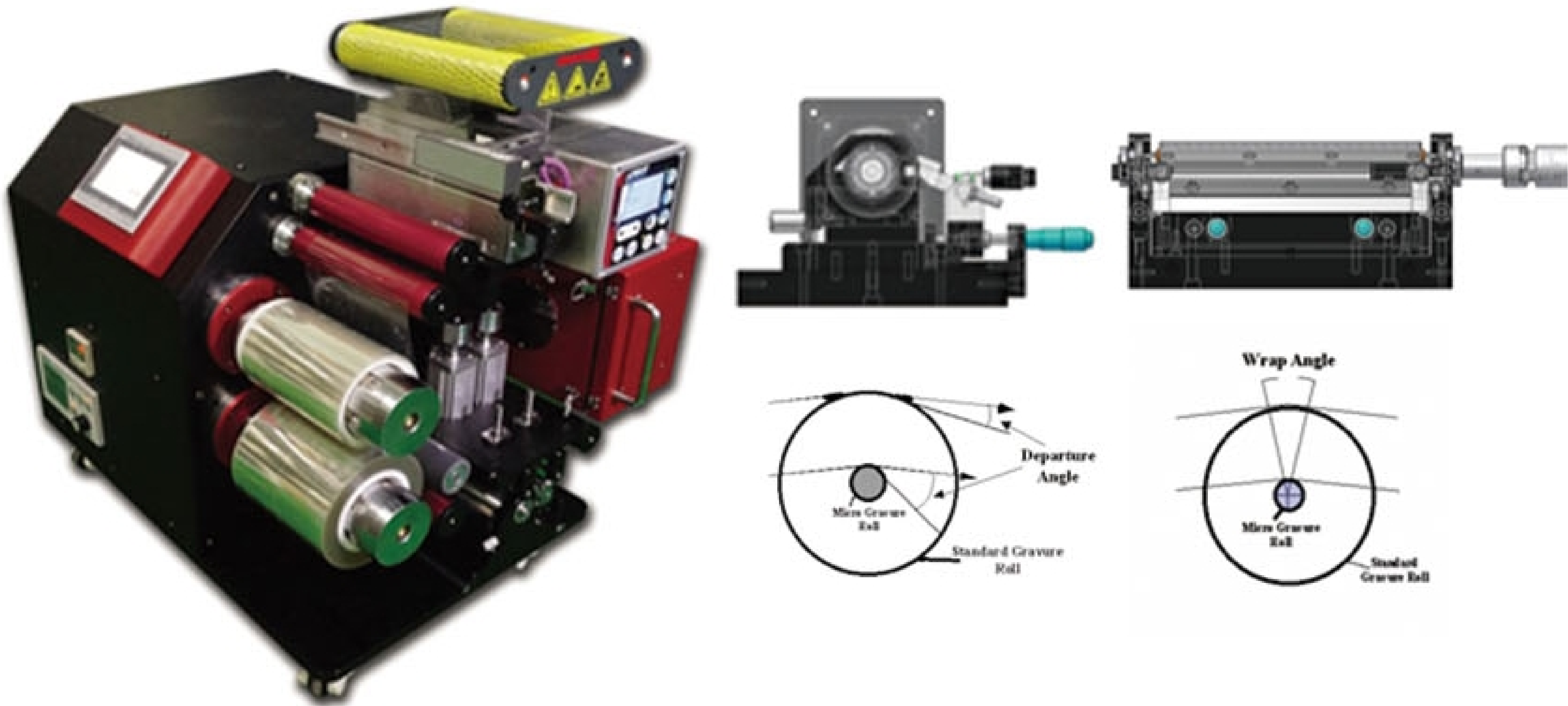
Slot-die	Head	Size	368 x 40 x 60 (mm)
		Material	SUS 420j2
		Internal volume	80cc
		Inlet / Outlet	1EA / 2EA
		Shim (SUS) type_1	0.05mm(Stripe) / 13-2 + back shim
		Shim (SUS) type_2	0.05mm(Stripe) / 8-2 + back shim

