



BIO-UV GROUP



Company profile

BIO-UV Group, one of France's most innovative small businesses was created in May 2000. It is **one of Europe's leading manufacturers of ultraviolet water treatment equipment for private and public swimming pool markets**. The **BIO-UV Group** designs, manufactures, and markets ultraviolet (UV-C) disinfection systems from its production site in Lunel, France. Since July 2018, **BIO-UV Group** is introduced on Euronext Growth stock exchange.

The management's experience in fields of medical equipment, water treatment, and engineering enables **BIO-UV Group** to provide state-of-the-art solutions in UV-C disinfection using the finest materials and the latest technology. **BIO-UV Group** has attained a place amongst the market leaders in just a few years and has had significant annual growth due to its **qualitative and competitive UV-C solutions**.

The Group currently employs almost 70 people and has one fully-owned subsidiary: **BIO-SEA**, manufacturing and marketing ballast water treatment systems.

BIO-UV Group is active in various activities such as:

- Water purification for domestic use in homes and towns
 - Solar panel powered drinking water
 - Waste water purification and waste water reuse, Industrial water treatment
 - Ballast water treatment for ships
 - Sanitation and chloramine removal for commercial pools and spas
 - Automatic non-chlorine water treatment for residential pools and spas
 - Water treatment for aquaculture, fish farms, ornamental ponds and fountains
 - Refrigeration tower anti-legionella treatment, hot water tanks anti-legionella treatment
 - Water treatment for industrial processes in all sectors and for all types of industrial use
- More than 50% of BIO-UV Group's turnover comes from Export to all the continents.**

Research and development engineering office

Day in and day out **BIO-UV Group's** engineers study and find solutions to new requirements with the **capacity of manufacturing specific UV-C reactors upon request**. The company permanently maintains ties with universities, laboratories, and research cells in order to address, develop, and validate optimal solutions for specific requests. **CFD (Calculation of Fluid Dynamics)** is part and parcel of our engineers' daily tools.

BIO-UV delivers

BIO-UV Group is **certified ISO 9001/2015** as well as obtaining **certifications from NSF, ÖNORM, and the French Health Ministry**. **BIO-UV Group** is also a member of the international cluster Pôle Eau for water and competitiveness, an association of water related companies in the Occitanie and PACA French Regions.

BIO-UV Group continues to pursue its path of progress and innovation in order to respond to all requests for Water Treatment throughout the world.

MARKET USES

Private pools and spas

The **BIO-UV** and **Delta UV** Residential ranges for private pools and spas offer an automatic chlorine-free water treatment. More than **100 000 swimming pools or spas owners** are already **benefitting from better quality and safer water**.



Commercial pools and spas

Chloramine Removal using the **BIO-UV** Medium Pressure and Low Pressure multi-lamp ranges are capable of treating **1 to 1000 m³/h**. With a view towards **sustainable environment**, these UV-C reactors considerably reduce chloramine levels while safely sanitizing and treating the water. The return on investment is relatively fast due to **substantial savings in water renewal**.

Domestic and municipal drinking water

UV-Home, IBP+/IAM/DW Ranges

All of these units safely allow delivering potable water to homes and communities from 1 to more than 1000 m³/h.

They **guarantee water purification** from wells, and, drillings as well as treating rain water for reuse in sanitation.



Solar powered drinking water

BIO-UV Group patented a free-standing solar powered unit for drinking water call the **BIO-SUN**. This drinking water post filters and sanitizes drinking water and is powered with a photovoltaic panel. It is easily carried and can be set up anywhere in the world. **One BIO-SUN unit can produce enough drinking water for 100 to 200 people**.

Aquaculture, fish farms, aquariums, and ponds

Our ranges of 316L **stainless steel** or **HDPE** ensure a perfect water quality. Used in fresh- or sea-water these UV-C reactors answer the needs of professionals and end-users guaranteeing healthy water for the aquatic life. These units treat flows ranging from **0.5 to 1000 m³/hour**.



