

Surface Reformation of Insulating Resin
by Ultra Violet Treatment

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What is the surface reformation method by UV irradiation ?

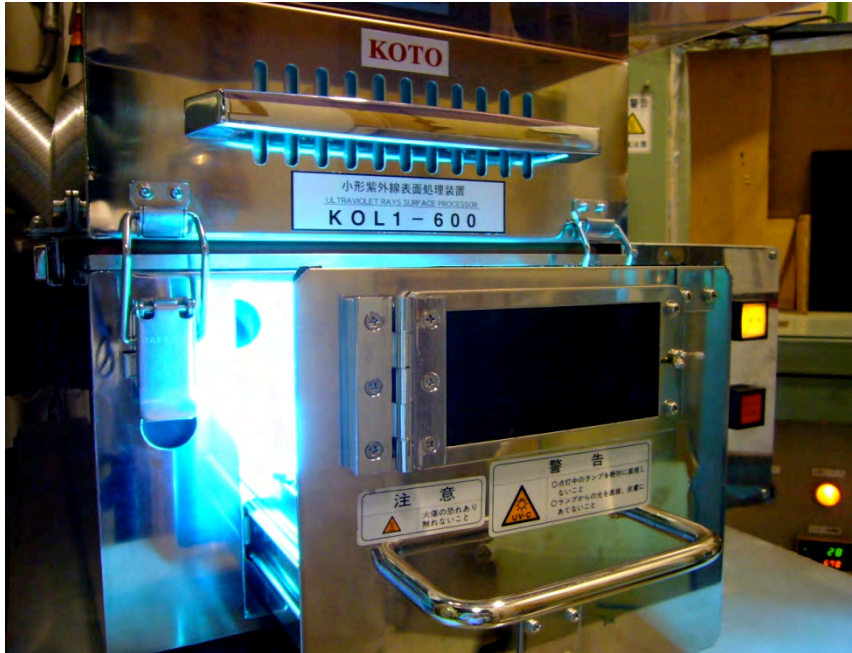
Pretreatment for electroless plating using UV irradiation as a substitute for etching

【Advantages】

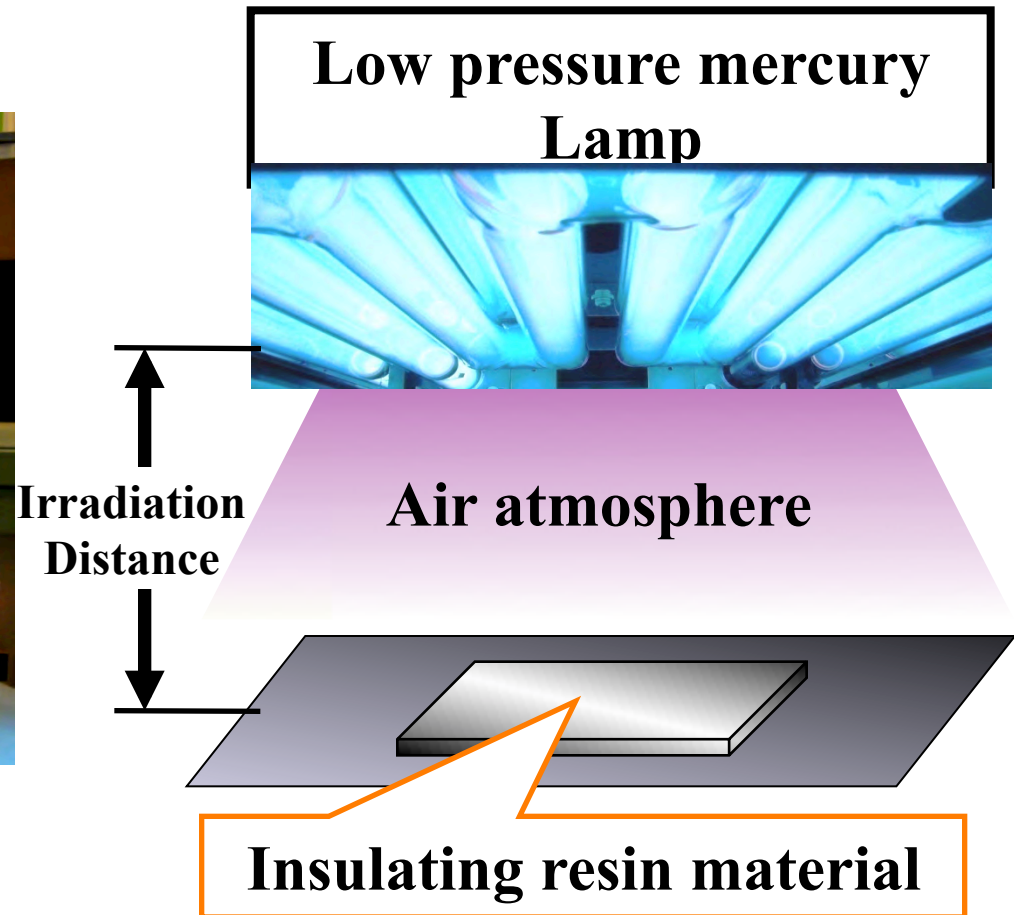
- Enables formation of a conductive layer on a smooth resin surface
- Enables formation of a conductive layer on difficult to plate materials
- Environmentally friendly plating process