05

Printed Electronic System

Roll to roll Micro gravure Coater

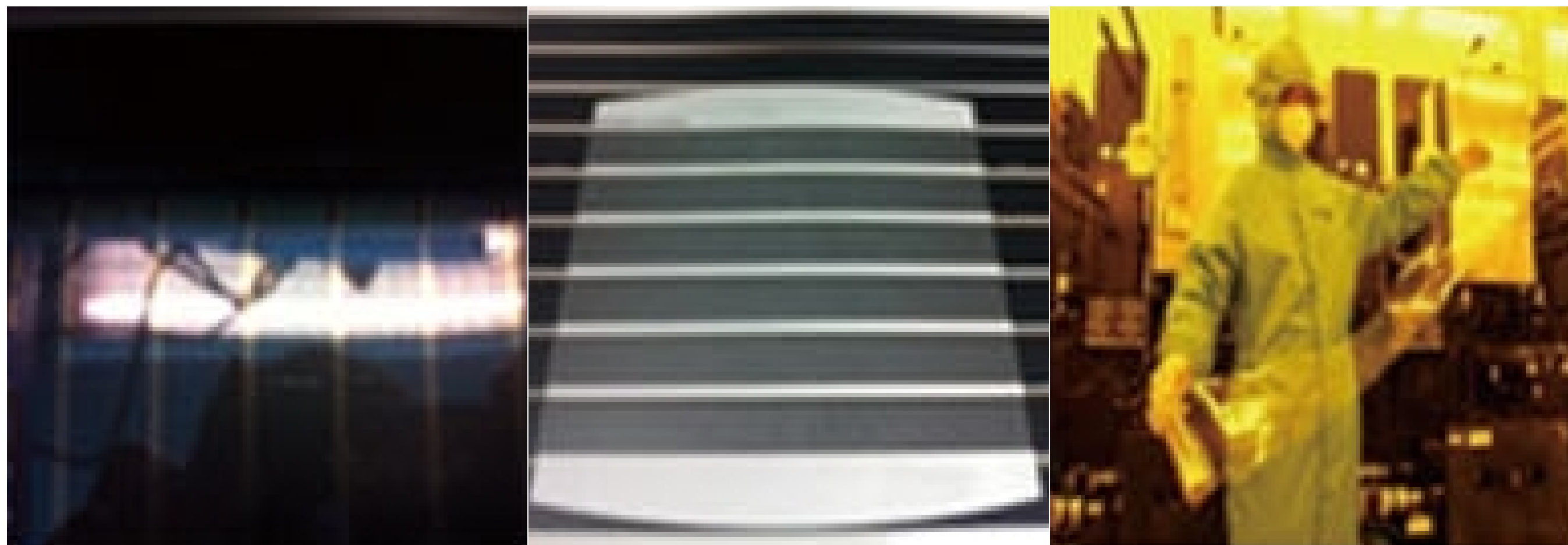
NB-RGC-150



Micro Gravure coater



Coating Sample

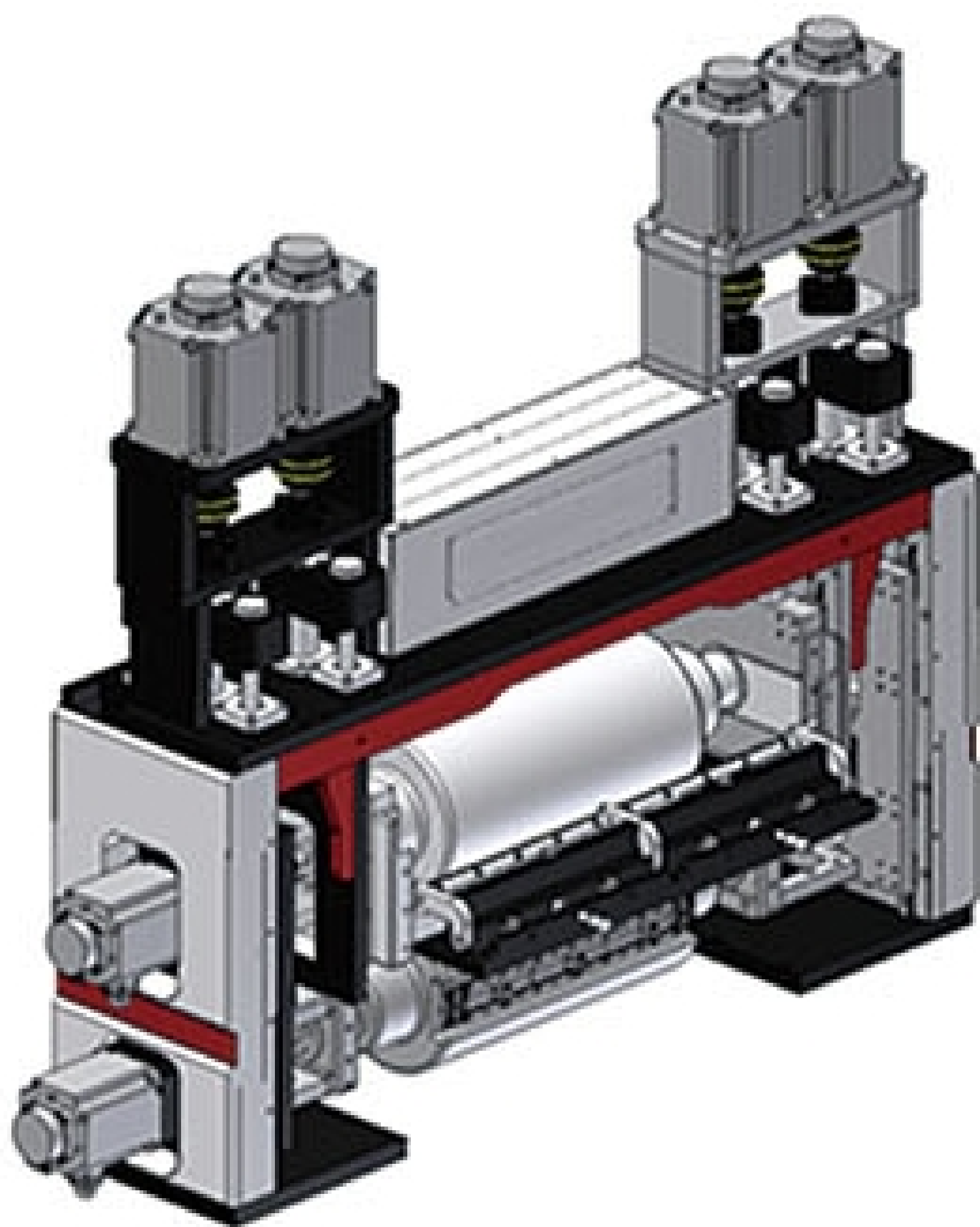


Aplication

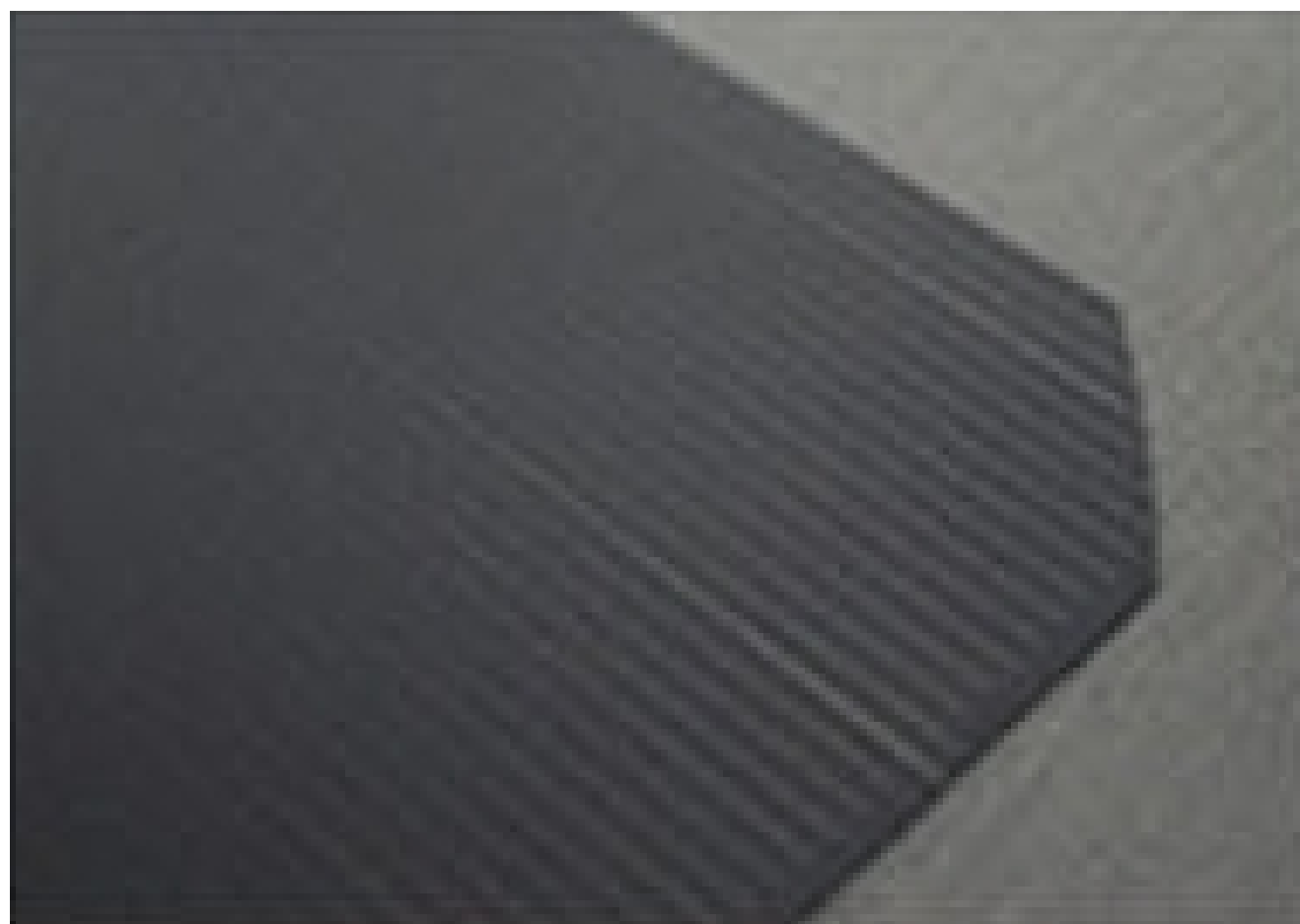
Specification	Roll	Diameter	Ø30
		Length	160
	Pattern	Form	Bar (Spec)
	Coating	Thinkness	1.5~200um (Spec)

Technical Specification	Coating	Speed	3m/min (Normal)
	Curing	Type	UV, thermal
	Dry	Length	190mm
	Machine	Size	426(L) x 630(W) x 460(H)
		Weight	60kg
	Power	Power Requirement	Main : Single-phase 220V 6A Dry : Single-phase 220V 2.5A

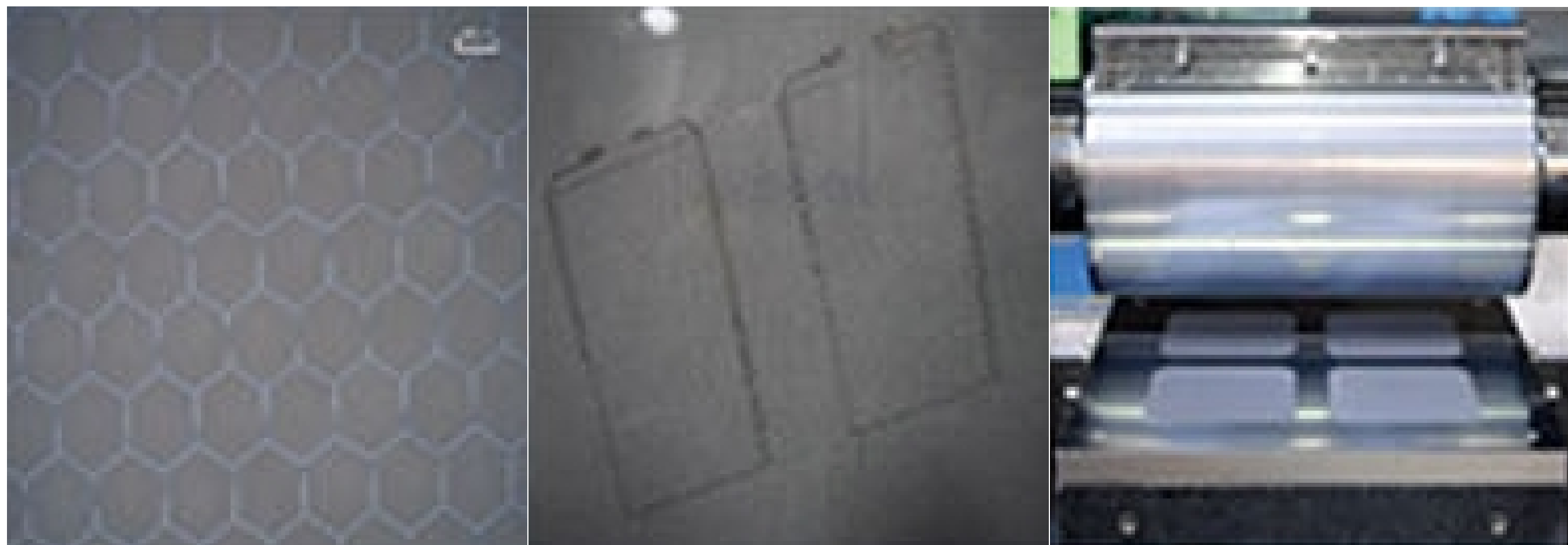
Roll to plate Gravure off-set Printer
NB-RGP-500