MARKET USES

Industrial processes water treatment and ultra-pure water

BIO-UV Group manufactures the **IBP+** and **PHARMA** lines of reactors for sanitizing water in Industrial processes and for the ultra-pure water treatment for pharmaceutical, medical, cosmetic, and agricultural industries.



Ship ballast water treatment

BIOSEA www.ballast-water-treatment.com



In 2012 under the auspices of the International Maritime Organisation for Ballast Water Treatment (IMO Convention) **BIO-UV Group** developed and patented the **BIO-SEA**. This is a complete Ballast Water Treatment System combining filtration and UV-C sanitation. **BIO-SEA** treats flows from **10 to 2000 m³/h**. **BIO-SEA systems are IMO and USCG type approved** and are able to provide BWT solutions for ships operating worldwide.

Waste water treatment and Reuse water

BIO-UV developed the **IAM** and **RW** ranges of UV-C reactors for tertiary treatment and sanitation of municipal waste water. They are also used for Industrial water and for reusing grey water. They protect the environment after the treatment stations and can also **reuse the treated waste water for farm irrigation**, parks' watering... This use of UV-C is in the process of being used more and more everywhere due to the increased demands.



Prevention of legionella

On **cooling towers** or in **hot-water networks**, **BIO-UV** offers a preventative treatment against Legionella safeguarding the installations. With UV-C treatment, it is possible to avoid using, or at least reduce the use of chemical products.

BIO-UV'S advantages

The **BIO-UV Group** has already installed up to **150 000 units throughout the world** and has never stopped innovating to find solutions to new market uses. Many options are available: UV-C sensors, lamp intensity monitors with alarms, manual or automatic quartz- cleaning mechanisms, power regulators, special inlet and outlet configurations...



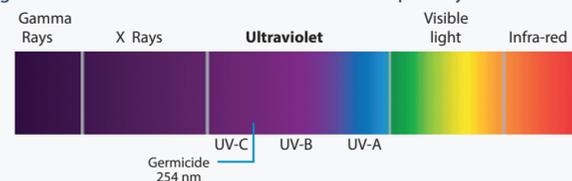
UV Water Treatment



UV-C LIGHT THAT DISINFECTS

About UV light

The sun emits an invisible light known as ultraviolet rays. This natural phenomenon is reproduced within BIO-UV Group's light chambers, using powerful lights **incorporating the latest technology** that emit UV-C rays. 254 nanometers is the optimum wavelength for inactivating micro-organisms (viruses, bacteria, algae, yeasts, mold); UV-C light penetrates to the heart of the micro-organisms' DNA and disturbs the metabolism of the cells. All the germs are thus inactivated (including legionella and cryptosporidium) and can no longer reproduce. Concerning the removal of chloramines special UV-C lamps are designed to produce a larger variety of lightwaves that are more effective at irradiating tri-chloramines which are known to cause respiratory ailments.



The effective dose

The UV dose is equivalent to the UV energy that the living micro-organism has to absorb to be inactivated. The table below shows the UV-C dose levels (expressed in millijoules (mJ) /cm²) required to **eradicate 99.9% of the micro-organisms**.

BACTERIA	UV-C DOSES
Bacillus Anthracis	8,5 mJ/cm ²
E.Coli	10,5 mJ/cm ²
Legionella Pneumophila	6,9 mJ/cm ²
Salmonella enteridis	9 mJ/cm ²
Streptococcus Faecalis	10 mJ/cm ²
ALGAE	
Chlorella vulgaris	22 mJ/cm ²
PROTOZOA	
Cryptosporidium	16 mJ/cm ²
VIRUSES	
Hepatitis	8 mJ/cm ²

The advantages

- A concept that reduces the use of chemicals
- Respect for the Environment and Ecologically Sustainable Solutions
- A simple physical principle: no by-products or overdosing
- Can be used in combination with other water treatment products
- Reasonable costs for purchase and maintenance
- Easy, quick, and modular installation

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