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UV surface reformation method



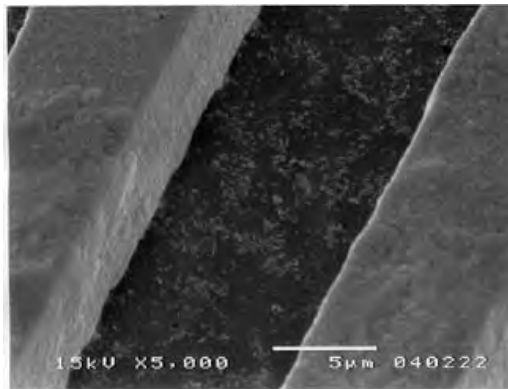
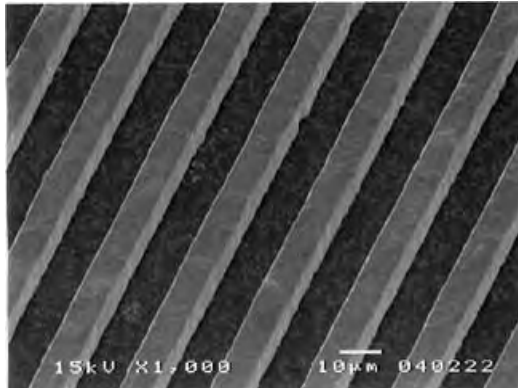
184.9 nm: 8 mW/cm²
253.7 nm: 18 mW/cm²



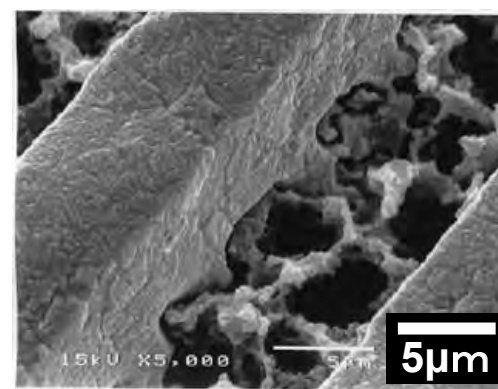
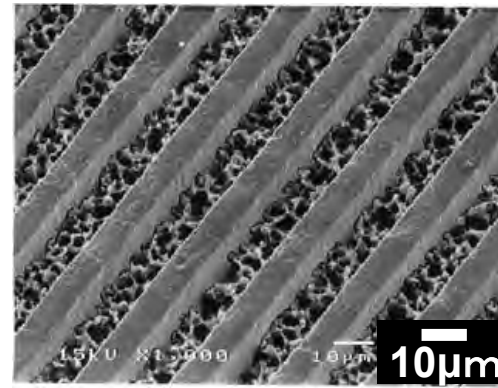
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Wiring patterns formed on modified surface