Gravure off-set printer



Printing Sample



Aplication

Specification

Roll	Diameter	Ø30
	Length	160
Pattern	Form	Bar (Spec)
Coating	Thinkness	1.5~200um (Spec)

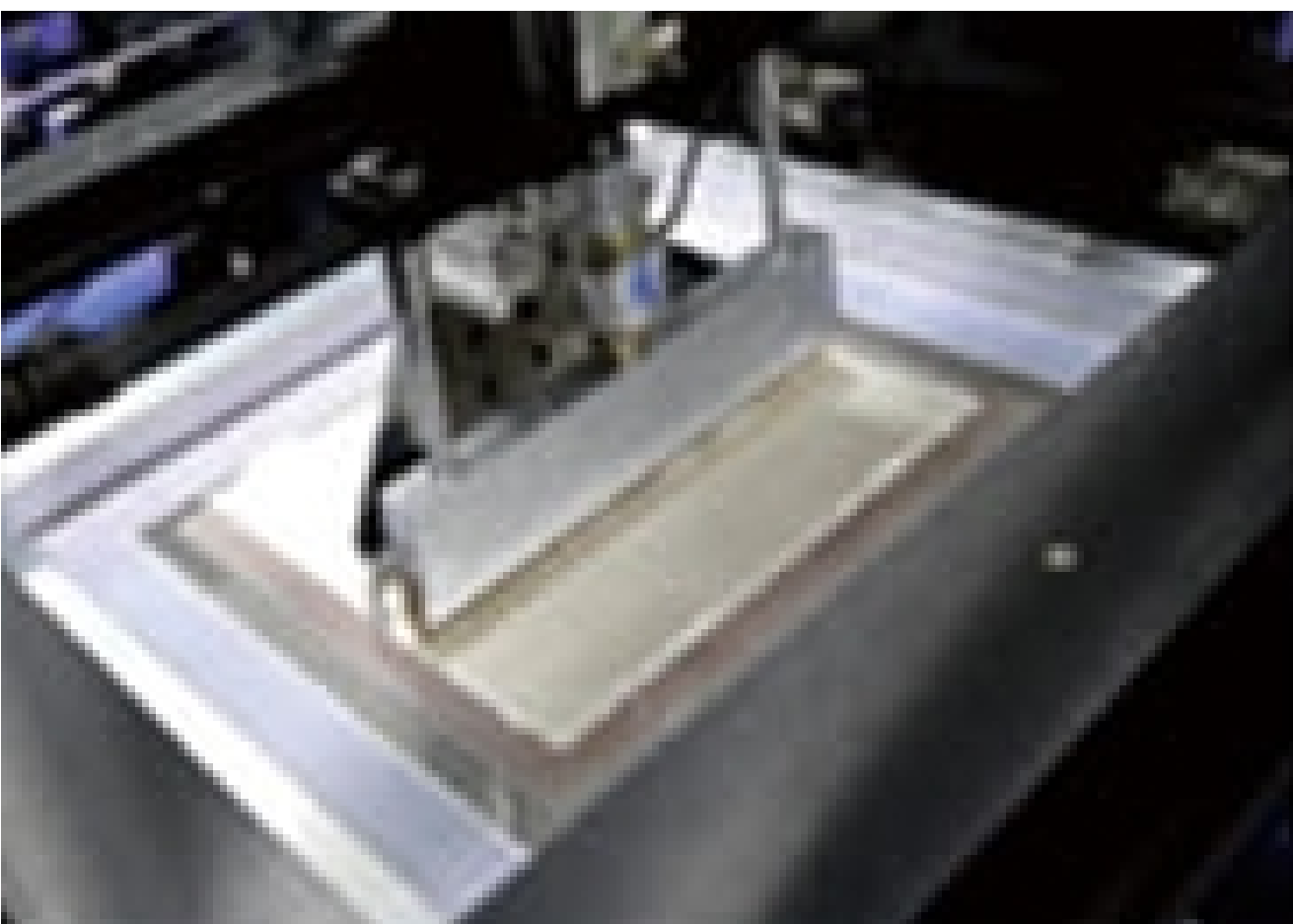
Technical Specification

Coating	Speed	3m/min (Normal)
Curing	Type	UV, thermal
Dry	Length	190mm
Machine	Size	426(L) x 630(W) x 460(H)
	Weight	60kg
Power	Power Requirement	Main : Single-phase 220V 6A Dry : Single-phase 220V 2.5A

