

JIMCO[®]

**UV-C & OZONE
Technology**

JIMCO's Kitchen Pollution Control (KPC)

**Documented Effect
Clean Ducts
Reduction of Bad Odors
No Bacteria Growth
Decreased Fire Risk
Environmentally Friendly**



About Jimco

Jimco specialises in UV-C & ozone technology and was established in 1993.

Jimco's kitchen pollution control systems (KPC) can be installed in almost any hood for the purpose of cleaning contaminated air resulting from the production of food.

The KPC systems has been tested by Force Technology who is certified to conduct Environmental Technology Verification (ETV).



The Challenge



Grease deposit on inspection door



Grease deposits inside hood

Brief overview

The special designed JIMCO lamps are placed in steel frames, which are installed behind the grease filters in the hood.

Exposure to intensive UV-C light and ozone oxidation causes contaminants in the air to be destroyed, resulting in the reduction of odour emissions to the surroundings and no grease deposits in the ductwork.



Pictures of different UV-C equipment



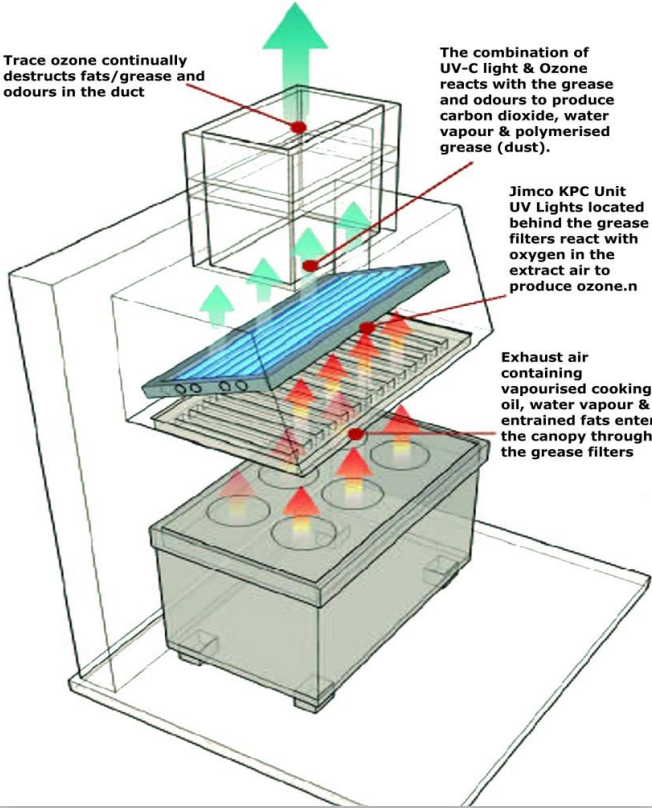
Typical Jimco KPC Canopy Unit

Trace ozone continually destroys fats/grease and odours in the duct

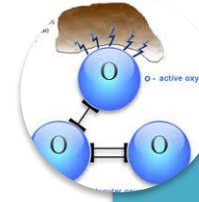
The combination of UV-C light & Ozone reacts with the grease and odours to produce carbon dioxide, water vapour & polymerised grease (dust).

Jimco KPC Unit UV Lights located behind the grease filters react with oxygen in the extract air to produce ozone.

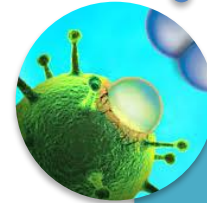
Exhaust air containing vapourised cooking oil, water vapour & entrained fats enters the canopy through the grease filters



The oxidized substances are removed through the duct system



The organic substances are oxidized



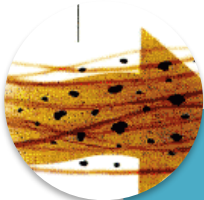
The Ozone combines with the organic substances in the air



The Oxygen converts into Ozone



The UV-C rays break down the organic molecules



The contaminated air passes through the KPC unit

The Process

Photolytic Oxidation

Photolytic oxidation is a combination of photolysis & ozonolysis

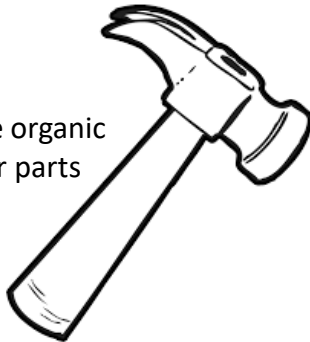
Photolysis is a process of photo-decomposition where the organic molecules (e.g. fat, grease and oil) are broken down by photons, when exposed to **UV-C light**.

