AMS ADVANCED MECHATRONICS SOLUTIONS, INC

AUTOMATION, SMT & LEAN MANUFACTURING

Manufactured by VSI

NEW Nanotechnology, NEW Breakthrough

SOFT X-RAY IONIZER

Low voltage models, 5kV

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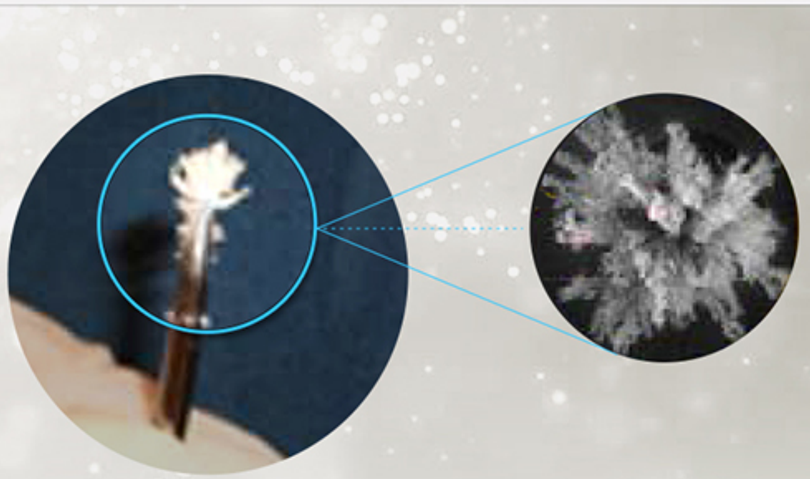
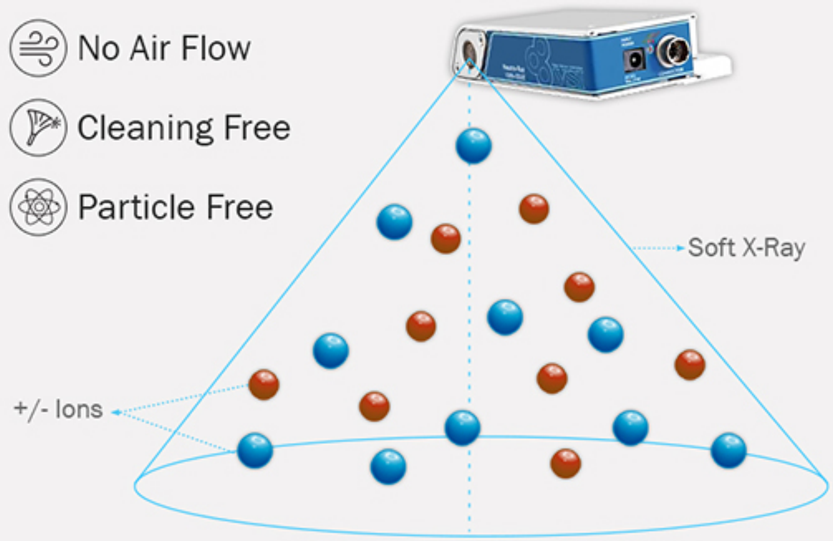
SOFT X-RAY vs CORONA DISCHARGE

Comparative Analysis with Corona Method

	Corona Discharge	Soft X-Ray
		
Air Supply	Required (CDA, N2 Supply)	Not Required
Particle Attraction	Yes (attraction, re-circulation)	No
Maintenance	Every 2-4 weeks (cleaning and adjustment)	Not Required
Ozone(O_3) Generation	YES	No
Ion Balance	+/- 30v (adjustment required)	+/- 0v
Ionization Speed	Moderate	Fast
Operation Cost	Air Supply, Higher Power Consumption, Accesories	No Additional Cost



[Particle attraction on emitter pin (fuzz ball)]



[Ion balance ±0v]

SOFT X-RAY BENEFITS 01 - Particle Free

Why You Should Choose SOFT X-LAY

Corona discharge ionizers

Problem 01

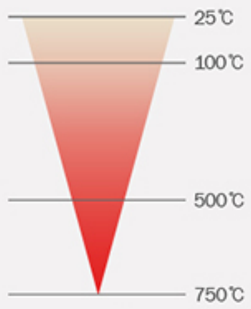
High temp with corona discharge

Particle attraction on the emitters

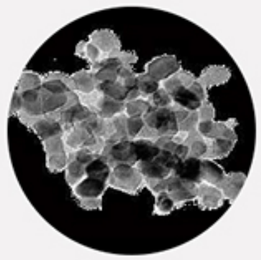
Particle attraction → Re-circulation by air flow → Product Contamination

