

**Nordstan**

A Mellifiq reference project



**The odors from the charcoal grill no longer disturb the offices**

**The Ozonetech Rena Pro ozone system enables up to 91.5 % odor removal**

**MELLIFIQ**

# Nordstan, Gothenburg, Sweden

*Nordstan is the main shopping mall in Gothenburg, Sweden's second largest city. Its central location, easy parking and variety of restaurants, cafes, shops and boutiques makes it one of the most visited malls in Sweden. In the mall and nearby there are also plenty of offices. When tenants complained that they were disturbed by odors, the mall management reacted swiftly and contacted us.*

## Facts

Name:	Nordstan shopping mall
Location:	Gothenburg, Sweden
Industry:	Restaurant, kitchen exhaust
Purpose:	Odor control
Performance:	72 % VOC reduction and 78 % odor removal
Air flow rate:	1,100 L/s

## Solution:

### Ozonetech RENA Pro B4

Dimensions (HxWxD):	800 x 600 x 1,800 mm
Input power:	2.3 kW
Noise level:	55 db

## The problem

One of the restaurants in the mall had been rebuilt recently to make place for a charcoal grill. The fumes had an intense odor and high grease content, disturbing the nearby offices when the wind was blowing towards them. With a ventilation flow rate of 1,100 L/s, the odor problem became significant, causing frequent complaints from

the office workers. In most kitchens, the air entering the ventilation contains odor compounds with low amounts of particles. Charcoal grills are a different story. The charcoal produces a lot of smoke and soot particles that protect the odor compounds from being treated. For this reason, charcoal grills are a very challenging task.

## The solution

To minimize the odor emissions, a Ozonotech RENA Pro™ ozone system was chosen. The plug-and-play installation was done in the back of the restaurant next to the ventilation ducts, out of sight from customers. The RENA system is mounted on a skid fitting half EUR pallet standard. The ozone is injected directly into the ventilation.

The high-performance and remote monitored RENA system is oxygen-fed and liquid cooled. This is the only way to produce large quantities of concentrated ozone stable over time – which in turn is the only way to continuously and automatically remove grease from kitchen ducts with an absolute minimum of maintenance. The HELS™ technology, our electrode-less technology for ozone generation, produces up to 30 % more ozone compared to traditional Corona Discharge techniques. In addition, RENA produces no dangerous by-products such as NO<sub>x</sub> and HNO<sub>3</sub>. The safety is high. In case of an ozone leak or low duct air pressure the ozone generator is automatically shut off.

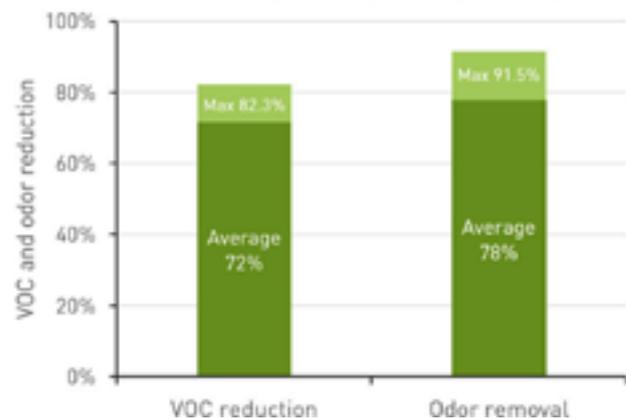


*The Ozonotech RENA Pro is skid-mounted and installed close to the ventilation duct where the ozone is injected. The operation is automatic and the installation includes closed-loop cooling system, oxygen concentrator, ozone sensors and remote monitoring.*

## Evaluation

The Ozonotech RENA Pro delivered as promised, showing an average VOC (Volatile Organic Compounds) reduction of 72 % and an average odor reduction of 78 %, with a maximum of 91.5 %. The performance was stable under various kitchen loads. Performance tests were done during both peak hours and low kitchen activity, ensuring reliable test results.

Thanks to the Ozonotech RENA Pro, people in the surrounding offices are not disturb by odors, even during high kitchen activity. Nordstan and the restaurant owner can trust that the investment for a long time will keep the surroundings free from odors coming from the popular charcoal grill restaurant.



# About Mellifiq

Mellifiq is a multi-awarded environmental service company group, that has since the early nineties evolved into a world leading system and solution provider with multiple groundbreaking applications for industrial, municipal, and real estate clients. We supply cutting-edge technologies to manage the most sophisticated air, water, and energy challenges.

Mellifiq offers a complete range of air and water treatment technologies and solutions across multiple industries such as processing industry, energy sector, food and beverage, pharmaceutical, wastewater treatment and commercial real estate.

Mellifiq offers strong and renowned brands, such as Ozonotech, Nodora and Water Maid, and world-class engineering services combined an excellent track record of more than 40 years of innovation. We help our clients achieve the most efficient and sustainable solutions while creating the maximum value for their businesses.

With several business units across Europe, Mellifiq is headquartered in Stockholm where research and development, production, QA and certification all take place. Our unique technology and our extensive expertise have made us the Center of Excellence for the world's most complex projects, and a global player with installations on all six continents.

Everyday millions of people rely on our solutions for ventilation, disinfection, sanitation, and odor control. We are committed to raising the bar for the concept of clean and the industry standard for engineering, technical services and general contracting.

For additional information, visit our website at [www.mellifiq.com](http://www.mellifiq.com)

# MELLIFIQ