

Liquid Sugar and Thin Film Applications

ILLUMINATION “LS” SERIES



IL-LS SERIES

PRODUCT OVERVIEW

The “IL-LS” systems are manufactured in the United States and are designed to treat flows ranging from .25 to 150 gallons per minute (1 to 568 liters per minute).

The systems are specially designed to treat liquids in a thin film manner. Lamps are spaced close together to force the liquid to be exposed to high doses of UV energy.

The systems are designed to treat opaque and thick liquids, syrups with high osmotic pressure (brix 25-67), glucose, juices and other base materials.

While these systems have been used primarily for disinfecting liquid sugars, where microorganisms can exist in spore form and can reproduce once introduced into the food and beverage lines, they have been proved effective for treating fruit juices and pharmaceutical base liquids.

Systems are scalable and available with many options including PLC controls for integration into facility network.

CONTAMINATION MECHANISM

Liquid sugar can become contaminated at many stages of the handling process. By integrating a UV disinfection system, the plant can greatly reduce this risk.

- Incoming liquid sugar to the plant
- Storage tanks and air in tanks
- Process feed water

APPLICATIONS

- Food and Beverage plants
- Pharmaceutical
- Honey manufacturing
- Apple cider and other juices
- Enhanced waters
- Glucose based material
- Liquid sucrose
- Cosmetics
- Laboratories
- Photochemical reactions

STANDARD FEATURES

- 316L stainless steel vessel manufactured in USA
- Electropolished internal and external surfaces
- Removable heads
- Monitoring port
- Drain port
- Sample ports
- Sanitary fittings
- Remote Ballast Control Center (BCC)
- Energy efficient electronic ballasts
- Running time meter
- LED lamp status indicators
- 9,000 hour lamp life
- GE Type 214 quartz sleeve
- Anodized aluminum compression fittings

DATA REQUIRED FOR SIZING

- Flow rate
- Brix rating or sample of liquid
- Pipe sizing
- Cleaning and sanitization program

OPTIONAL FEATURES

- UV monitoring
- Hand Off Auto switch (HOA)
- Internal baffling
- Window kit
- High heat shutoff
- Shroud cooling
- PLC control

BENEFITS

- Non chemical method for controlling microorganism growth
- Reduces food discoloration
- Increases shelf life
- Helps maintain flavor
- Can create photochemical reactions
- Instantaneous kill
- Effective on a wide range of pathogens
- No heat treatment in processing
- No change in odor, color or taste
- No residuals left in liquids

SIZES

IL "LS" SERIES

UNIT NAME	GPM 67 Brix	LPM 67 Brix	INLET / OUTLET	WATTS	UNIT DIMENSIONS L x W x H	ELECTRICAL DIMENSIONS W x H x D
IL-LS-300-5	10	38	1" SANITARY	400	36 "x12"x12" 914x305x305	18 "x 18 "x 7" 457x457x178
IL-LS-300-12	35	132	2" SANITARY	960	36 "x12"x12" 914x305x305	18 "x 18 "x 7" 457x457x178
IL-LS-5000-12	75	283	3" SANITARY	2100	64 "x12"x12" 16264x305x305	18 "x 24 "x 7" 457x610x178
IL-LS-5000-20	100	379	3" SANITARY	3400	64 "x14"x14" 16264x356x356	30"x24"x10" 762x610x254
IL-LS-6000-16	125	473	4" SANITARY	5280	64 "x14"x14" 16264x356x356	30"x24"x10" 762x610x254

IL "LS" SERIES

UNIT NAME	VOLTAGE	AMP DRAW	# LAMPS
IL-LS-300-5	120 / 220 50/60 Hz	5	5
IL-LS-300-12	120 / 220 50/60 Hz	10	12
IL-LS-5000-12	120 / 220 50/60 Hz	15	12
IL-LS-5000-20	120 / 220 50/60 Hz	20	20
IL-LS-6000-16	230 50/60 Hz	25	16

THINFILM CUSTOM DESIGN

While we offer a full product line of liquid sugar disinfection systems, we are often asked to design custom units for laboratory testing.

The **IL-TF-5000-1** was designed to provide researchers and developers the ability to use a single lamp reactor in a laboratory setting.

The 60" unit uses a single 254 or 185 nm lamp and is used for small batch processing and product testing.



THINFILM LOW FLOW

For smaller flow rates, the **IL-LS-300-5** is designed to treat flows up to 10 gpm. The 30" unit uses five (5) UV lamps and has been installed in liquid sugar, apple cider, coconut water and other viscous solutions.

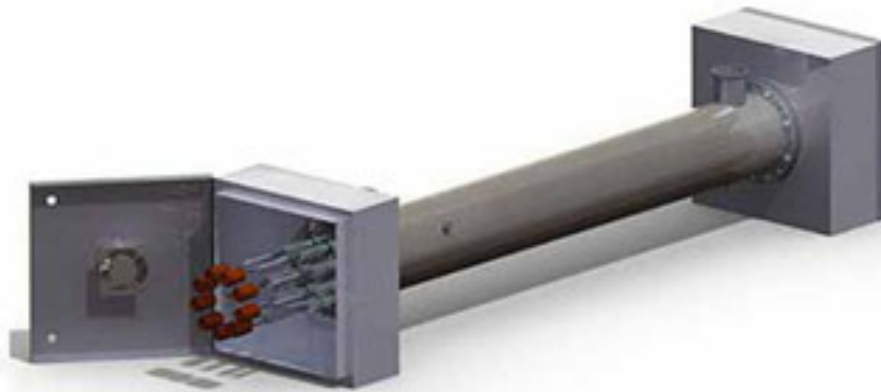


UV LAMP OPTIMIZATION

When designing UV disinfection systems, knowing the liquid's transmission (the amount of energy absorbing material) is critical to system design. Tap water can be as high as 95%, but most liquid sugars are closer to 0%.

The **IL-LS** systems were designed using computational fluid dynamics (CFD) modeling and biological testing. The "thin film" design forces the liquid into close proximity with the UV lamps.

In addition to battling the low transmission, many liquid sugar processing facilities heat the sugars to aid in handling. High temperatures will impact the UV lamp's output. The addition of cooling shrouds on the ends of the unit, ensures that the lamp temperature is kept at an optimal rate, which also protects the product.



TYPICAL PROCESS

- IL-LS-5000-12 (75 US GPM)
- Remote Ballast Control Center
- High heat shrouds
- Sanitary connections
- Drain port
- Sample ports
- Energy efficient electronic ballasts
- Running time meter
- LED lamp status indicators



IL-LS SERIES



TYPICAL PROCESS

- IL-LS-5000-20 (100 US GPM)
- Remote Ballast Control Center
- High heat shrouds
- Sanitary connections
- Drain port
- Sample ports
- Electronic ballasts
- Running time meter
- LED lamp status indicators