



Solutions for tomorrow

JIMCO®

UV-C & OZONE
Technology



CHEMICAL FREE

DISINFECTION

FLO-D® TECHNOLOGY

WHY CHOOSE JIMCO DISINFECTION TECHNOLOGY?

- ✓ Avoid time-consuming manual disinfection with water and chemicals.
- ✓ Save litres of water by the tons as well as energy for heating and drying.
- ✓ Disinfect more efficiently in corners, chinks and ventilation ducts, cooling coils and surfaces.
- ✓ Avoid strong chemicals, which have an impact on the environment and work environment.
- ✓ Avoid an environmentally harmful release of chlorinated waste-water.

Efficient disinfection – without manual procedures, chemicals or water

With the introduction of the UV-C-based disinfection of surfaces, we now add yet another field of application to our patented UV-C technology, which has been awarded the EU Environmental award and which since 1993 has been used in air cleaning – systems which i.a. are used for removing obnoxious smells, improving the indoor climate as well as reducing the danger of fire and infection.

The fact that it is now possible to disinfect surfaces, which would normally require a manual treatment, involves a large number of advantages for the operating economy, the environment as well as the work environment.

TEST OF JIMCO FLO-D® DISINFECTION EQUIPMENT BASED ON UVC/OZONE

Aim of project

To investigate the bactericidal effect of UV-C produced ozone on chosen bacteria strains that are regarded as relevant contaminants in the food processing industry. Furthermore, it was desirable to determine a setting for the ozone concentration and the time of exposure, in achieving the desired effect.

Experimental setup

The test was performed in a special designed ozone chamber, where the ozone concentration and the temperature were measured during the experiments. 10 µl of bacteria culture was applied on stainless steel plates and spread to an area of 1 cm². The bacteria culture was diluted in sterile milliQ H₂O to a concentration of 10⁵-10⁷ cells/ml. The steel plates were incubated at room temperature for one hour until the applied culture had dried out. The plates were then placed in the ozone chamber and exposed to various ozone concentrations for time point.

Bacteria survival was measured by washing the applied area on the steel plates with 2x50 µl 0.9 % NaCl, which was obtained and spread on agar plates for CFU determination by overnight incubation at 37 °C. As a reference, the CFU of bacteria applied on stainless steel that were not exposed to ozone, was also performed. The experiments were performed at room temperatures that did not exceed 23 °C during the experiments.

Conclusion

In these experiments, the largest effect was observed after two hours of exposure at 10 ppm. When the time exposure was reduced to one hour, or the concentration of ozone was lowered to 5 ppm, the reduction of bacteria was distinctively decreased. Furthermore, the effect of ozone was limited by the amount of bacteria applied on the steel plates.



When the level of bacteria exceeded 10⁵ bacteria per cm², the effect of ozone also decreased after two hours of exposure at 10 ppm.

However, with a reduction that is within the accepted range. Also, this amount of bacteria exceed the level of what would be representative of well-cleaned food production facilities, which is the premise for the application of the device.

Exposure time	Ozone concentration	Loaded CFU/cm ²	Control CFU/cm ²	Ozone CFU/cm ²	Reduction
2 hours	10 ppm	2,40E+03 (2400)	4,00E+00 (4)	0,00E+00 (0)	
		3,30E+03 (3300)	8,00E+00 (8)	0,00E+00 (0)	
		3,00E+03 (3000)	7,00E+00 (7)	0,00E+00 (0)	
			1,60E+01 (16)	0,00E+00 (0)	
	Average	2,90E+03 (2900)	8,75E+00 (8,75)	0,00E+00 (0)	100,00%
2 hours	10 ppm	2,00E+04 (20.000)	3,00E+00 (3)	0,00E+00 (0)	
		2,00E+04 (20.000)	1,40E+01 (14)	0,00E+00 (0)	
		2,00E+04 (20.000)	2,80E+01 (28)	0,00E+00 (0)	
			1,50E+01 (15)	0,00E+00 (0)	
	Average	2,00E+04 (20.000)	1,50E+01 (15)	0,00E+00 (0)	100,00%
2 hours	10 ppm	3,60E+04 (36.000)	3,00E+01 (30)	0,00E+00 (0)	
		2,20E+04 (22.000)	1,13E+02 (113)	0,00E+00 (0)	
		2,60E+04 (26.000)	3,40E+01 (34)	0,00E+00 (0)	
			5,90E+01 (59)	0,00E+00 (0)	
	Average	2,80E+04 (28.000)	5,90E+01 (59)	0,00E+00 (0)	100,00%
2 hours	10 ppm	3,60E+05 (360.000)	3,98E+02 (398)	0,00E+00 (0)	
		2,20E+05 (220.000)	2,85E+02 (285)	1,00E+00 (1)	
		2,60E+05 (260.000)	2,97E+02 (297)	0,00E+00 (0)	
			3,27E+02 (327)	3,33E-01 (0,33)	
	Average	2,80E+05 (280.000)	3,27E+02 (327)	3,33E-01 (0,33)	99,90%