Ozonolysis is the process of oxidation of the photo-decomposed molecule which when exposed to the **ozone** (produced by the lamps) is incinerated by means of **cold incineration**

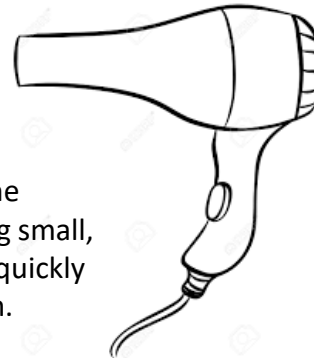
The photolytic oxidation process leaves no **volatile compounds**.

After combustion the waste product is water, oxygen and CO² & polymerized grease

UV-C light breaks the organic molecule into smaller parts



As a result of the molecules being small, the **Ozone** can quickly incinerate them.



Polymerized grease is 100 % biodegradable

Photolytic Oxidation



Benefits for McDonalds

Grease and fat reduction 75-85 %

- Eliminates the need of regularly cleaning in the hood as well as ductwork
- Clean ductwork results in improved exhaust efficiency : reduced power consumption from the fan
- Optimizing heat recovery thanks to clean air
- Decreased fire risk (In Denmark the insurance companies will give restaurant owners an insurance rate reduction if they install our system)

Odor reduction to the surroundings between 44-91 %

- Exhaust can be placed at street level
- No complaining neighbors
- Authorities allow restaurants to be located in areas that are sensitive to odor (Because of our documentation)

