



**KRISTALNA
IDEJA**

Innovation is life



CASE STUDY

Sophisticated, smart device *iTherapy 1* affects the reduction of the concentration of aerosol particles PM_{2.5}, PM₁₀, volatile organic compounds TVOC particles, formaldehyde HCHO.

- ✓ Harmony between ecology and industry achieved through smart system integration.
- ✓ Croatian patent and product.

ABSTRACT

Restaurant kitchens as well as areas for food preparation and washing are exposed to possible microbiological and chemical contamination. Microbiological contamination refers to various microorganisms, especially pathogens and their toxins caused by growth in and on food due to poor hygienic conditions. Chemical contamination refers to organic aerosols which, due to their toxicity, can adversely affect the health of consumers. Restaurants and other commercial kitchens are a major source of air pollution as such facilities have large amounts of oil and organic matter that are aerosolized and ventilated from kitchens in the form of exhaust gases. The emissions generated by cooking food in a restaurant are large, if not the main driver of the spatial variability of organic aerosols. It is therefore important that existing facilities introduce the necessary measures to ensure safe air quality to prevent any contamination.

THE CHALLENGE

The restaurant prepares quality food for the public dining room as part of the restaurant kitchen every day. They are fully aware of the fact that at all stages of production, processing and distribution, food needs to be protected from any contamination that could make it unfit for human consumption or harmful to health. For this purpose, a smart air purifier *iTherapy 1* was installed in the restaurant kitchen. Using an instrument for measuring air quality, the concentrations of organic aerosols were monitored. Most of the measurements were carried out during the morning,



Mesuring air quality inside restaurant kitchen!

Impact of air purifier iTherapy 1

- ✓ **concentration of aerosol particles PM_{2.5} reduced by 45%, PM₁₀ by 42%**
- ✓ **concentration of TVOC particles reduced by 32%, HCHO by 8%**
- ✓ **air quality improved by 37%**

The sophisticated, smart air purifier ***iTherapy 1*** has improved the overall air quality by 37% and thus influenced the elimination of chemical and microbiological contamination.

**iTherapy improving
quality of life**

and the air detector made it possible to accurately determine the concentration of organic aerosols. The ***iTherapy 1*** air purifier simultaneously detects the presence of organic aerosols, purifies and modifies the air inside the restaurant kitchen. It contains an integrated UV lamp, which contributes to the sterilization of indoor air. By using UV disinfection there are no harmful chemical compounds and by-products, and a high degree of elimination of microbiological contamination is achieved.

THE SOLUTION

To prevent the development of microbiological and chemical contamination, an ***iTherapy 1*** air purifier was installed inside the restaurant kitchen. The highest concentration of contaminant parameters was detected at food preparation desks. New air purification technology contributes to the rapid reduction of harmful volatile organic compounds (TVOC), aerosol particles (PM_{2.5}, PM₁₀) and formaldehyde (HCHO). The patented universal filter iTHE100 filters these particles by the adsorption process. When their molecules reach the filter, they stick to its specific surface by the adsorption process. With the work of UV lamps, ultraviolet rays with a wavelength of 265 nm are emitted into space. As various microorganisms, such as bacteria, viruses, slow molds pass through UV rays, their genetic damage occurs. The analysis of the results of the measurement of the total air quality and the air quality index AQI revealed the high influence of the smart air purifier ***iTherapy 1*** on the elimination of pollution. He reduced the concentration of PM_{2.5} aerosol particles by 45%, PM₁₀ by 42%. The concentration of volatile organic compounds was reduced by 32% and formaldehyde HCHO by 8%.

THE RESULTS

The test results showed a significant reduction in contamination within the restaurant kitchen. After installing the ***iTherapy 1*** smart air purifier, the measured values are within the standard permitted air quality parameters.

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