FLO-D® MINI

TECHNICAL DESCRIPTION

FLO-D® MINI - Mark 2



UV-lamps: 8 pcs. 70 watt
Quartz sleeve: 8 pcs. (in cold storage)
Power supply EU: 1x230V + PE 50/60Hz, 10A
Power supply US: 1x115V + PE 50/60Hz, 10A
Consumption EU: 640 watt
Consumption US: 685 watt
Display: Proface PLC, color panel
Room-volume: Disinfection: Up to 314 m3
Odor treatment: Up to 1.258 m3

Mesurements:
Height: 1150 mm
Width: 560 mm
Depth: 890 mm
Weight: 59 Kg



Control Board

- ✓ Easy to maneuver from room to room.
- ✓ Disinfect all places where air are in touch.
- ✓ Access point for wireless connection by smartphone/tablet.
- ✓ All valued data is logged for later analytic use.



Ozone measuring unit



WIFI enables Ipad, tablet or Android device. (up to 5 pcs. is standard)



FLO-D®

TECHNICAL DESCRIPTION

FLO-D®

UV-lamps: 30 pcs. 89 watt

Quartz sleeve: 30 pcs. (in cold storage)

Power supply EU: 3x400V + PE 50/60Hz, 16A

Power supply US: 3x480V + PE 50/60Hz, 16A

Consumption: 9 kW

Display: Siemens PLC, Proface color panel

Treatment capacity: Roomsize up to 1,500 m³

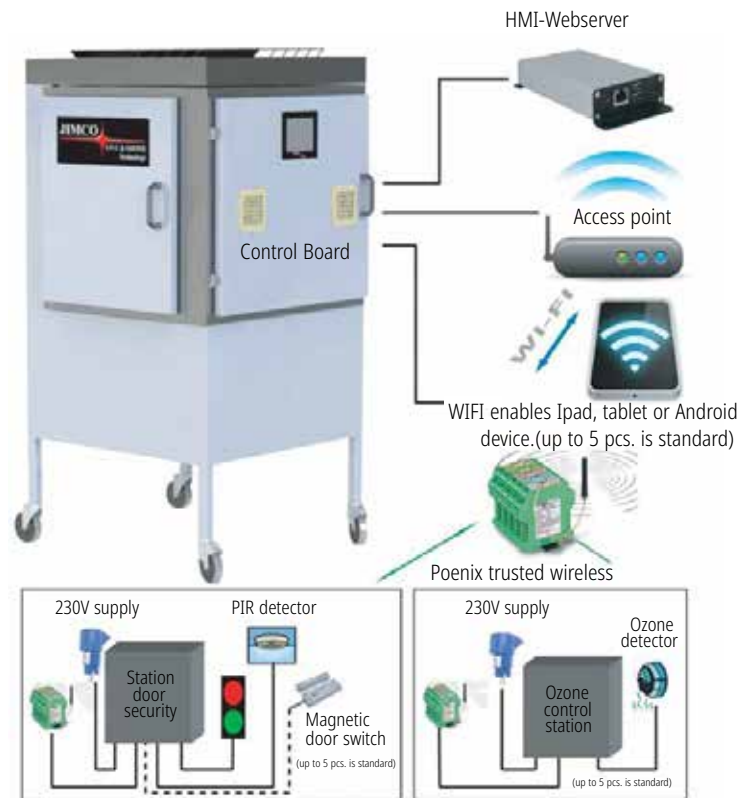
Mesurements:

Height 2,100mm

Width: 1,200 mm

Depth: 1,200 mm

Weight: 175 Kg



- Each entrance is monitored by a PIR sensor or magnetic door switch.
- There are warning lamps at each input. Status of ozone levels can be read via FLO-D's website outside the room with a handheld Web browser (tablet, Iphone etc.).
- All signals from the doors and ozone sensor handled wirelessly. However, all stations must have a 230V supply.
- Single-station and measuring stations come with up to 5 pcs. per installation by default, but it is possible to connect more.