07

Printed Electronic System

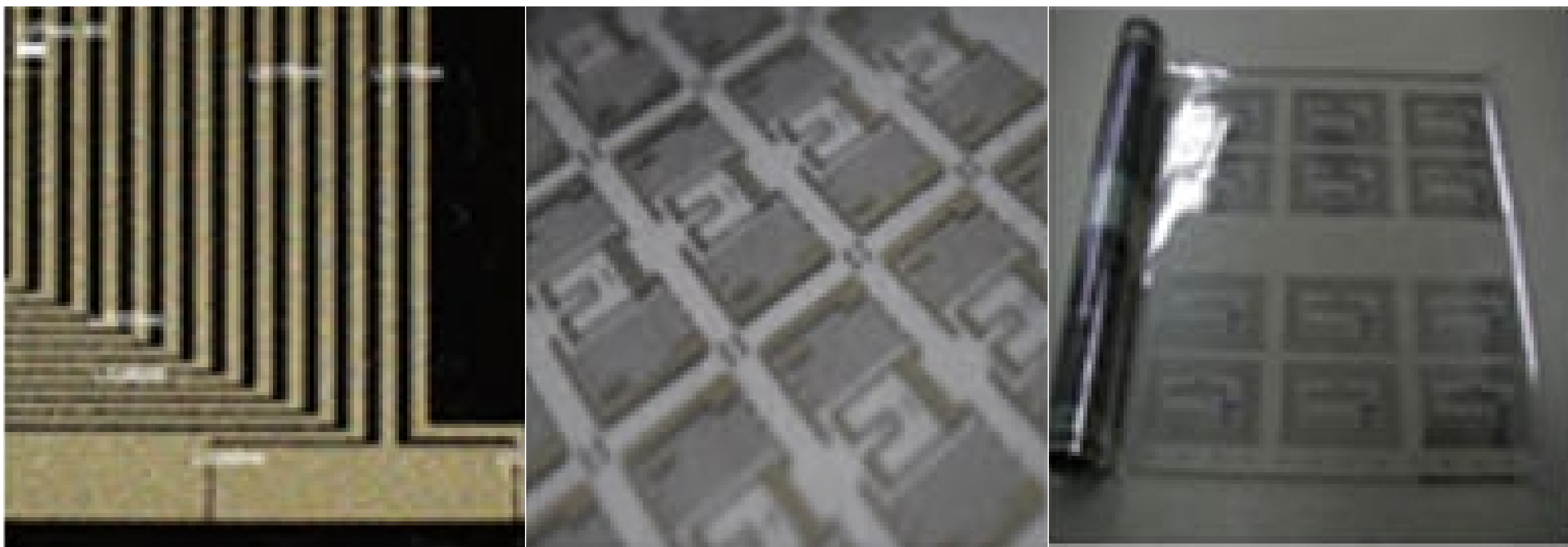
Roll to roll Screen Printing NB-RSP-300



Screen printer



Printing Sample



Aplication

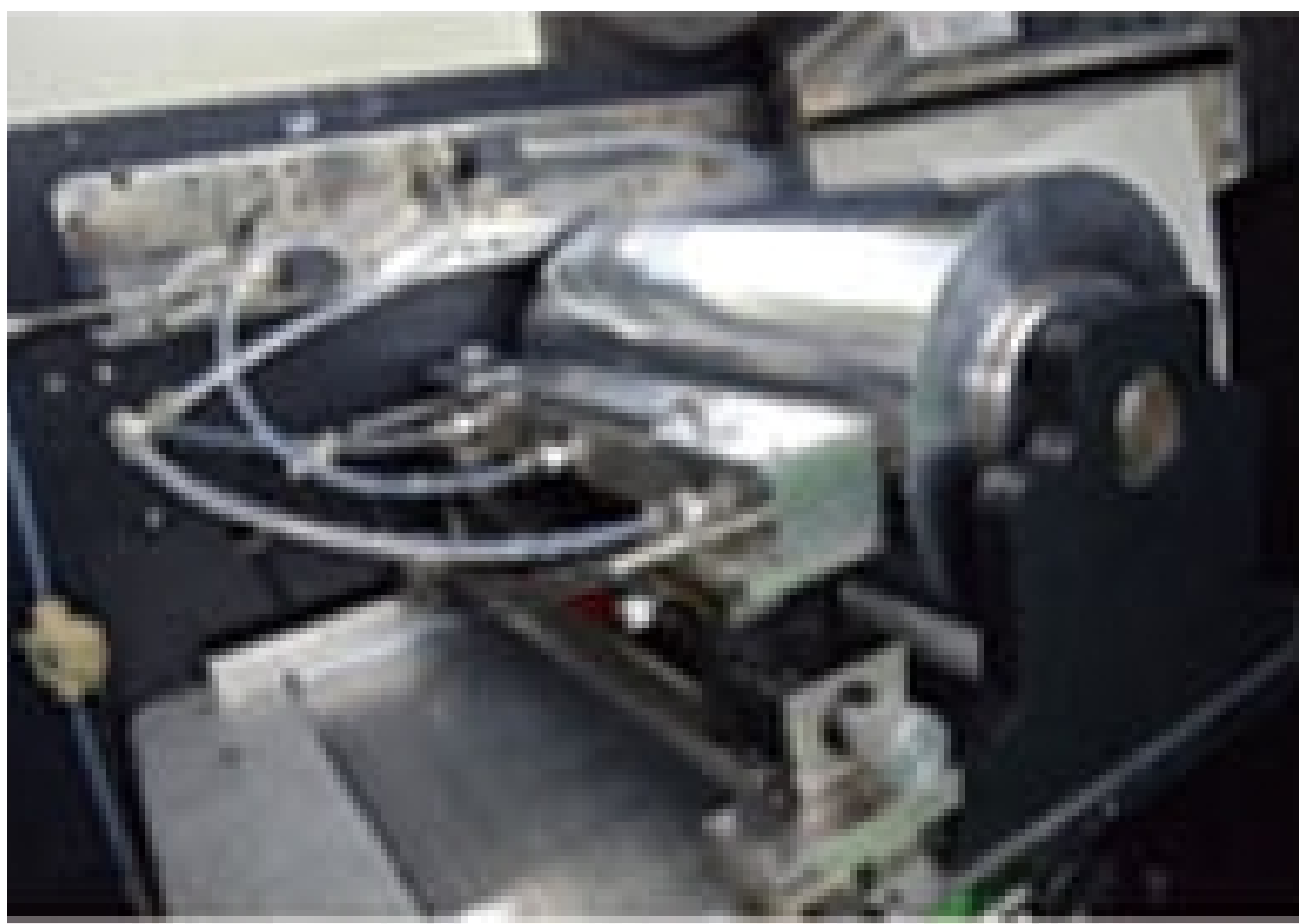
Specification	Size	Mask	600 x 600
		Printing	300 x 300

Technical Specification	Printing	Type	Continuous (R2R)
		Speed	500mm / sec (Normal)
	Curing	Type	UV, thermal
	Dry	Length	14m
	Machine	Size	7850(L) x 1600(W) x 1920(H)
		Weight	5000kg
	Power	Power Requirement	Three-phase 220V 6A

08

Printed Electronic System

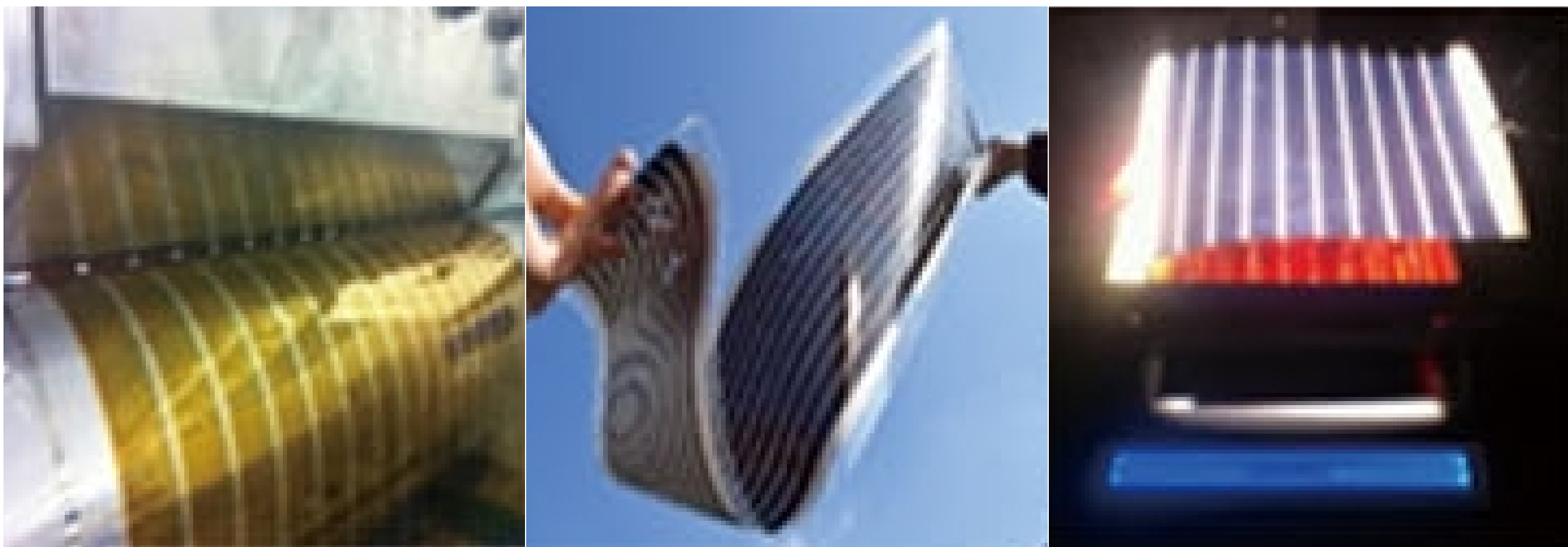
Roll to roll Slot-die Coater NB-RSC-300(2)



