

Fresenius Kabi

A Mellifiq reference project



Complete pharmaceutical residue removal

**Fresenius Kabi uses ozone to completely
remove pharmaceutical residue from
their process wastewater**

MELLIFIQ

Fresenius Kabi, Uppsala, Sweden

Fresenius Kabi is a global healthcare company with about 40,000 employees worldwide that specializes in medicines and technologies for infusion, transfusion and clinical nutrition.

In Sweden the company employs 1,000 workers located in Uppsala and Brunna. In Uppsala the production focuses on the intravenous nutritional solutions and in Brunna the focus is egg phospholipids.

Facts

Name:	Fresenius Kabi AB
Location:	Uppsala, Sweden
Industry:	Pharmaceutical production
Application:	Industrial wastewater treatment
Capacity:	30 m ³ /hr with 10 ppm API
Purpose:	Removal of propofol
Performance:	Complete removal of 10 ppm propofol

Solution:

Ozonetech RENA Vivo C-series

Units:	3
Dimensions (HxWxD):	2625 x 1240 x 1600 mm
Input power:	5.5 kW
Noise level:	49 dB

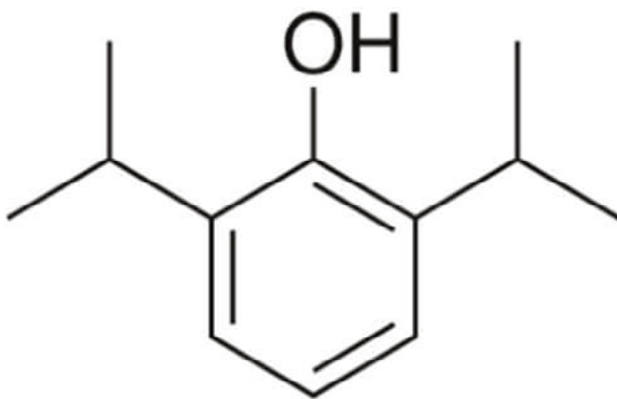
The problem

The active pharmaceutical Ingredient (API) propofol was present at concentrations above the allowed limits in the wastewater from the production site in Uppsala. Propofol is one of the pharmaceuticals that is extensively used for induction and maintenance of anesthesia. The compound is a very stable molecule, highly persistent

and there are difficulties breaking the compound down in the biological process in municipal wastewater treatment plants. This meant that Fresenius Kabi had to look for a new wastewater treatment method that efficiently removes propofol, due to local effluent requirements.

The solution

Fresenius Kabi turned to Mellifiq for an evaluation of the degradation of propofol using ozone. This resulted in a pilot scale project performed by Mellifiq at Mellifiq's facilities. The study showed 100 % removal of propofol and resulted in a full-scale offer based on the findings and assessment done in the pilot scale project.



Molecular structure of propofol.

The solution was a combination of Ultra Filtration (UF) and multiple turnkey Ozonetech RENA Vivo C-series ozone systems. The Mellifiq consulting team designed the solution to integrate the treatment equipment into the existing available space and pipe works.



3 Ozonetech RENA Vivo C-series, a solution designed by Mellifiq. The systems ozonates the process wastewater to effectively remove propofol.

Evaluation

Once again ozone has shown to be an effective method for removal of pharmaceutical residues and the propofol levels are now reduced and are below the requirements. The system was installed and successfully commissioned on site by our engineers. The performance of the system

is continuously monitored through an integrated ORP control system. The solution effectively removes more than 10 ppm propofol to zero levels. The wastewater is then safely discharged to the municipal wastewater treatment plant Kungsängsverket in Uppsala.

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

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