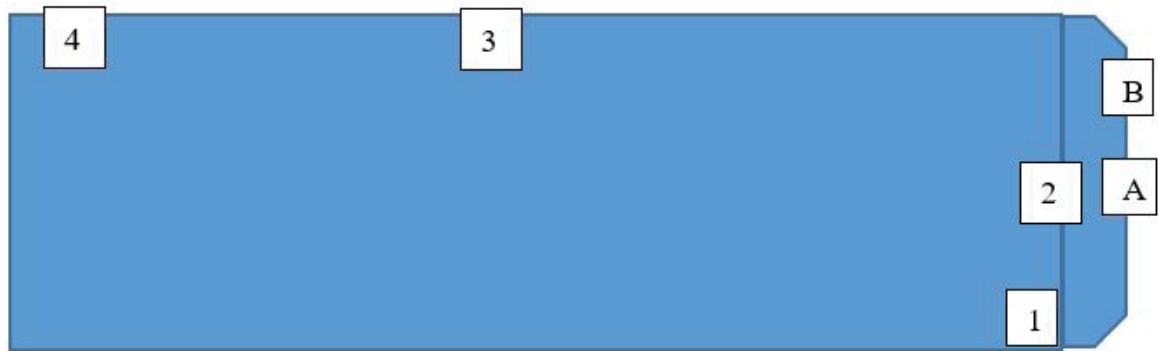
FLO-D® FIXED



COOLING TRAILER TEST

1. Ozone treatment in 3 hours with FLO-D mini would reduce the amount of organic matter in which bacteria thrive and reproduce.
2. That, without other means, we get an ozone flow through evaporating the unit, so that there is also a reduction of organic matter.
3. Reduction or removal of odors.

The FLO-D mini produces Ozone by draining the air in the room through the system's UV-C chamber where oxygen O₂ contained in the air is converted to ozone O₃. The ozone then blows out and spread into the room.



Position	Start ATP	15 seconds ATP	60 seconds ATP	Remarks:
1	2463	101	71	OK
2	2471	111	9	OK
3	2788	90	62	OK
4	1786	106	56	OK
A	1216	106	75	OK
B	1556	199	87	OK

There was a **SIGNIFICANT** reduction of fish smell after treatment, the trailer was left in the workshop overnight, which without ozone treatment usually means no one can keep the smell of fish out at the workshop and it is normal practice to pull chees / fishing trailers out at night.

Mini FLO-D settings: blower speed 80%, Ozone measurement upper ozone limit 9 ppm lower limit 8 ppm - hours ON - 03 hours 00 minutes.

COLD STORAGE

KILL MOULD, YEAST AND ETHYLENE

- No need to use so many resources to effectively clean your cold store.
- Avoid premature wastage of your precious fruits.

JIMCO A/S has performed tests and analysis, depicting significantly lower concentration of both mould and yeast when using the FLO-D®

SAVE MONEY

The shelf life of food has always played an important role. For example, ethylene, mould and yeast shorten the time in which the food stays fresh. In the fruit industry, among other places, mould and yeast growth is a tough opponent affecting product lifespan. FLO-D® (photolytic oxidation disinfection) will help revolutionize the way fruit is stored. The FLO-D® uses UV-C

Technology to kill the bacteria, mould and yeast in the cold storage, hence optimizing the lifespan of fruits.

Cleans within a few hours

One FLO-D® unit is capable of cleaning a cold storage room of up to 1,500m³ within a few hours.

TREATMENT WITH & WITHOUT UV-C PRODUCED OZONE

With ozone



Without ozone



Grapes

With ozone



Without ozone



Strawberries



Oranges



Tomatoes

DISINFECTION OF ROOMS, EQUIPMENT AND TOOLS

The fully automated JIMCO FLO-D® appliances are able to disinfect any room or processing unit. Gaseous ozone cleans the air and HVAC systems, resulting in mold, fungi and pathogen-free environment, eliminating the risk of cross contamination.

Ozone is a USDA Organic food treatment, thus can be used in premises where chemicals are not allowed or proven to be inefficient.