Slot-die Coating Module



Micro-Gravure Coating Module



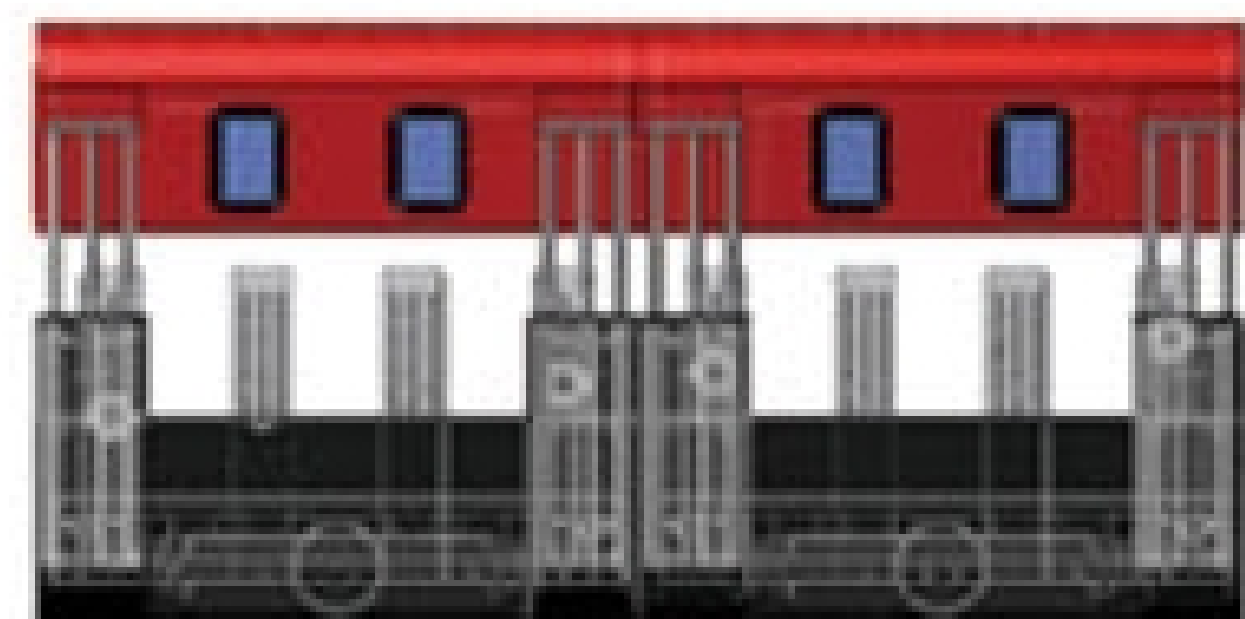
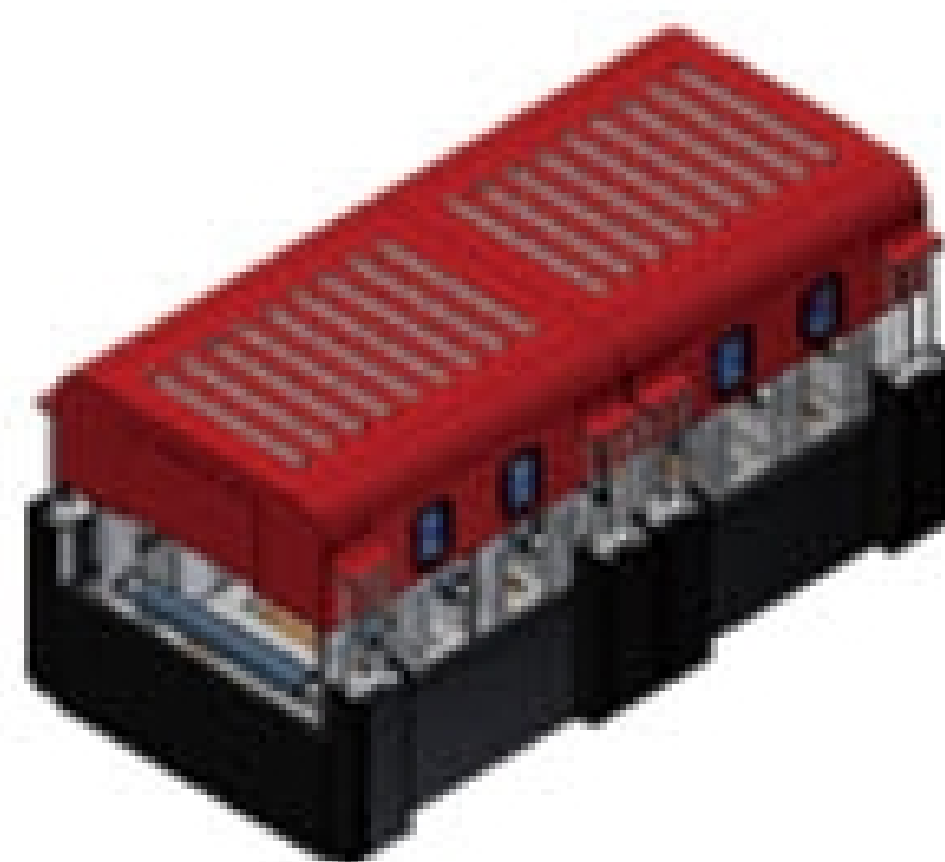
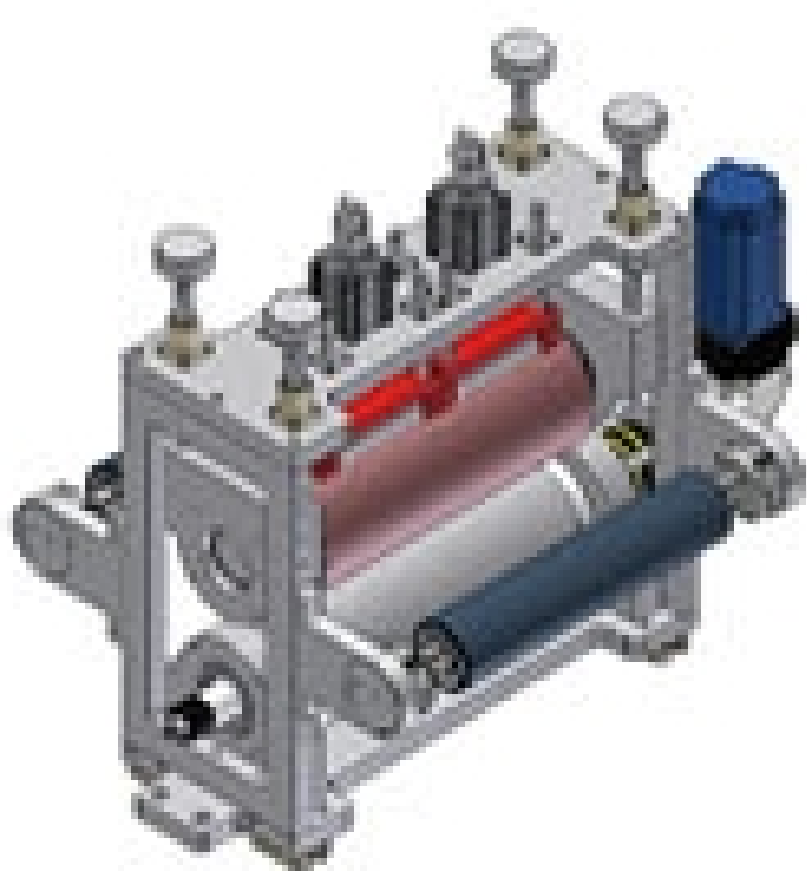
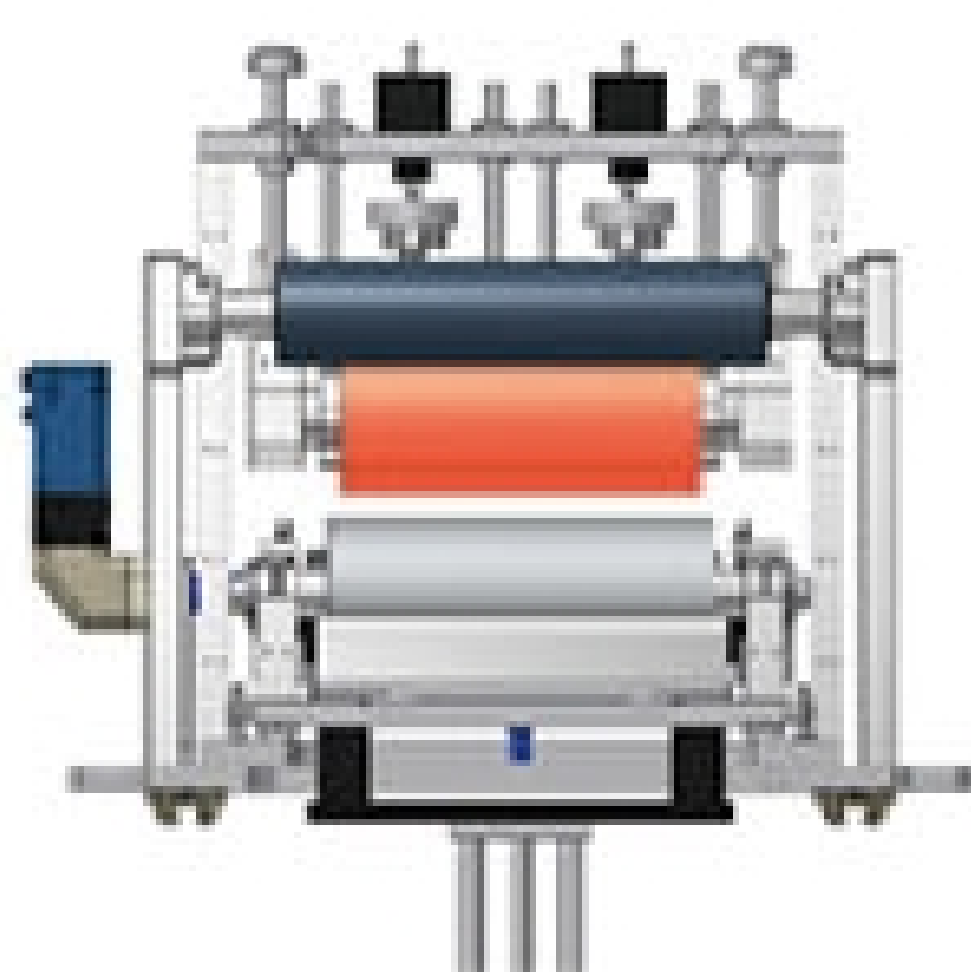
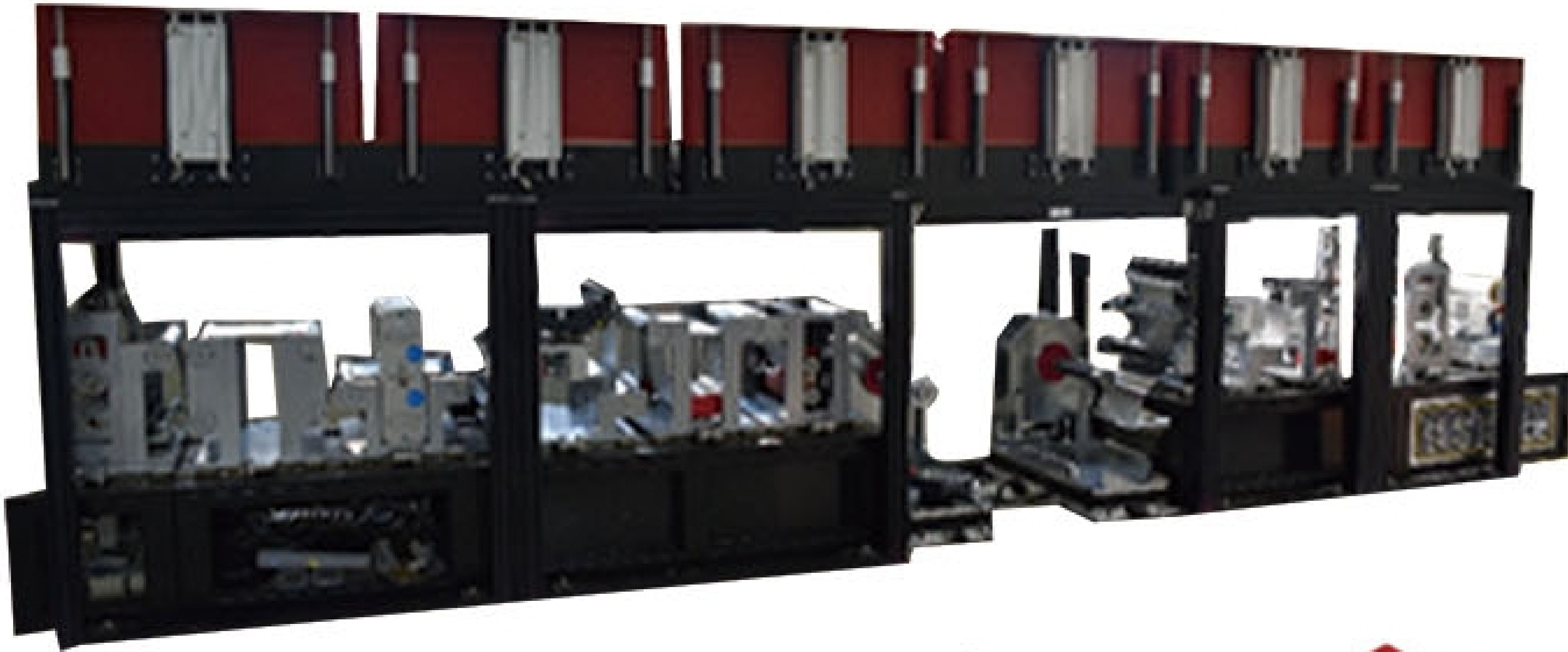
Aplication

