

# UVOCS

ULTRA-VIOLET OZONE CLEANING SYSTEMS

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- **Ultra clean surfaces**
- **Room temperature process\***
- **Fast – less than ten minutes for many applications**
- **Easy processing**
- **Modest initial price and minimal operating cost**

UV/Ozone cleaning process provides a simple, inexpensive, fast method of obtaining ultra-clean surfaces free of organic contaminants on most inorganic surfaces, such as quartz, silicon, gold, nickel, aluminum, gallium, arsenide, alumina<sup>†</sup>, etc. The process is ideal when thin film deposition with excellent adhesion to the substrate is required. Ultra-clean surfaces can easily be achieved by UV/Ozone processing in one to several minutes after the substrate has been cleaned by conventional techniques.

#### UV/Ozone cleaning removes traces of:

- Skin oil
- residual photoresist
- silicone oil and grease
- condensed adhesive volatiles

#### How clean is “ultra” clean?

Contact angle measurements of 4-5 degrees. Miniscule peaks when measured with AES and ESCA. With steam test, there are uniform rainbow-like fringes during condensation and evaporation. Often, cleaning of critical surfaces prior to other processing steps is considered finished after the usual scrubbing and ultrasoneration steps. Ultra-violet/ozone cleaning adds a new dimension to cleaning, a valuable new dimension that can prove itself in dollars and cents in improved performance and reliability in applications where UV/Ozone can be used after the standard cleaning operation.

#### How does UV/Ozone work?

The heart of UVOCS cleaning equipment is a low pressure quartz-mercury vapor lamp, which generates UV emissions in the 254 and 185 nanometer range. Ozone and atomic oxygen are generated. Organic contaminant molecules are excited or dissociated by the absorption of the 254nm wavelength UV. The excited organic contaminants react with the atomic oxygen to form volatile products, such as CO<sub>2</sub> and H<sub>2</sub>O. The whole process takes place at essentially room temperature in one to several minutes.\*

<sup>†</sup>White alumina substrates exposed to UV energy turn yellow. This phenomenon is due to the absorption of UV energy by the substrate and is not a coating. The alumina will revert to its original color upon heating.

\*The temperature rise of parts being cleaned is dependent on the length of the processing time. For most applications, parts temperature can be considered as essentially room temperature.



#### Features:

1. Intermittent lamp operation. Lamp and timer are activated by door closing.
2. Sliding parts tray—smooth, low vibration ball-bearing system—height to 1 ½ inches.
3. Rugged all stainless steel construction.
4. Long life, low pressure quartz-mercury vapor lamp emits 254 and 185 nm UV causing rapid oxidation and removal of trace organic residues.
5. Total UV protection makes these units operator safe.
6. Low initial equipment cost and low operating cost.
7. 0 to 999 second/minute/hour timer for precise control. Both lamp and timer are activated by door closing.
8. Ozone Exhaust Shroud: UVOCS tray models have an ozone exhaust shroud which allows the UVOCS cleaning equipment to be placed in your production or lab area adjacent to process associated equipment, minimizing recontamination of material. A 3” exhaust line outlet is built into the back of the shroud for connection to your exhaust system. *Exhaust fan is not supplied. 100 CFM min. exhaust required.*
9. Audible end of cycle beeper.
10. UV “ON” indicator and Sight Window.
11. Simple to operate: Set times, open door, pull out tray and place parts on tray. Slide tray in and close door. Audible beeper signals end of timing sequence for cleaning. Open door and remove totally clean parts.

## **DISCLAIMER**

All UVOCS models are warranted to produce Ultra-Violet energy in 185nm and 254nm ranges, and in a normal air atmosphere will produce ozone. The intent of UV/Ozone processing in UVOCS equipment is to remove trace organic contaminants from a variety of surfaces. However, organic species vary and any one species' characteristics depend on the processes and handling to which it has been submitted. Therefore, UVOCS Inc. cannot be responsible for the results of any specific cleansing situation.

## **WARNING**

### **Ozone and Ultra-Violet Light are dangerous to your health**

This Equipment generates Ozone and Ultra-Violet light. Allowable Ozone level for a time weighted average of 8 hours is 0.1 PPM. Excessive exposure to Ozone may be irritating and damaging to eyes, nose, throat and lungs. UVOCS models without OES (Ozone Exhaust Shroud) must be operated under and exhaust hood vented outdoors. Uvocs models with OES must be operated connected to a 100 cfm

exhaust (at the connection) and vented outdoors. Read the full instructions in the machine manual furnished with each unit.

Ultra-Violet light is dangerous to the eyes and skin. Turn unit off IMMEDIATELY if Ultra-Violet light stays on with the door open.



## UVOCS

Model Number

Source Size

Active Area

Width

Depth

Height

Depth -Tray Out

Sliding Trays

Construction

Power Requirements

Ozone Exhausts Shroud

Exhaust Port Opening

Required Exhaust

(at equipment - fan not supplied)

Timer

Audible End-of-Cycle Beeper

UV "ON" Indicator

## Model

T10X10/OES

10" x 10"

100 sq. in.

14"

23.75"

14.5"

33"

1

Cabinets and Trays: Stainless Steel

110V, 60Hz

5 amp Max.

These models have an exhaust shroud

3" Dia. on all models

100cfm

0-999 seconds/minutes/hours

Yes

Yes

## Model

T16X16/OES

16" x 16"

256 sq. in.

20"

29.75"

14.5"

46"

1

Cabinets and Trays: Stainless Steel

230V, 50Hz

2.5 amp Max.

These models have an exhaust shroud

3" Dia. on all models

100cfm

0-999 seconds/minutes/hours

Yes

Yes



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## UTILITIES FOR INSTALLING ALL MODELS OF UVOCS UV/OZONE CLEANING SYSTEMS

There are only two facility requirements needed for operating all UVOCS UV/Ozone systems.

- 1. Exhaust Requirement** – 100 CFM (cu. ft/minute) **MINIMUM, MEASURED AT THE CONNECTION TO THE 3 INCH DIAMETER NIPPLE** at the back of the machine.

Note: The exhaust fan must be sized according to the length of exhaust line needed.

Exhaust Line Materials: Most materials used in standard exhaust systems are acceptable bearing in mind that the exhaust from the machine has an ozone content of 1-4 ppm while the machine is operating. We recommend a dedicated exhaust line.

If the UVOCS exhaust is to be connected to a central exhaust system please check with your plant safety and maintenance people regarding interaction with other exhausted gasses or products in the exhaust system, again bearing in mind that the ozone content in the exhaust line from the UVOCS system is 1-4 ppm.

- 2. Power** – The equipment can be plugged into standard 110V 60 Hz or 220V 50 Hz power outlets depending on whether it is a 110V or 220V model.

Model T10X10/OES – 110V, 60 Hz is fused at 2.5A

Model T10X10/OES-E – 220V, 50 Hz is fused at 1.6A

Model T16X16/OES – 110V, 60 Hz is fused at 5A

Model T16X16/OES-E – is fused at 2.5A

Note: There are no other utilities required, such as oxygen, since atmospheric oxygen is used to generate ozone.

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