KEY ADVANTAGES

- ✓ Even disinfection from floor to ceiling and all nooks and crannies
- ✓ Immediate disinfection of eggs in storage - no cross contamination
- ✓ No harm to cuticle
- ✓ Increase hatching rates
- ✓ Decrease 7-day mortality rate
- ✓ No resistance or mutations against oxidation
- ✓ Regular use will result in 1> CFU throughout the facility
- ✓ Higher efficacy and bigger capacity than fogging systems (especially VHP)
- ✓ Sterilizing all tools and equipment in the room
- ✓ No storage of hazardous materials - ozone is produced on site
- ✓ No toxic residues - ozone naturally turns back to oxygen
- ✓ Low cost of operation
- ✓ No downtime after treatment



Absence of disinfection at farm or egg depot level puts great risk to table eggs which can spend 2-6-days before ending up in washing and disinfection at the processing facility.

Farm level infestation and cross-contamination in storages and trucking can result in possible pathogen outbreaks or egg recalls.

Mobile, "plug-and-play" JIMCO FLO-D® Mini appliances can disinfect eggs at all stages, already at farm level.

- ✓ PLC controlled units with datalogging, do not require additional manpower.
- ✓ Access point for wireless connection by smartphone or tablet.
- ✓ Loud alarm before treatment start – in 8 different languages
- ✓ New weekly treatment programme mode

TECHNICAL DESCRIPTION

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 Consumption EU: 640 watt
 Consumption US: 685 watt
 Display: Proface PLC, color panel

Temperature and moisture sensor
 Data logging for your surface disinfection

Room-volume:
 Disinfection: Up to 314 m³
 Odor treatment: Up to 1.258 m³

Mesurements:
 Height: 1150 mm · Width: 560 mm
 Depth: 890 mm · Weight: 59 Kg



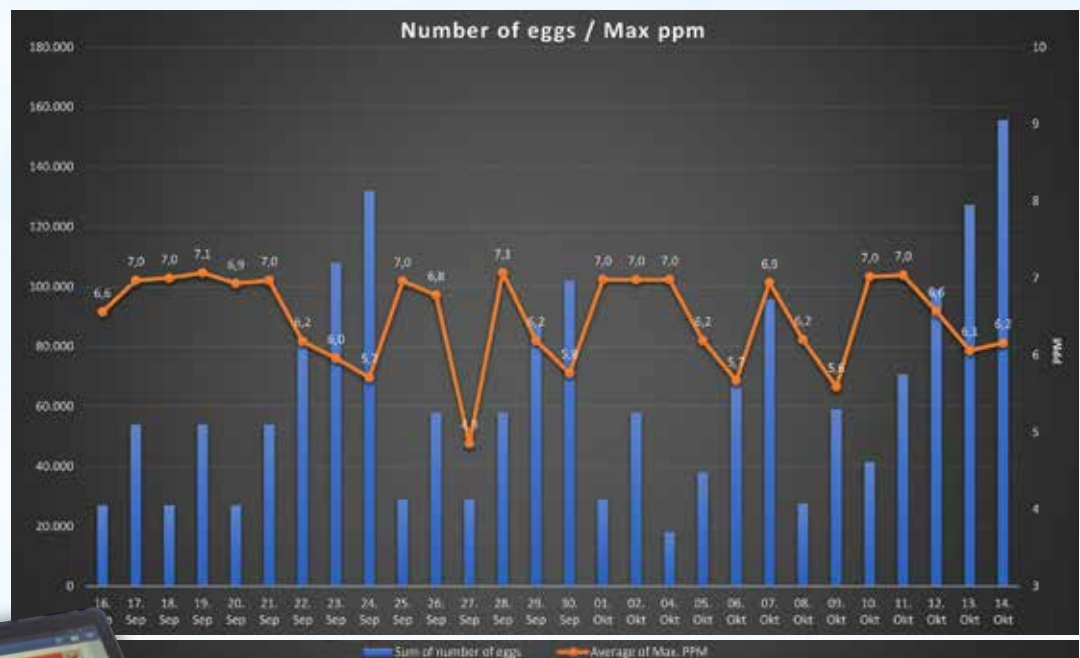
CHOOSING THE RIGHT DISINFECTION TECHNOLOGY IMPACTS THE PERFORMANCE

Completely eliminate darkling beetles, meal worms, mites, lice or bedbugs from your operations in as short treatment as 24-48 Hrs. After proper cleaning and drying of houses you can deploy JIMCO FLO-D® appliances which

will kill all pathogens, fungi and pest inside the house at all life stages. Cleaner air, lower ammonia to start with will also result in better bird performance.