Specification	Size	Mask	600 x 600
		Printing	300 x 300
Technical Specification	Printing	Type	Continuous (R2R)
		Speed	500mm / sec (Normal)
	Curing	Type	UV, thermal
	Dry	Length	14m
	Machine	Size	7850(L) x 1600(W) x 1920(H)
		Weight	5000kg
	Power	Power Requirement	Three-phase 220V 6A

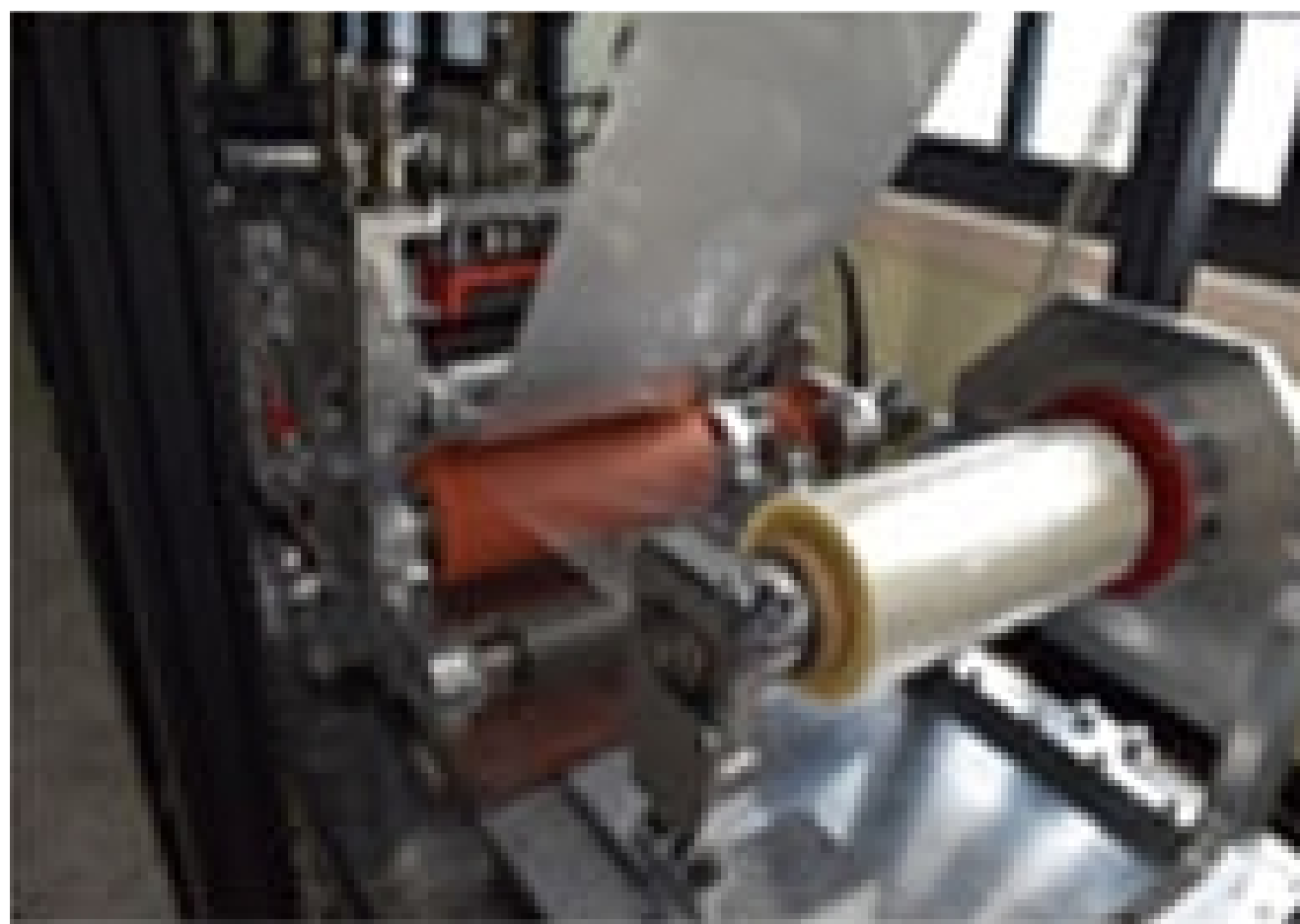
09

Printed Electronic System

Roll to roll Gravure Coater NB-RGC-300



Gravure Coating Module



Lamination Module



Aplication



Specification

Roll	diameter	Ø120
	Length	300mm
Pattern	Form	Bar (Spec)
Coating	Thickness	1.5~200um (Spec)