Problem 02

Pin contamination during advance process



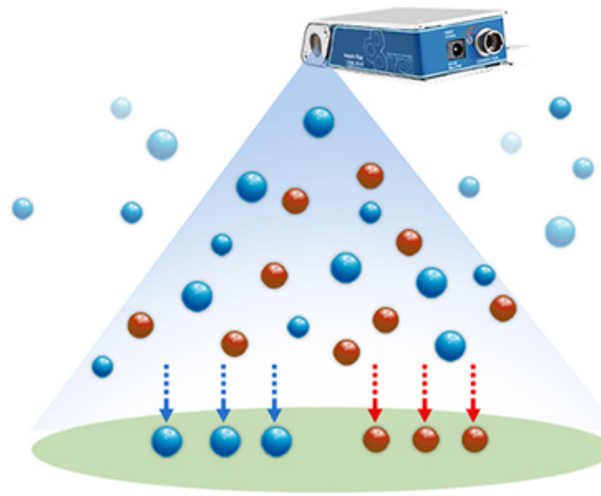
① Temperature on emitter pins



② Particulates (gaseous substance)

③ Contaminated Pin

VSI's Photo ionizer



- No Air supply required for Soft X-ray irradiation
- Particle free, maintenance free
- Large coverage area
- Good for fast moving object

Soft X-ray tube (Replaceable) ▸

SOFT X-RAY BENEFITS 02 - Maintenance Free

Why You Should Choose SOFT X-LAY

Corona discharge ionizers

High Maintenance Cost

Spot check	Periodic Maintenance	Material cost
✓ Pin cleaning ✓ Balance adjustment	✓ Air circulation ✓ Monitoring and check (2~4hrs)	✓ Material cost ✓ Labor cost
1~2 hr per time 24 times per year	6 times per year	$200~$500 per year + Labor cost

※ Recommended

VSI's Photo ionizer

No maintenance

during the Tube lifetime (over 10K hours)

PRODUCT GROUP - Low voltage models(5kV)

Low Voltage models (5kV)

▲ **VSN-05UE** (All-in-one type)

- Integrated body (No controller required)
- Replaceable X-ray tube (Low cost)
- Compact size (117.5mm×29mm×84.5m)
- Reasonable price

▲ **VSN-xxxxRD series** (Slim Bar)

- Expandable module blocks
- Replaceable X-ray tube (Low cost)
- Bar+Controller as a set
- Large area coverage

▲ **VSN-05Q** (Pin type tube unit)

- Minimal spatial constraints
- Ideal for target ionization

PHOTOIONIZER - VSN-05UE

VSN-05UE (All-in-one type)

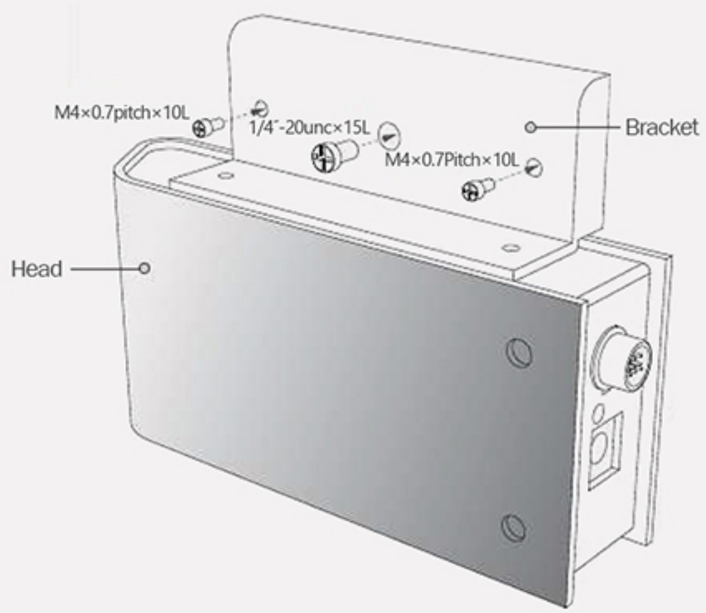
> Replaceable Soft X-ray Tube
(※Optional)

> LED Indicator
- ✓ Normal/Lifetime due/Error
- ✓ Operation status

Soft X-ray window <

DC12V Power input <
(110~220V power adaptor)

> Data Signal pins for extremal systems
- ✓ Remote on/off
- ✓ Inter-lock(safety alarm)



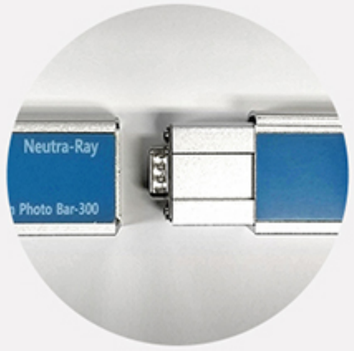
Bottom view ▲

Main Application

LCD manufacturing | Semiconductor (supply to Samsung Electronic) | Injection molding | Film, packaging manufacturing | Aerosol, pharmaceutical production

PHOTO SILM BAR - VSN-xxxxRD series

VSB-900RD (Bar unit)



- ✓ Expandable module block (300mm/ea)
  (※Max. 2,750mm)
- ✓ Replaceable by single module block

- ✓ Easy replaceable tube unit
  (simply unscrew!)
- ✓ Ceramic tube body
  (excellent durability)

> LED indicators

- ✓ Run status
- ✓ Alarms

> Display Window

- ✓ Elapsed time, Run status

VSC-108E (Controller)

> Control for max. 8 blocks

> No periodic replacement required

> Cable included

- ✓ Output (10m)
- ✓ I/O (5m)
- ✓ Power cord(1.8m)

Explosion proof Photo Bar

- Ignition free, Vacuum sealed body
- Photoionization type - Exclusively available by VSI
- Cert class: Ex nR II T6 IP66 (Korean standard)
- Replaceable module block and tube units
- Supply to LG Chem, etc.