UV modified



Conventional method

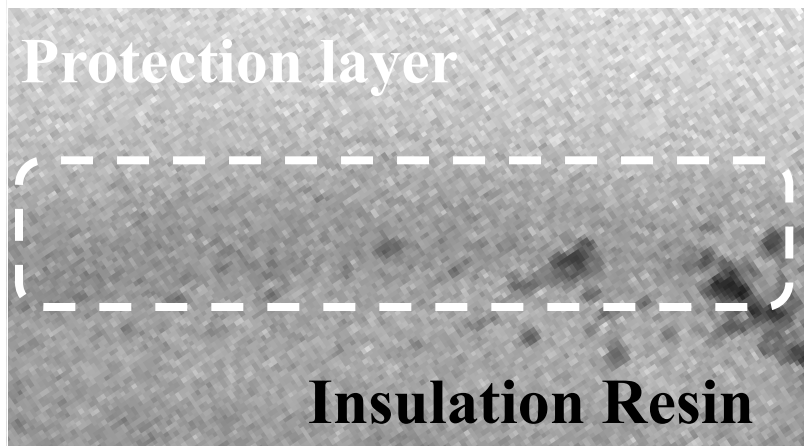


- Minimal damage to the resin surface
- Enable to form micro circuits
- Allows 10micron line and pitch space

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Effect of modified layer on adhesion strength