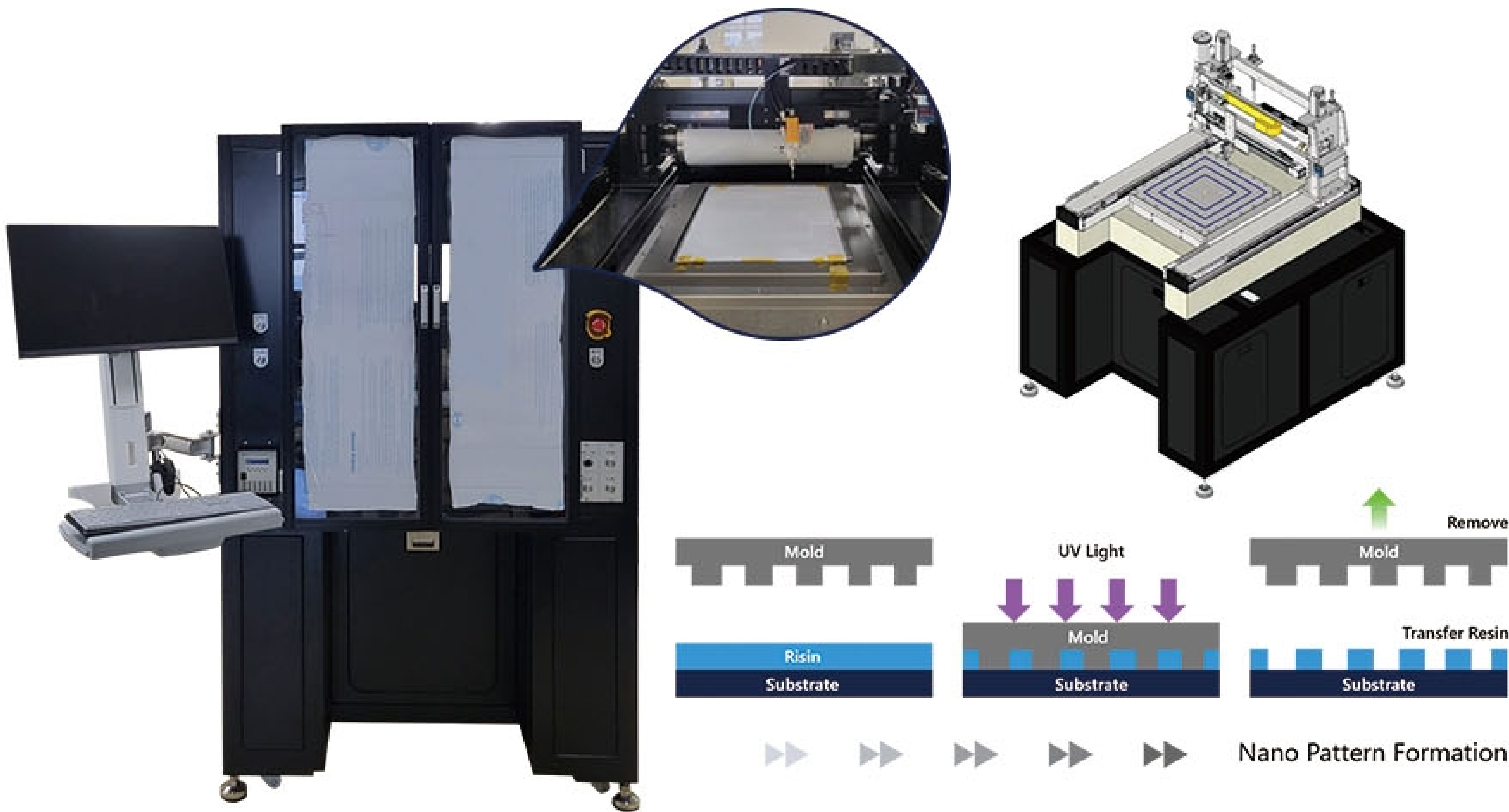
Technical Specification

Coating	Speed	250mm/s (Max)
Curing	Type	UV, thermal
Dry	Length	12m (Other sizes available upon request)
Machine	Size	6600(L) x 1300(W) x 2400(H)
	Weight	1.5ton
Power	Power Requirement	Main : Single-phase 220V 30A Dry : Single-phase 220V 60A

Printed Electronic System

Plate Imprinting Lithography System

NB-PIL-300



Imprinting Sample



Micro Lens Array



Micro Lens Array

Specification

Z-axis	Ball screw (2 axis)
Maximum drive shaft	Ball screw (3 axis)
Working area	290mm(W) x 400mm(H)
Solution supply	Pneumatic pressure vessel + nozzle
UV-Type	UV LED
Ventilation	200A

Technical Specification

Machine	Size	1460 x 1200 x 2010
	Weight	1800kg
Pneumatic	6-bar	
Control	PC based Control	
Power	220V single phase 30A	

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Printed Electronic System

Roll to roll Slot-die/Micro-Gravure Coater

NB-RSGC-300



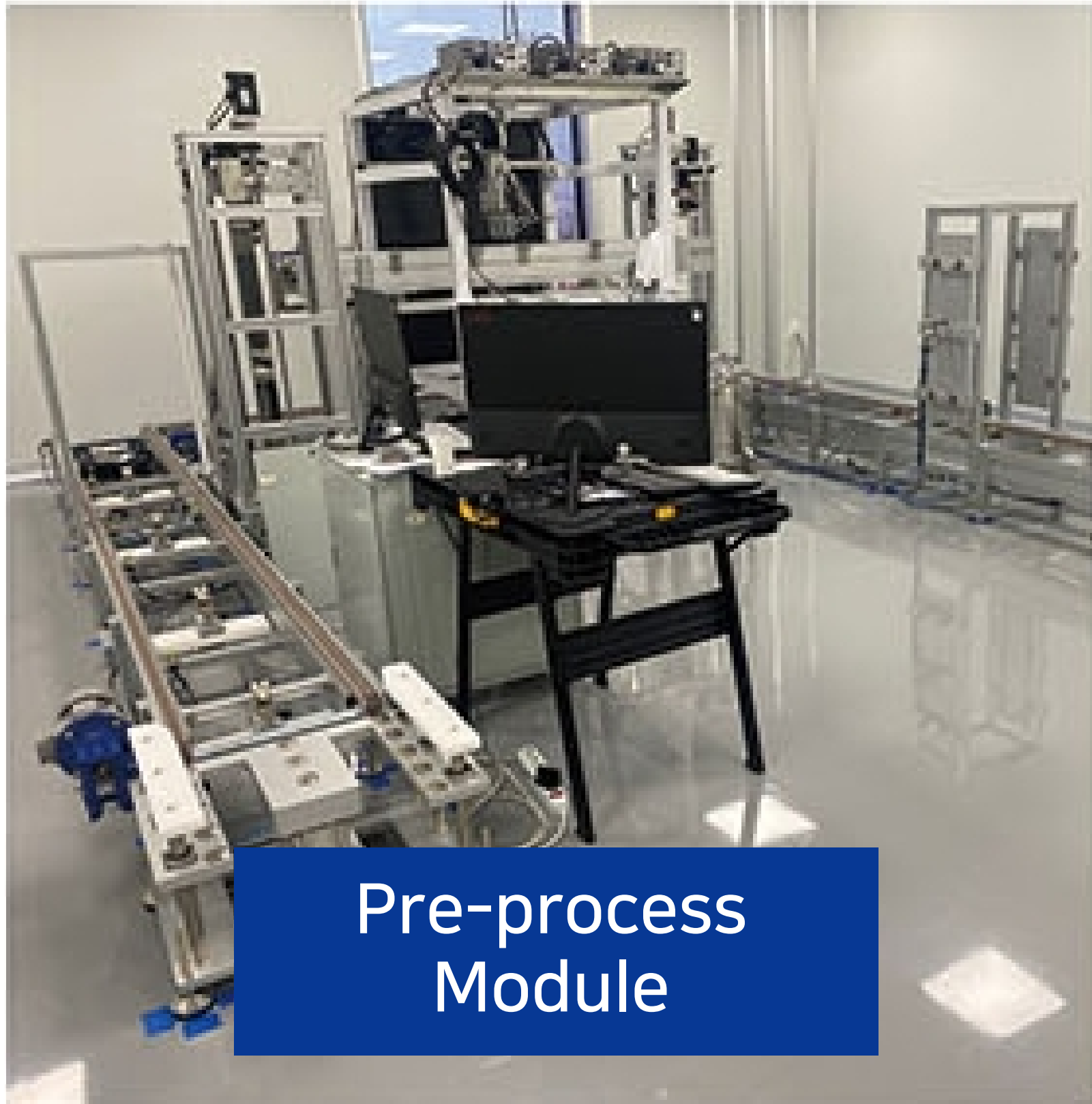
Specification

Web	Width	300~340mm (PET / Al web)
	Web speed	1000mm/sec(Max) (Depending on rheological properties of solutions)
Machine	Size	8000(L) x 2550(W) x 1950(H) (mm) [Drying length : 6m]
	Weight	5ton
Required space	10000(L) x 4000(W) x 2500(H) (mm)	
Power	Three-phase 220v / 180A (CV cable / 50SQ)	
Pneumatic	More than 6 bar (Ø8) / N ₂ / Ar / O ₂	
Control	PC based Control(EtherCAT) / Movable handy touch panel	

