

# Water Purification

## We deliver:

- Optimization of flocculation and filtration processes
- Increased DOC<sup>1</sup> reduction
- Elimination of undesirable tastes and odors
- Reduction of hazardous chemicals and organic matter

<sup>1</sup>Dissolved Organic Component



## The Industry Challenge

The ultimate objective of drinking water treatment is to avoid any sanitary risks due to pathogenic microorganisms and dissolved pollution. Ozone, one of the most powerful oxidizing agents, is particularly efficient at killing germs including protozoan, which are resistive to other treatments. Additionally, ozone acts like a micro-flocculant to remove dissolved pollution.

If you're looking to insure a high quality, safe and reliable drinking water production, industrial gases can provide you with a truly effective solution.

## Your Solution

A comprehensive gas solution designed for and adapted to your specific needs, **Nexelia™ for Water Purification** combines the best of our gases, application technologies and expert support. As with all solutions under the Nexelia™ label, we work closely with you to predefine a concrete set of results, and we commit to delivering them.

**Nexelia™ for Water Purification** is an all-in-one gas solution, which consists of water ozonation in substitution for chlorine or other chemicals. Ozone is produced by electrical high voltage corona discharge in an oxygen-fed generator. Ozonated oxygen is dissolved into water inside a reactor. Ozone kills microorganisms by damaging their cell walls. What's more, ozonation of dissolved pollution creates polymers that enhance coagulation and are easy to filter out.

**Nexelia™ for Water Purification** optimizes ozone production from 3 mg/l up to 20 mg/l with dosage control and compact transfer reactor design.

## Your Advantages

### ▪ Less investment – smaller footprint

Pure-oxygen-fed ozone generators require a reduced footprint without any air compression and air treatment installation. Implementation is easier.

### ▪ Less maintenance – longer lifetime

Without any rotating parts (air compressor) and no pollution risk (air treatment) maintenance is easier too, and ozone generator lifetime is increased.

### ▪ Higher efficiency

Pure-oxygen-fed ozone generators reach higher ozone concentrations of typically up to 14%. The water ozonation reactor is more compact, which kills bacteria, germs and parasites in a short contact time of typically 5-15 minutes.

### ▪ Energy and flocculant cost savings

Pure-oxygen-fed ozone generators are 40% less power intensive as air-fed generators.

Ozonation of raw water is more effective than pre-chlorination to reduce filter effluent turbidities. It improves the water clarity and reduces the need for flocculant by 20% to 50%.

### ▪ Safe and environmentally friendly

Ozone is more effective against chlorine resistant microorganisms. And because ozone breaks down into oxygen rapidly, it dramatically reduces chemical consumption and eliminates health hazards associated with chemical by-products.

# Core Features

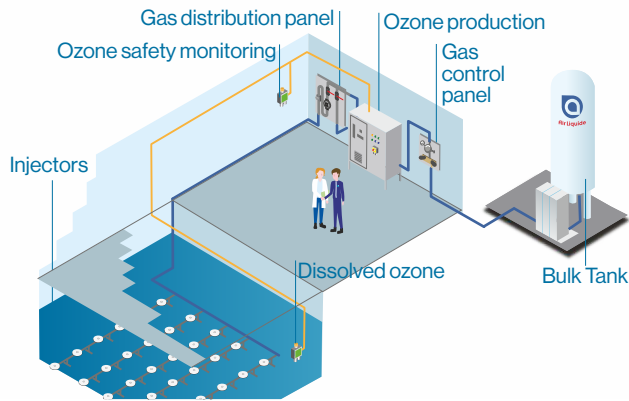
Nexelia™ for Water Purification consists of:

- **Oxygen (O<sub>2</sub>) supply:**

From liquid storage or in low-pressure gaseous state from on-site production generators.

- **Application technologies:**

The installation is made up of three different modules:



The equipment design is always based on pre-analysis that are carried out by ALTEC specialists to determine the optimal ozone dosage. Upon request we can provide the full package or the gas panels.

**You benefit from full support of our water treatment experts,** from the auditing of your current system capacity to the preliminary and detailed designs, as well as the complete implementation in just a few days, which includes commissioning, monitoring and maintenance.

# Case Studies

Case study #1: Surface water contaminated with organic constituents of soil (humic matter)

- **Customer need: water sanitation and micro flocculation**

- Destruction of all of the microorganisms
- Treated water flow: 90 000 m<sup>3</sup>/day

- **Our solution:**

- Water ozonation with an oxygen-fed generator at 10% ozone concentration
- Ozone production: 23 kg/h

- **Benefits:**

- Improvement of flocculation and filtration properties thanks to the formation of microflocs of ozone complexes
- Removal of seasonal algae peaks
- Elimination of undesirable tastes and odors

Case study #2: Municipal drinking water station

- **Customer need: water sanitation and metal removal**

- Destruction of all of the microorganisms
- Treated water flow: 430 000 m<sup>3</sup>/day

- **Our solution:**

- Implementation of an **OZONATION UNIT** with an oxygen-fed generator at 10% ozone concentration
- Ozone production: 60 kg/h

- **Benefits:**

- Oxidation of iron and manganese, and higher efficiency of granulated activated carbon (GAC) filtration to remove both oxidized metals.
- Elimination of hazardous by-products like trihalomethanes which are predominantly formed when chlorine is used to purify water for drinking.

# Related Offers

- **Nexelia™ for Groundwater**
- **Nexelia™ for Remineralization**

## Contact Us

Air Liquide Polska Sp. z o.o.  
ul. Jasnogórska 9, 31-358 Kraków  
tel.: +48 12 627 93 00  
fax: +48 12 627 93 33  
e-mail: [airliquide.polska@airliquide.com](mailto:airliquide.polska@airliquide.com)

[www.airliquide.com/poland](http://www.airliquide.com/poland)



The world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with approximately 67,000 employees and serves more than 3.7 million customers and patients.