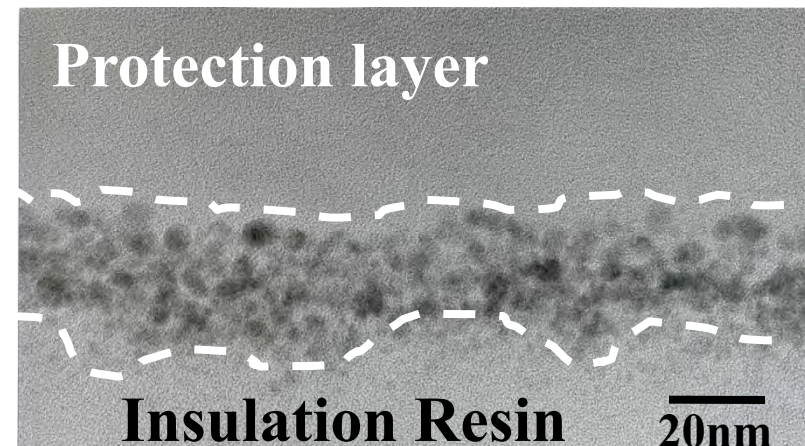
Without modification



No modification layer

Adequate adhesion strength is not obtained

With modification



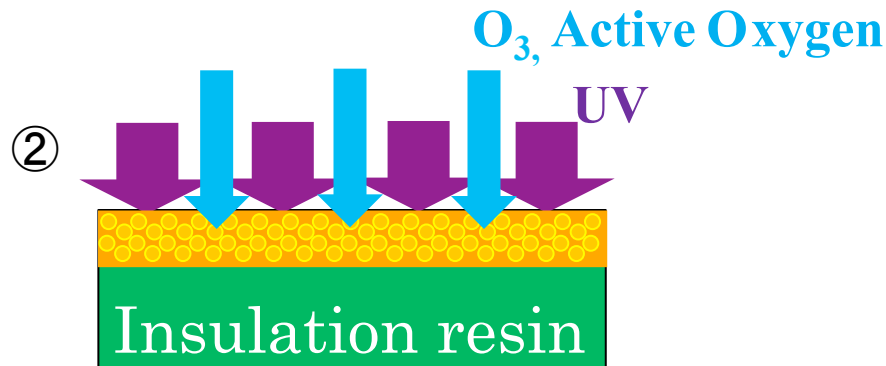
Modified layer

More than 1.0 kN/m adhesion strength can be achieved

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Mechanism for Adhesion

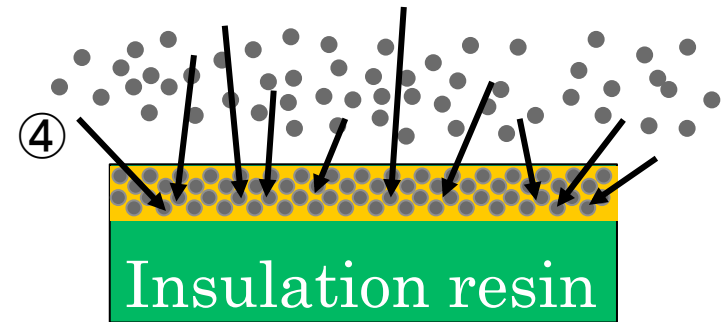
①



Ozone is generated during irradiation of resin



The surface material is Oxidatively cleaved, then eluted from resin to form nanoscale voids



Catalyst penetrates resin to form diffused catalyst layer

⑤



Nanoscale anchor layer is formed by electroless plating reaction which progressing from catalyst layer

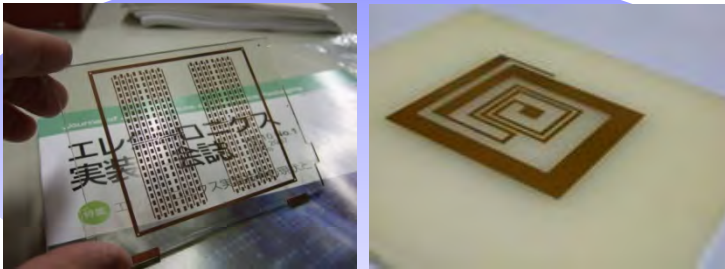
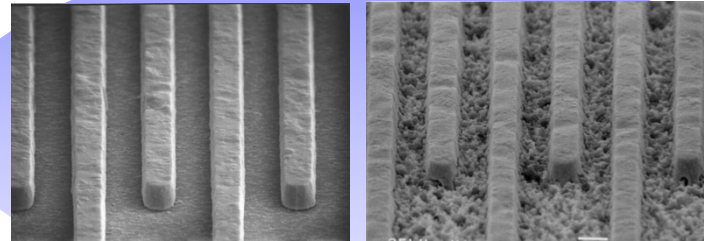
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Applicable materials

LCP, PI, COP, PA, Urethane, ABS. Nylon etc.

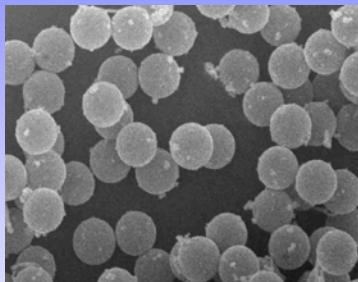
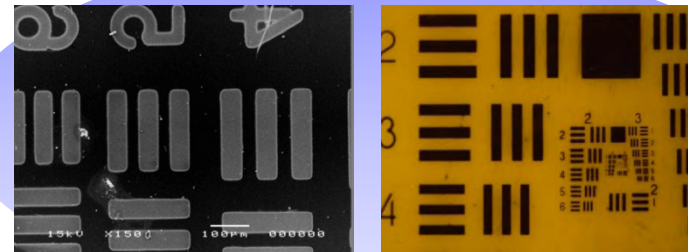
Application examples