Clean environmentally friendly technology – No use of chemicals

No bacteria growth in hoods or ducts

Low operation and maintenance costs

Sparerib restaurant

Before



Sparerib restaurant

After



Without Jimco's Kitchen Pollution Control Systems



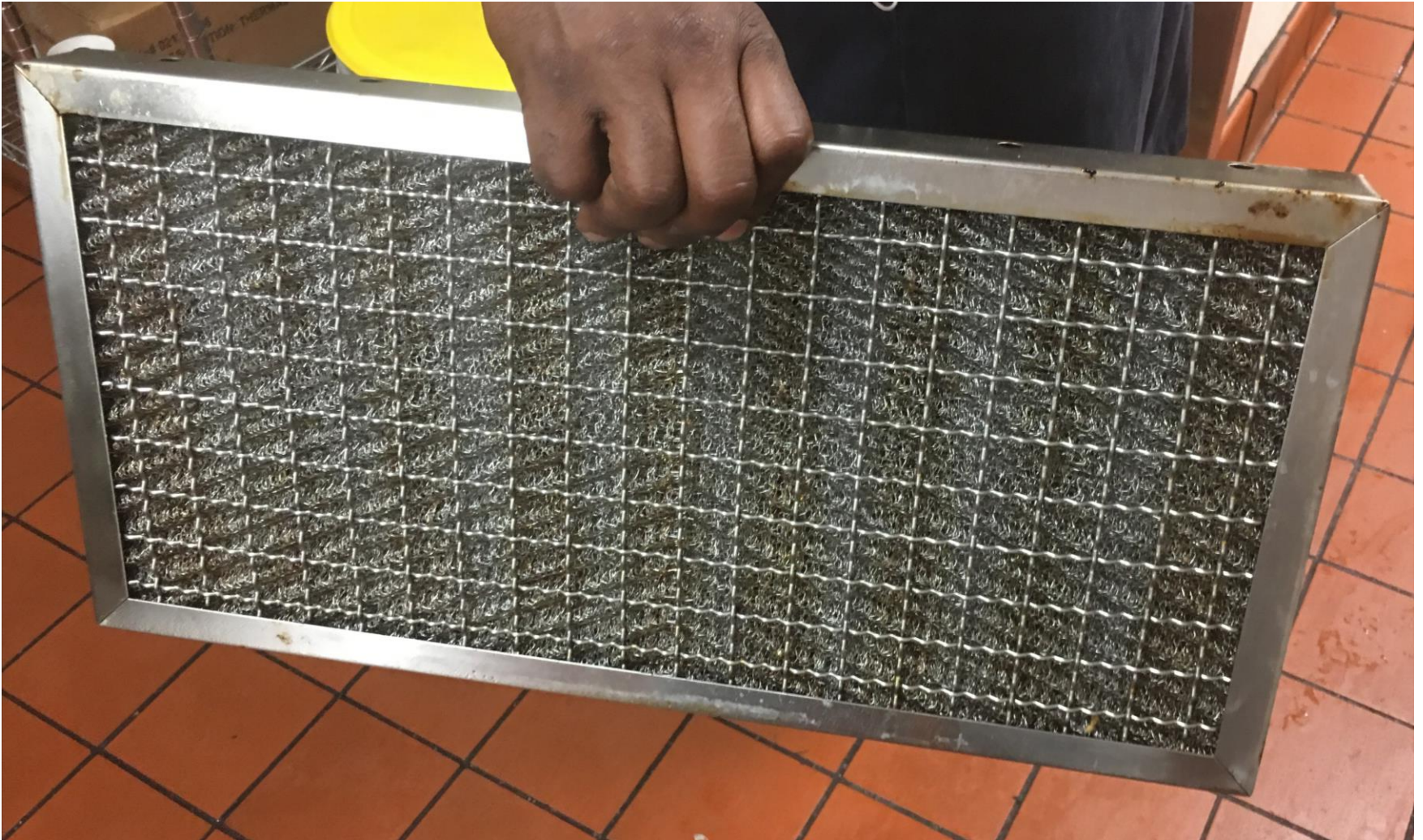
Commercial kitchen hood after 3,000 hours of
operation