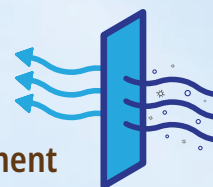
Date	Eggs	PPM level	Duration (minutes)	Disinfection cycle																	Total % disinfected	
27-08-2019	48.000	9,50	120	0,99	3,44	4,91	5,67	6,20	6,57	6,67	6,65	6,49	6,46	6,35	6,24	6,28	6,47	6,72	6,84	6,99	1,43	99,62%
28-08-2019	56.000	9,50	120	1,83	3,63	4,41	4,92	5,23	5,50	5,73	5,93	5,27	5,07	5,72	5,18	4,71	5,54	5,24	4,80	3,68	0,35	99,80%
29-08-2019	83.100	9,50	120	0,65	3,19	4,25	4,11	4,12	3,95	4,20	4,85	4,99	4,18	4,31	5,06	4,48	3,81	4,77	4,97	4,45	0,11	99,92%
03-09-2019	92.000	7,00	360	1,38	3,47	4,87	4,36	5,70	5,33	4,59	6,31	6,80	6,25	5,71	5,35	5,11	4,97	5,91	7,00	5,65	0,29	92,85%
04-09-2019	108.000	7,00	360	2,08	3,75	4,86	4,97	5,53	5,46	5,59	6,01	6,00	5,72	6,20	5,82	6,25	6,02	6,41	6,35	4,77		98,76%
05-09-2019	19.000	7,00	360	4,44	6,50	6,68	6,30	6,59	6,10	7,03	6,03	6,50	5,03	1,68	0,41							98,97%

Easy to maneuver from room to room.



- ✓ Avoid time-consuming manual disinfection with water and chemicals.
- ✓ Save litres of water by the tons as well as energy for heating and drying.
- ✓ Disinfect more efficiently in corners, chinks and ventilation ducts, cooling coils and surfaces.
- ✓ Avoid strong chemicals, which have an impact on the environment and work environment.
- ✓ Avoid an environmentally harmful release of chlorinated waste-water.

Compact and Powerful UV-C air cleaners and disinfection machines



Eliminating mold, fungi, viruses and bacteria up to 99.99 % for a healthier environment



Jimco OZ 1000 & OZ 2000 Air purifiers for sanitizing

Remove mold, fungi and odor with the effective OZ series UV-C Air purifier up to 99.84%

OZ 1000 & OZ 2000 creates fresh air by eliminating, mold, fungi, viruses and bacteria, and ensuring a healthy & safer and better indoor climate using UV-C and Ozone technology.

Even in a well-ventilated room, it may be difficult to remove nuisance such as mold, fungi bacteria and odors. This can be achieved without using chemicals, by using the OZ 1000 & OZ 2000 series



Jimco MAC500s the small and powerful UV-C air purifier for offices, clinics & homes

Documented effect on virus reduction up to 99.99%

A study from the Technological Institute in Denmark states that the Danish-developed air purifier **MAC500s** effectively reduces viruses from the air. In rooms where the air purifier is in use, the virus is reduced by 89 % already during the first hour. After two hours, the virus is reduced by 99 percent, and after three hours, the reduction is 99.9%.

convenient for

- Private homes
- Hotels
- Cooling rooms
- Meeting rooms
- Restaurants
- Fitness & Gym
- Supermarkets
- SPA

KPC frames with UV-C lamps installed in the hood



Jimco KPC A clean technology

The kitchen is clean, safe, confident and free of grease stains.

The **JIMCO system** is installed close to the source of pollution – directly behind the grease filters in the hood of the grill and fryers. The system utilizes UV-C and ozone technology to purify the air. The UV-C light breaks down the fat and grease molecules, and the ozone oxidizes the molecules throughout the ductwork. the result is environmentally purified air.

convenient for

- Hotel kitchens
- School Kitchens
- Fast food restaurants
- Hospital kitchens
- Food industry

Pump well Purifier



- 🌱 Waste water pump well
- 🌱 Flooding tanks
- 🌱 Drain water storage tanks
- 🌱 Water tanks

Industrial odor removal **FLO-K**

- 🌱 Rendering lines
- 🌱 Tannery process
- 🌱 Food production
- 🌱 Wastewater treatment
- 🌱 Feed mills
- 🌱 Petfood

Industrial grease removal **FLO-P**

- 🌱 Snack foods industry
- 🌱 Ready food industry
- 🌱 Pet foods



JIMCO®

UV-C & OZONE
Technology

JIMCO TECHNOLOGY USERS



FRIIS

Solutions for tomorrow



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