Micro circuit pattern on
smooth substrate



Form conductive layer on difficult to
plate materials

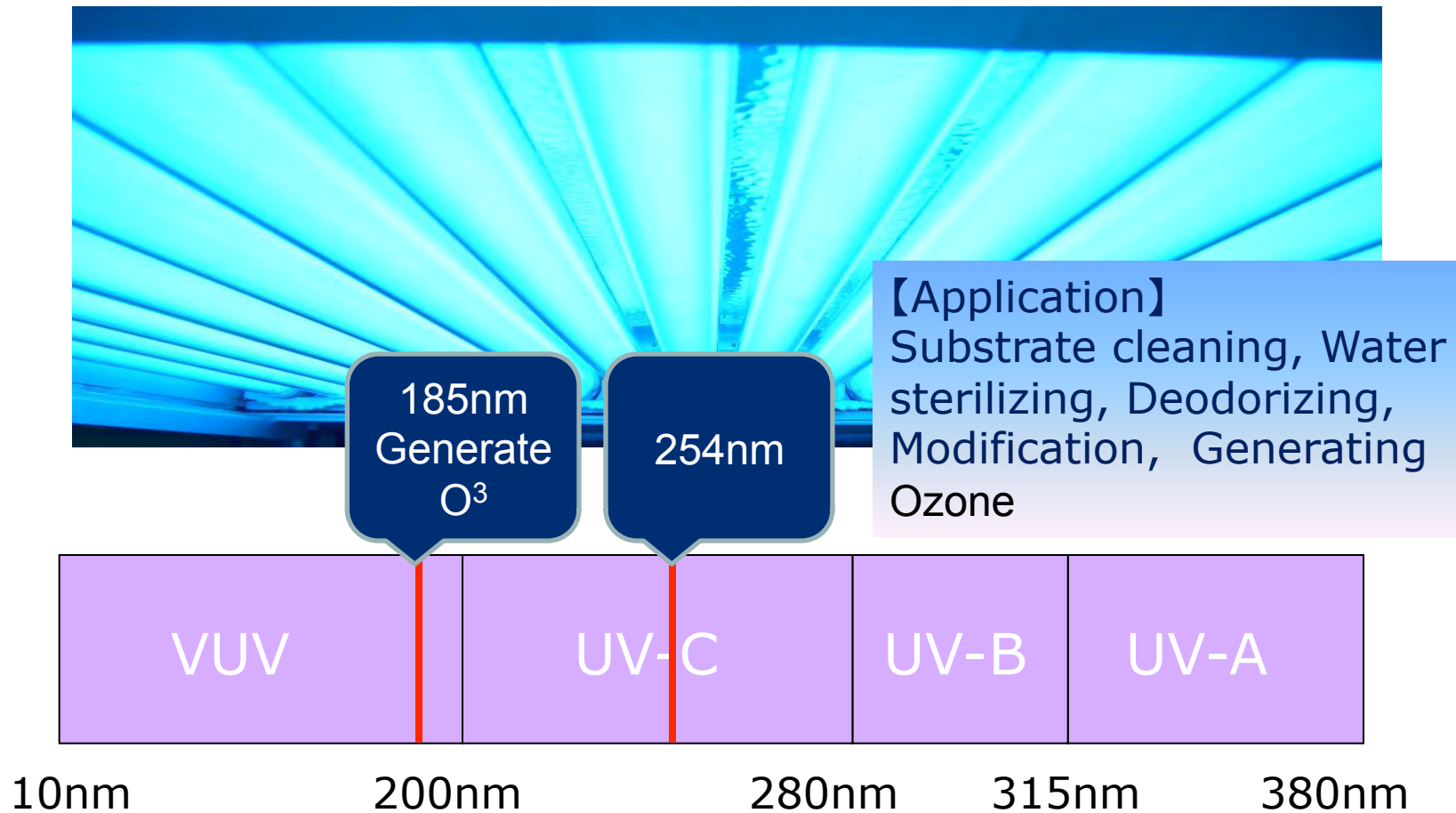
Selective plating for fine pitch pattern