With Jimco's Kitchen Pollution Control Systems



Commercial kitchen hood after 3,000 hours of operation

Fat and Grease Reduction Kankakee



McDonads Ducts

Comparison with JIMCO and without JIMCO



Without JIMCO's KPC

Grill duct not cleaned for 1 year



With JIMCO's KPC

Grill duct not cleaned for 3 years
and 2 months

McDonads Ducts

Comparison with JIMCO and without JIMCO



Without JIMCO's KPC

Grill inspection hatch not
cleaned for 1 year



With JIMCO's KPC

Grill inspection hatch not
cleaned for 3 years and 2 months

McDonads Ducts

Comparison with JIMCO and without JIMCO



Without JIMCO's KPC
Fryer inspection hatch not
cleaned for 1 year



With JIMCO's KPC
Fryer inspection hatch not
cleaned for 3 years and 2 months

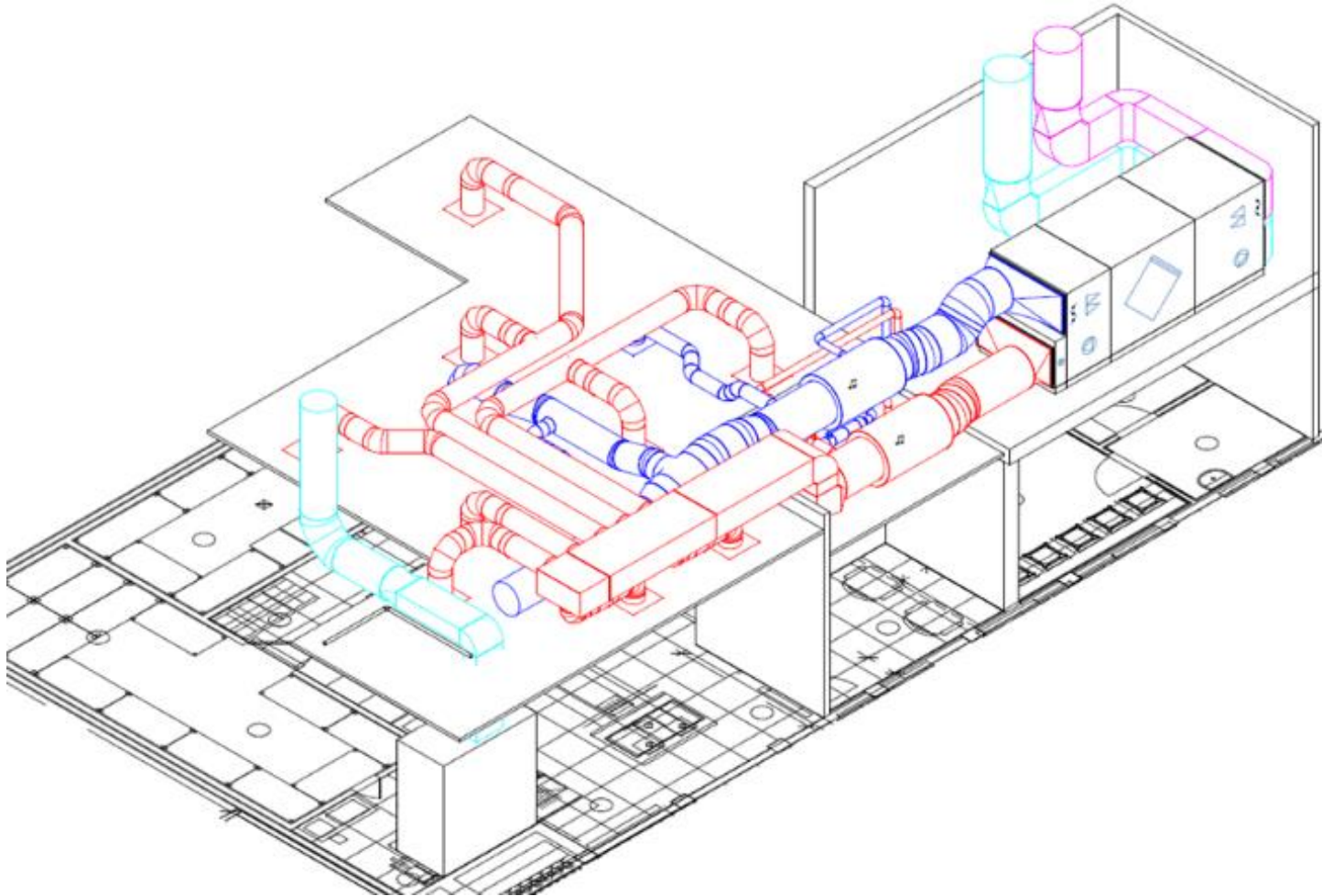
McDonalds Duct

The result

The duct has not been cleaned for 2½ year and the bag filter has not been changed for 1 year.



Heat Recovery



Comments from inside McDonalds

"Since implementing Jimco systems, it has not been necessary to carry out any cleaning"

"The best thing about Jimco products is that fire hazards are significantly reduced"

"We expect to achieve substantial savings on maintenance in the coming years"

"We have previously tested several ozone generators, but none of them were as efficient as the system from Jimco and the ozone from these systems will only blend with the air several meters inside the system, leaving the first part dirty. Furthermore, these installations are much more expensive to repair."