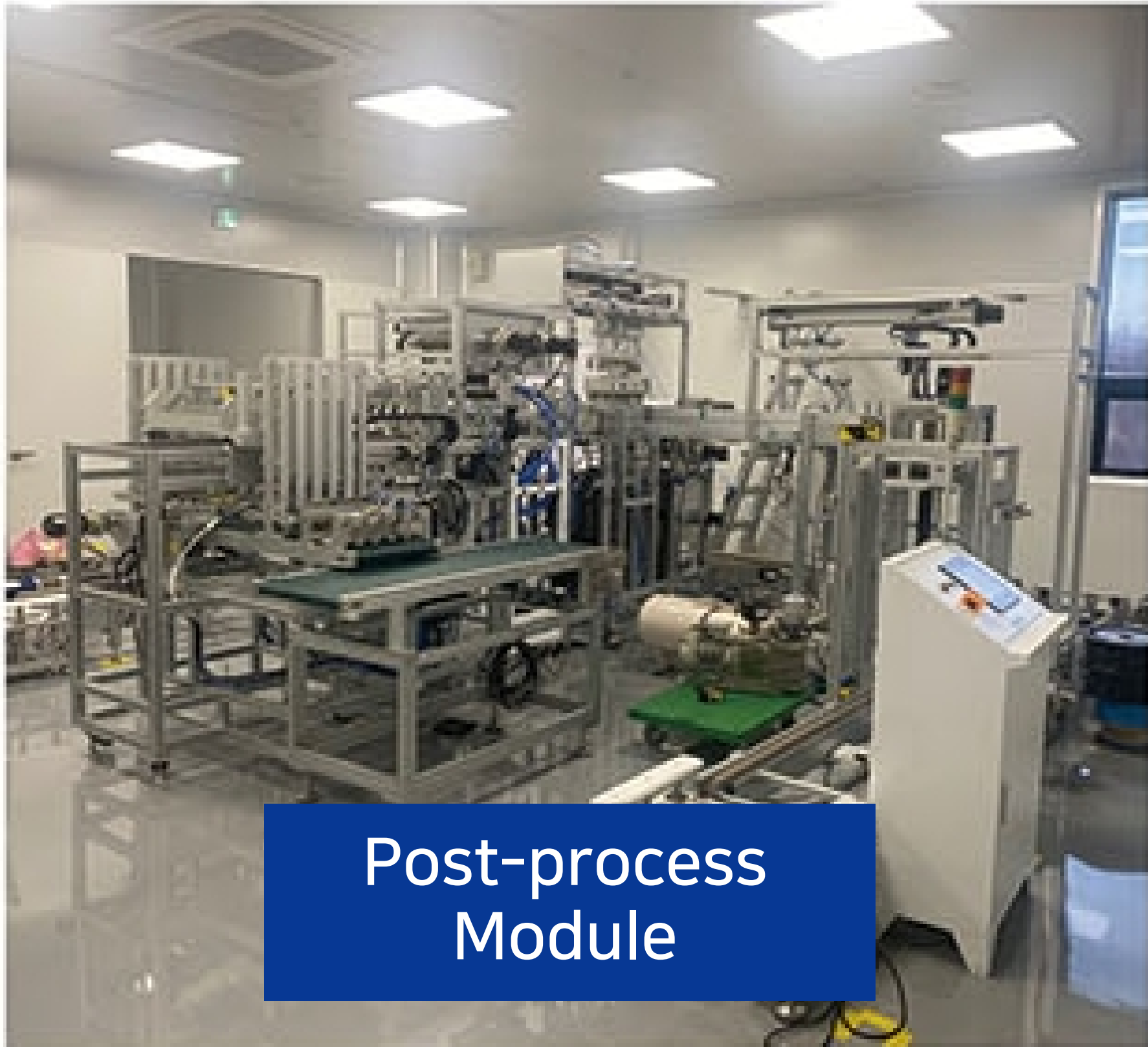
12

Factory Automation

Manufacturing System
for Microneedle Patch



Pre-process
Module



Post-process
Module



Drying room



Depressurization
Chamber



Cleaner



Packaging
Machine

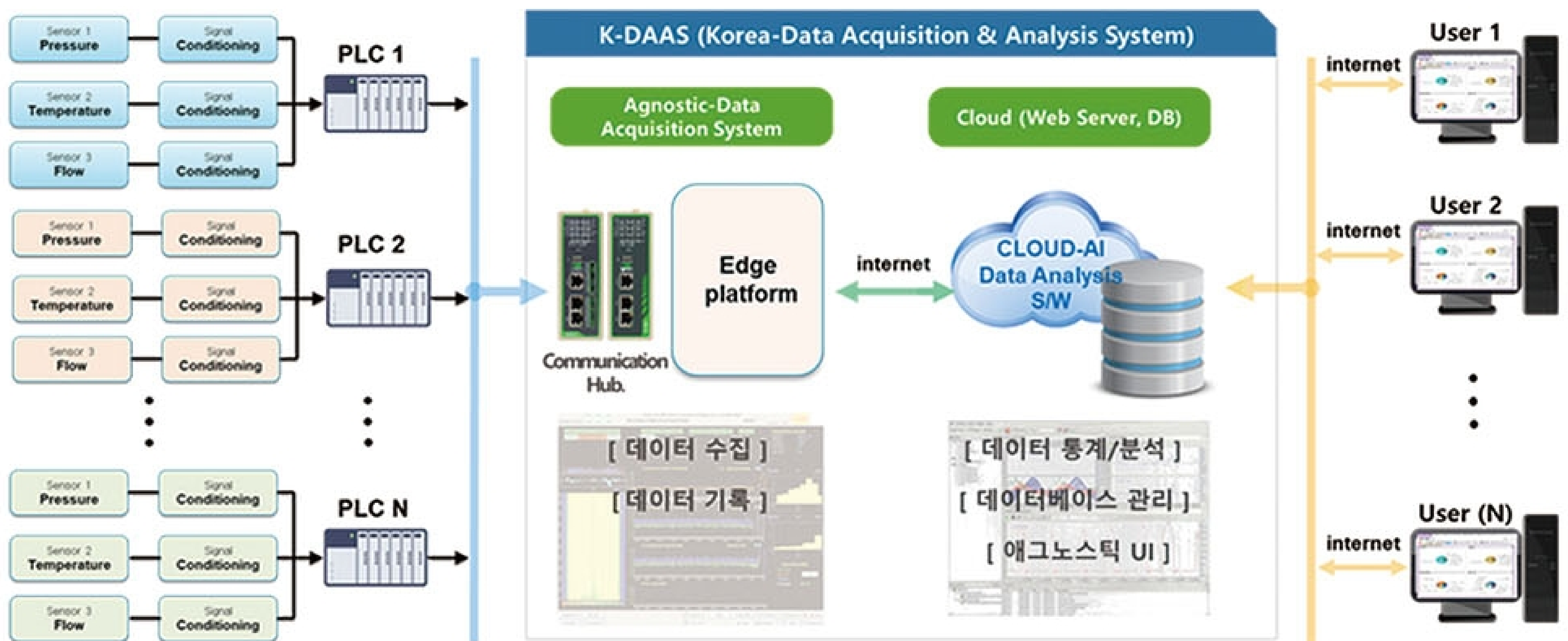
Specification

Working plate	Size	300 x 420 x 15 (mm)
Patch size	70 x 70 (mm) 15EA / Working plate 1EA	
Remove air bubbles using low vacuum		
Material drying by humidity control		
Needle patch molding using punching process		
Foreign object inspection using vision system		
Automated packaging and working plate cleaning		

Technical
Specification

Injection Process	Musashi Dispenser 3 set	
	Can be changed after specification discussion	
Depressurization Process	Depressurization Chamber	Needle Manufacturing Vacuum 50torr~100torr
	Vacuum pump	Maximum vaccum degree 5 x 10 ⁴ torr, Pumping speed 400 L/min
	Can be changed after specification discussion	
Drying process	Drying room	Dehumidifier ~RH 35%
	Can be changed after specification discussion	
Punching Process	Punching with pinnacle	
	Can be changed after specification discussion	
Packaging	Rotary Filling and Packing Machine	
	The width and length of the pouch vary depending on the size of the product(decision after discussion)	
Cleaning	Ultrasonic cleaner	

Korea Data Acquisition & Analysis System



Explanation

Patent & Certificate

Patent No. KR10-2732930, Heterogeneous PLC and edge platform linked cloud system

Patent No. KR10-2791335, Data conversion system using on-premise generated AI and heterogeneous PLC and edge platform linked cloud system using this

Application No. PCT/KR2025/005159, Data conversion system using on-premise generated AI and heterogeneous PLC and edge platform linked cloud system using this

Certificate of Software Quality(GS certificate), Name of software : NBDX Edge v1.0(Certificate No. 25-0034), Republic of Korea

Certificate - AI Factory Specialists
(Korea Planning & Evaluation Institute of Industrial Technology)



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