Environmentally-friendly
Anisotropic conductive fine particles

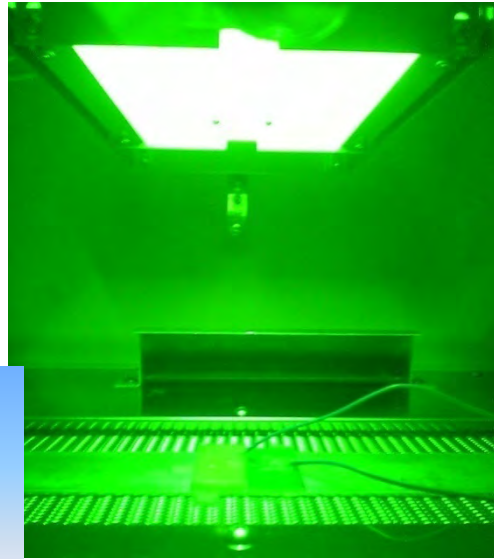
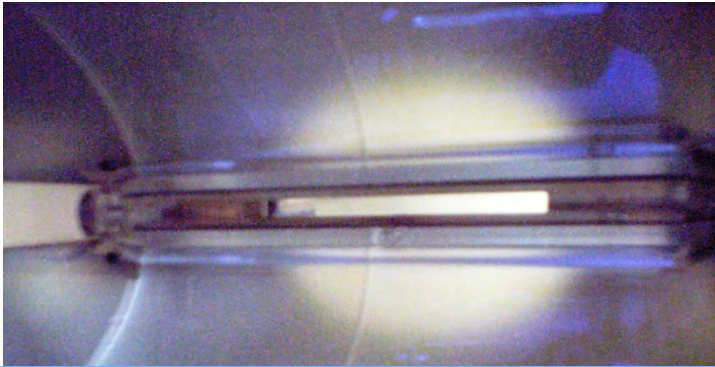
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Low Pressure UV Lamp



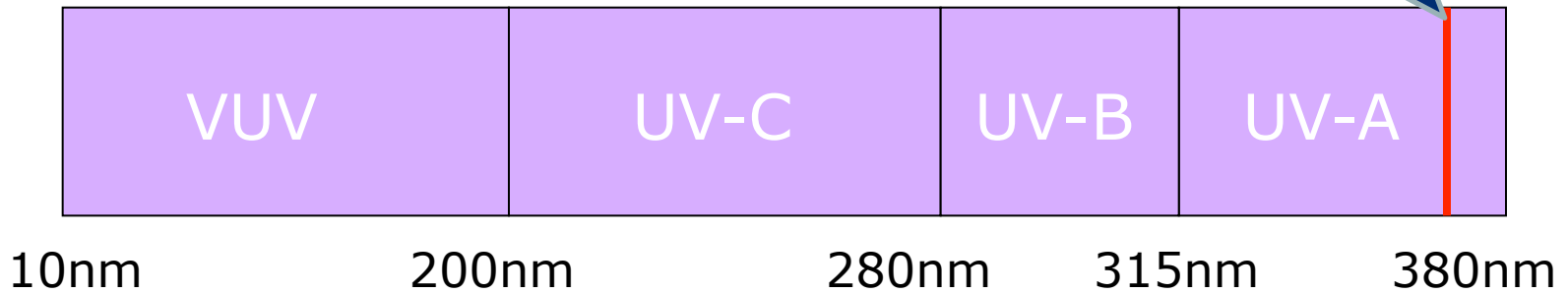
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High pressure UV Lamp



【Application】
Curing and drying for Inks,
Paints, Adhesive materials,
Resin coating etc.