JIMCO[®]

UV-C & OZONE
Technology

Odor Reduction



Picture: Industriens Hus (House of Danish Industry)

The Installation



Before



After

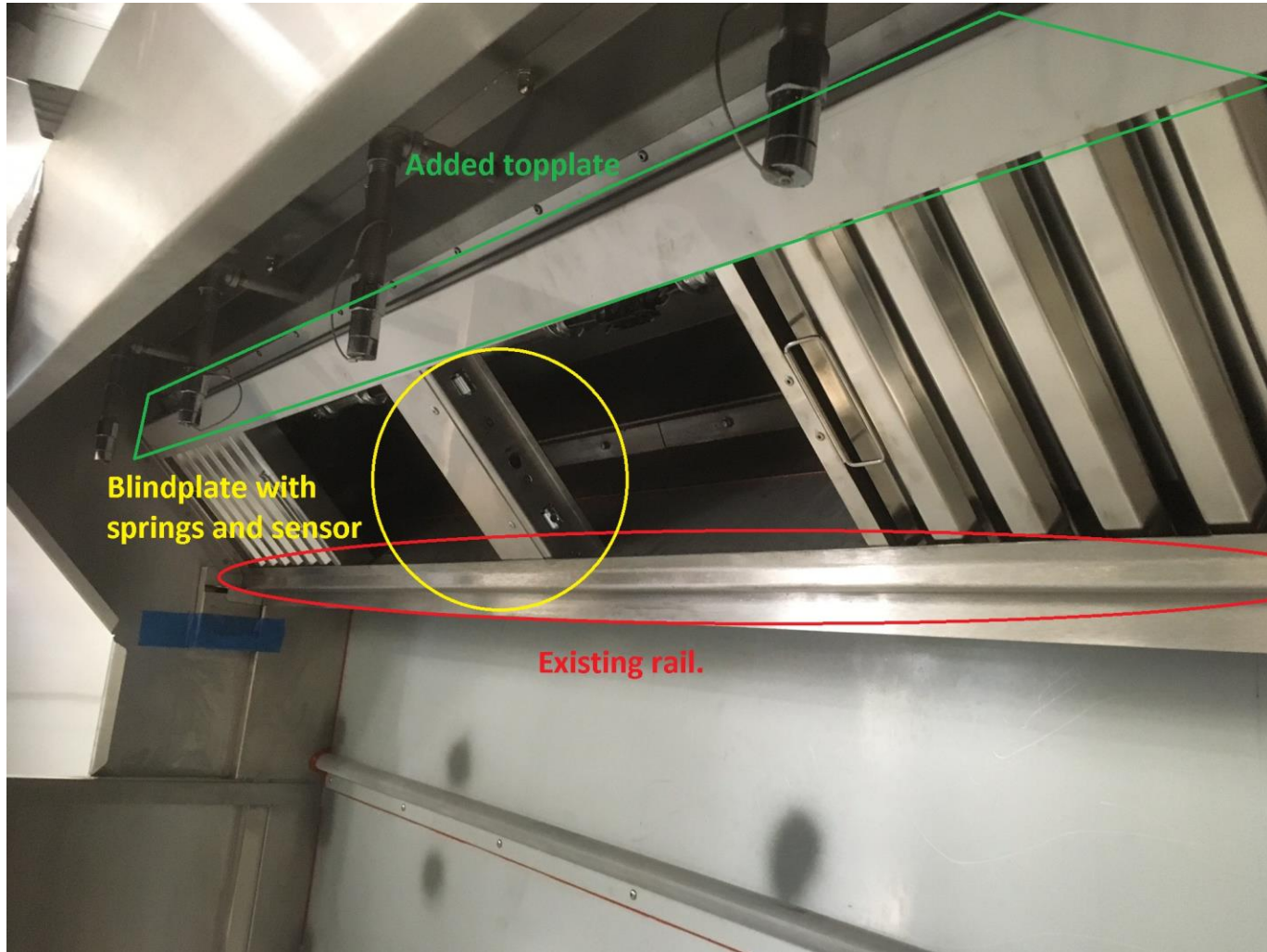
Before the Installation

Explanation

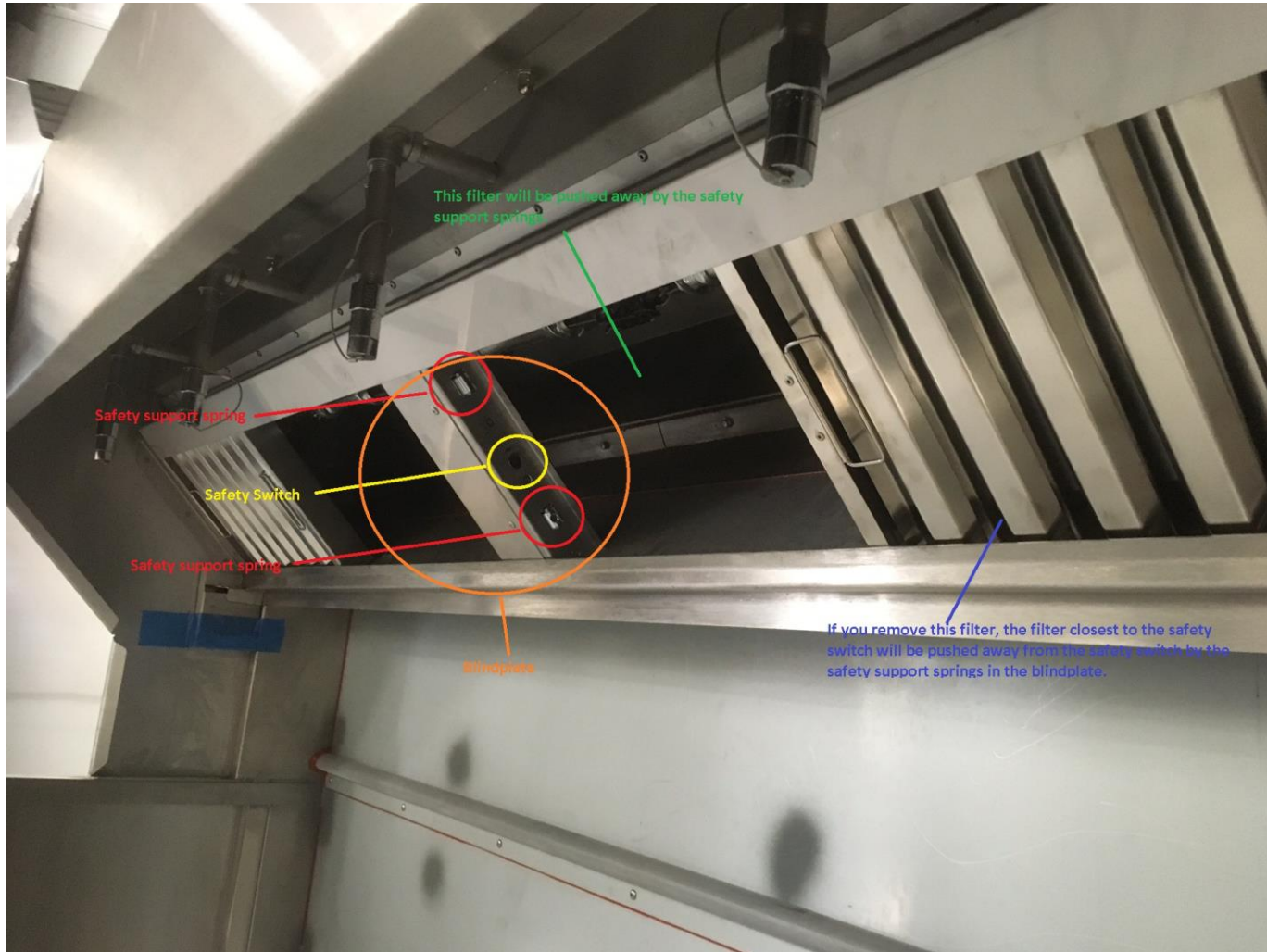


After the Installation

Explanation



After the Installation Explanation

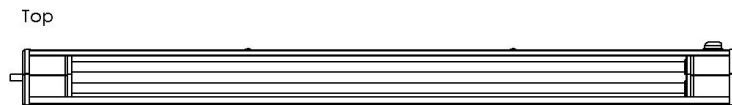
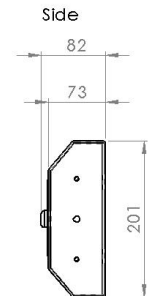
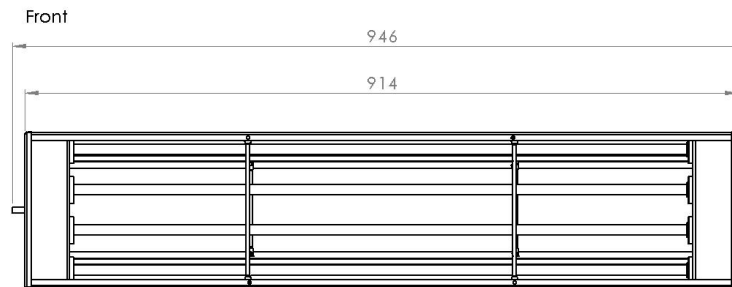
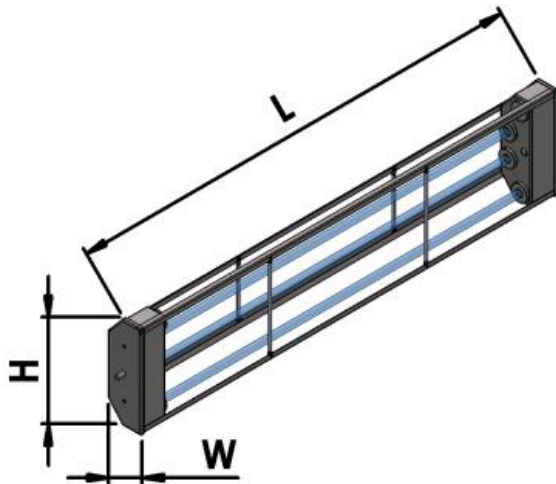


After the Installation Explanation



Frames HEX

- Developed specially for McDonalds
 - Ansul system
 - Space



Documentation

The **only UV-C** product in the world
with **ETV verification**

***Environmental Technology Verification (ETV)** is a new tool to help innovative environmental technologies reach the market. The problem at the moment is that many clever new ideas that can benefit the environment and health are not taken up simply because they are new and untried.