"Dry" air treatment with ozone for restaurants and commercial kitchens

There are a number of technologies, methods and products for air treatment with ozone on the market. Knowledge makes it easier to use the right product for the right application.
Right Product for the Right Application

Ideal for medium sized to large restaurants and commercial kitchens.

- Up to 12,000 l/s per generator
- One generator services several hoods and kitchens
- Does not affect the SFP-value (Specific Fan Power)

Perfect for the smaller restaurant, snack bar or café

- Excellent for smaller flows (< 750 l/s)
- Easy to Maintain
- Low Investment Cost
High Performance Ozone Generator

A high cleaning capacity is required to get rid of fat and cooking odors in the exhaust air. Our experience is that greasy air flows require a high performance ICT-generator to meet the task. These products have previously only been available for the industrial market, but we can now offer their unique advantages to all restaurants and commercial kitchens.

Advantages of high performance ozone generators (ICT-series)

- High Cleaning Power
  One generator for up to 12,000 l/s (~43,000 m³/h)
- Central ozone system
  One generator can service several hoods and ducts
- Easy Installation
  Equipment can be placed outside the kitchen in another room
- Cost Efficient with Low LCC
  High performance ozone generator are less expensive with lower lifecycle cost (LCC) than air-fed ozone generators
- High reliability
  Thanks to water as refrigerant, well-tried design and tough requirements from the industry
- Easily placed
  Compact size (400x400x200mm / 15,7x15,7x 7,9in)
- Ozone Distribution through Hose/Pipe
  Easy and flexible to reach one or several injection points near the duct
- No feed-air
  High performance ICT-generator consumes minimal amount of air
- SFP-value is unchanged (Specific Fan Power)
  No pressure drop or air flow balance is affected in the ventilation system
- Quiet
  Below 50 dBA which is recommended for a healthy working environment

Diagram: Medium sized restaurant

Ozone can easily be distributed, from the ozone output of the ICT-generator, to several hoods. Higher cleaning capacity reduces both fat and cooking odors, and contributes to possibility of heat recycling and increased fire safety.

Diagram: Several kitchen installation, such as food court

A central high performance ICT-ozone generator can be expanded to service a complete food court, or several kitchens in the same building, even if they are on different floors.

Amount of ozone into each duct is regulated through valves.

The system can also be customized to shut down the ozone flow for different hoods, as well as controlling and supervision through the building’s central control system, or our O3Eye™.

Diagram: ICT-ozone generator for a medium sized restaurant

Safe and Secure Working Environment

Ozone treatment is an efficient and environmental friendly method which should be used responsibly. Our recommendation for installations is:

Pressure Switch
Use a pressure switch to shut down the ozone system if the ventilation fan is not operating, or if there is no flow (and pressure) in the ventilation duct.

Ozone Sensor
The sensor measures the ambient ozone levels continuously and shuts off the ozone system if they rise above recommended levels (0.1 ppm in Sweden). Ozone sensors are placed in kitchen and/or where the equipment is installed.

TIPS! Always ask for a unique NIST traceable calibration certificate for each ozone sensor unit.

Diagram of an ICT installation for multiple kitchens and/or food courts

Ozone Tech Systems’s monitoring system O3Eye™ can monitor operation parameters of all your ozone generators. It allows us to see the need of service before any malfunction, and respond in case of downtime.

Diagram: O3Eye™, “Always keepin’ an eye”

Our service organization gives you probably the markets highest functionality and availability. And peace of mind.

O3Eye™ features:
- 24/7 monitoring
  - Alarms from sensors, eg. ozone sensor, pressure/flow switch
  - Operation temperature
  - Ozone generator alarm outputs
- Alarm via SMS/E-post to our service department
- Less downtime – Malfunctions are detected immediately
- Faster service
- Possible to monitor peripheral equipment
- Possible to have tailor-made functionality

*Depending on model of ozone generator
Air-fed ozone generator

Air-fed ozone generators usually have lower capacity and ozone concentration and are therefore the optimal choice for smaller restaurants, cafés and snack bars with low air flows below 750 l/s, one hood and moderate fat load.

Advantages of air-fed ozone generators (FTX series)
- Simple engineering
  Connection to electricity and air duct is all that is required
- Suitable for smaller flows
  Suitable for kitchen hoods in smaller restaurants with moderate fat load
- Stainless steel
  All our ozone generators are manufactured in robust ozone-resistant stainless steel
- IP64 class
- Compact design
- Silent operation
  Below 50 dBA for a healthy work environment with low noise levels.
- Maintenance
  No polishing or cleaning the ozone element. The ozone module is easily changed at low cost
- Economical solution
  Perfect for the smaller kitchen
- Adjustable ozone production (0-100%)
  4-20 mA analogue control input

Clean Air Supply
Air-fed ozone generators are usually supplied with clean F7 filtered supply air.

- The air supply is usually consistent quality in terms of e.g. temperature and humidity.
- Place an air flow valve before the unit to adjust required fed-air flow through the ozone generator.
- The connection between the kitchen flue and ozone generator should be in ozone resistant stainless steel duct.

Outdoor Air-feed
In rare cases, when a clean air supply is not available, you can use filtered outdoor air as feed-air to an FTX ozone generator. The air should be F7 (or better) filtered before entering the ozone generator to reduce the amount of particles passing through the ozone generator.

- Known problems with this method are too low/high temperature and/or too high humidity in the air-feed which can result in operation disruptions.

Example of an Air-fed FTX Installation
You should also install a pressure switch on the duct for controlling the ozone generator. It is also possible, if desired, to connect the generator to an optional monitoring unit which can send alarms and operation status as well as for remote controlling.

For optimal odor and fat reduction we always recommend at least 3 seconds reaction time from ozone injection point to where the ventilation ducts are merged.

TIPS! For best result clean all ducts/flues before an ozone installation.

- FTX ozone generator
- Ventilation valve
- Pressure switch
- Ozone sensor (optional)

We always recommend an ozone sensor placed in the kitchen for monitoring purposes.

Clean Air Supply

Outdoor Air-feed

TIPS!

Warning
Avoid installing your ozone generator as the illustration to the right. This type of installation will not clean the most flammable part of the flue which is right after to the kitchen hood.