365nm



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***UV (Ultra Violet) Surface
Treatment System***

UV Surface Treatment System for 3 dimensional objects (KOL4-1200V)

■Features

- Easily set irradiation speed. Just press Start button to clean and modify the surface of material
- Simple UV output and treatment temperature settings
- Enables UV irradiation while a material is rotating
- Supports material size up to 200×200×700(mm)



■Specification

- 【Effective irradiated area】 200×200×700(mm)
- 【Irradiation distance】 15~100(mm)
- 【Lamp】 High output low-pressure mercury lamp
- 【Footprint】 W1000×D1000×H2350(mm)
- 【Utility】 AC200V(50/60Hz) Exhaust duct

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Small UV Surface Treatment System (KOL1-300)

■ Spec

【Effective irradiated area】150 × 150(mm)

【Irradiation distance】5 ~ 100(mm)

【Lamp】High output low pressure mercury
lamp

【Footprint】W360 × D550 × H530(mm)

【Utility】AC200V (50/60Hz)

■ Accessories

- 300W low pressure mercury
lamp(KOGLQ-300GS) 1pc
- Power source for the low pressure
mercury lamp(KSG-302MHKT) 1pc
- Connection cables



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Roll-to-Roll UV Surface Treatment System (KOL2-1200V/R)

■Features

- Easily set irradiation speed and press Start button to clean and modify the surface of material
- Simple UV output and treatment temperature setting
- Enable UV treatment of various films by simply adjusting the tension of the rollers
- Support different material sizes (500mm wide or less, outer diameter Φ 300 or less)

■Specification

- 【Effective irradiation with】 500mm
- 【Irradiation distance】 10~30(mm)
- 【Lamp】 High output low temperature
- 【Footprint】 W2300×D1400×H1750(mm)
- 【Utility】 AC200V(50/60Hz) Exhaust dust



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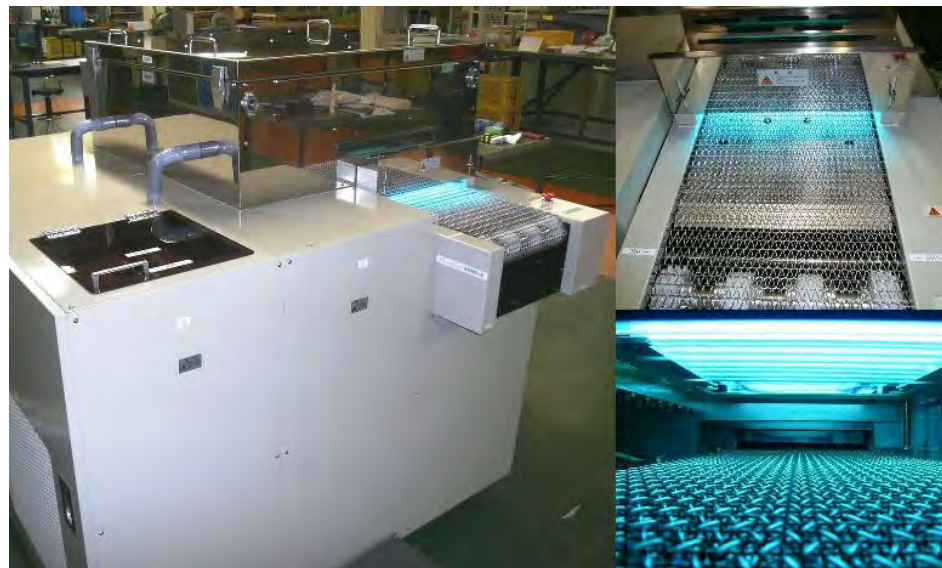
UV Surface Treatment System (KOL4-600H/L)

■Features

- Conveyor operation modes can be switched between continuous and intermittent for cleaning and property modification.
- Support up to 250 mm wide materials of sheets, films and exterior components.
- Applicable to heat sensitive materials by using cooling net.
- Real-time monitoring of the temperature inside the equipment is possible.

■Specification

- 【Effective irradiated area】 250×500(mm)
- 【Irradateion distance】 15~100(mm)
- 【Lamp】 High output low-pressure mercury lamp
- 【Footprint】 W1800×D1620×H1360(mm)
- 【Utility】 AC200V(50/60Hz) Exhaust duct



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Thank you

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