*

Under ETV, claims about innovative environmental technologies can be verified – if the 'owner' of the technology so wishes – by qualified third parties called 'Verification Bodies'. The 'Statement of Verification' delivered at the end of the ETV process can be used as evidence that the claims made about the innovation are both credible and scientifically sound.

Source: <http://ec.europa.eu/environment/etv/>



Documentation

McDonalds: Denmark



Fat and grease reduction

- Grill: 85 % reduction depending on load
- Fryer: 75 % reduction depending on load

Odour reduction

- 44 % - 91 % reduction, depending on number of Odor Units (OU)
- The more load the higher % reduction



EU Environmental Award

In February 2000, JIMCO A/S received the **EU Environmental Award** for Cleaner Technology for the development of the:

Photolytic Oxidation System



Jens Voersaa Rasmussen

The Danish Engineers Society
Chairman of the judging committee



Kristian Smestad

The Danish Engineers Society
Secretary of the judging committee

Legislations

1. Croatia

- “and therefore the positive opinion was expressed about the mentioned system [Jimco’s KPC system]... is equally valuable as mechanical-chemical cleanings of range-hoods and exhaust channels in accordance with Article 27 of the Rules of Fire Protection of Catering Establishments.”

2. Chile

- January 1, 2019: New odor legislation in Chile
- If a citizen is complaining about a restaurant and the restaurant exceeds 5 OU, the authorities will shut down the restaurant.
- A typical McDonalds restaurant has between 2-3,000 odor units.
- The Jimco system is the only system in the world that guarantees to solve this.

3. USA

- Cleaning of the ducting, every 3 months, depends on the load e.g. McDonalds
- Inspected and controlled by third party
- Sweden
 - Inspection every 4 months and cleaning if necessary.
- Germany
 - Cleaning every 4-6 times a year (McDonalds)

Customers

UV-C AND OZONE SOLUTIONS FOR THE FUTURE.
EUROPE · SOUTH AMERICA · USA · ASIA · MIDDLE EAST · AFRICA

JIMCO TECHNOLOGY USERS