Compatible controller (model: VSC-108E)

PERFORMANCE - Decay time rate

Model: 5kV

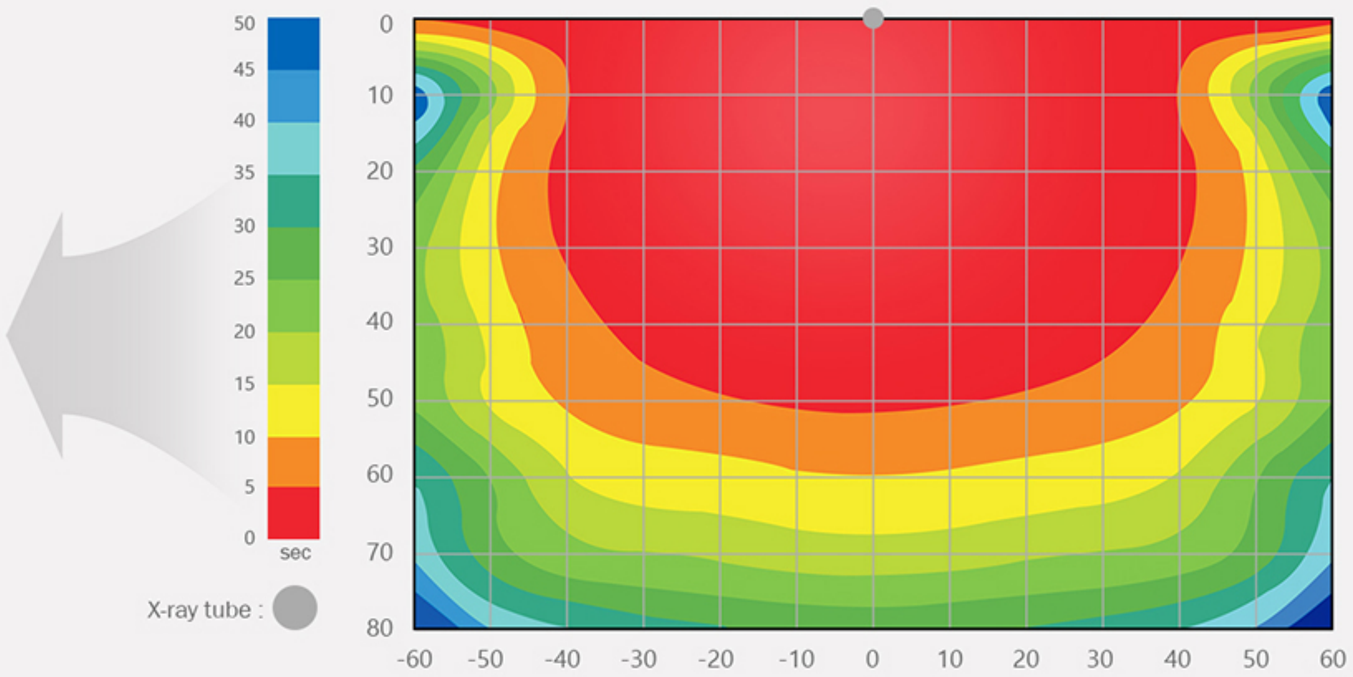
Unit: sec.

Width(cm) / Height(cm)	0	10	20	30	40	50
10	0.1	0.2	0.6	2.3	4	24.5
15	0.3	0.4	0.8	1.8	5	13.5
20	0.5	0.6	1	2	4	12.6
25	0.7	0.8	1.2	2.2	4.3	11.6
30	1.1	1.2	1.6	2.5	4.7	11.4
35	1.5	1.7	2.1	3.1	5.6	11.9
40	2.1	2.3	2.9	4.1	6.6	14.2
45	3	3.2	3.9	5.1	7.5	15.2
50	4.1	4.3	5.3	6.5	9.4	13.3
60	10	10.6	11.8	13	15	25.8

Measuring conitions

- Model: Neutin(5kV)
- Discharge: +1000V ⟶ +100V
- Temp/Humi: 18.8℃/27%
- Tester Model : TREK 156A

- Best ionization performance within 30cm distance.
- Key selection criteria :
  - ✓ Angle
  - ✓ Distance with object
  - ✓ Required ionization speed



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