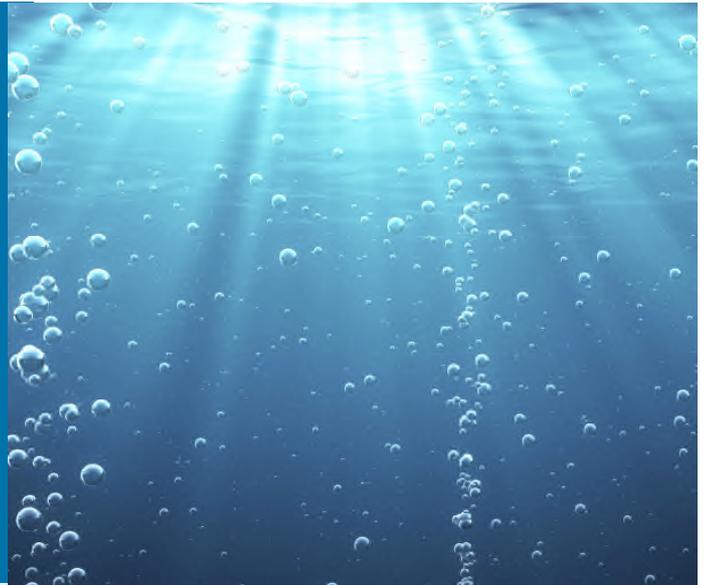


nexelia

for Biological Treatment

WE DELIVER:

- UP TO 50% CAPACITY INCREASE
- UP TO 25% OPEX SAVINGS
- REDUCED CAPEX
- REMOVAL OF FOAM AND ODORS



The Industry Challenge

Water-waste treatment has become a major concern. In some regions, water is scarce, and environmental protection is a growing necessity. As a result, the industry needs reliable, cost-effective technologies to comply with today's strict regulations regarding waste-water discharge.

If you're looking to boost your plant capacity, optimize operating costs, or resolve various foam and odor issues, industrial gases can provide you with a truly effective solution.

The Nexelia Solution

A comprehensive gas solution designed for and adapted to your specific needs, **Nexelia for Biological Treatment** 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 pre-define a concrete set of results, and we commit to delivering them.

Nexelia for Biological Treatment is an all-in-one gas solution, which consists of introducing pure oxygen into biological basins for the respiration of bacteria (activated sludge) which digest biodegradable pollution. Advanced gas injectors are used to dissolve oxygen in the waste water.

Nexelia for Biological Treatment is suitable for municipal or industrial waste-water treatment plants.

Your Advantages

- **CAPACITY INCREASE**
Pure oxygen dissolves better in water than in air. Therefore, using pure oxygen can increase the capacity of a waste-water treatment plant by up to 50%.
- **OPEX SAVINGS**
The total power consumption required to transfer pure oxygen in water is reduced by 50% compared to air. Operation and maintenance costs are 25% less.
- **REDUCED CAPEX**
Implementing pure-oxygen technology makes it possible to reduce the size of a new waste-water treatment plant or increase the capacity of an existing one. Additionally, better oxygen dissolution allows for nitrification (ammonia oxidation) in an existing aeration tank
- **NO FOAM**
The oxygenation of the biological flock is enhanced when using pure oxygen. Filamentous bacteria are eliminated and the flock is more compact. Sludge settling improves without any foam and sludge flotation at the surface of the secondary clarifier
- **NO ODORS**
There is no dissolution of nitrogen from the air when dissolving pure oxygen. The stripping of light and volatile compounds that generate odors are almost totally eliminated.

Core Features

Nexelia for Biological Treatment consists of:

- Oxygen supply:** from liquid storage or in low-pressure gaseous state from on-site production generators. Oxygen requirements are calculated to ensure optimal biological activity in compact basins or lagoons. Both exogenous respiration of sludge (to ensure the digestion of biodegradable pollution) and endogenous respiration (to ensure bacterial metabolism) are taken into account.
- Oxygen injection in-house equipment**
OXY INJECTOR-VENTOXAL: immersed pumping and venturi transfer system designed for treating varying levels of pollution and typically more than 6 meter deep basins.



OXY INJECTOR-TURBOXAL: floating turbine mixer transfer system designed for treating low bio-degradable pollution and typically shallow basins or lagoons between 2 and 6 meter in depth.



Both systems are installed quickly and easily. They are mobilized with a crane. Power control cabinets and gas cabinets are placed closely to the basins. A monitoring system using a dissolved oxygen sensor can optimize the oxygen quantity which is transferred to the waste water.

You benefit from full support of our water-treatment experts, from the auditing of your current aeration system's 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 Study

Industrial waste-water treatment plant:

- 10 t COD¹/d difficult to bio-degrade
- 4 m water deep basin of 20,000 m³ with fine-air bubble diffusers

STEP 1: OPEX savings

- Objective : 25% reduction in operating expenditures

| Solutions | Solution with air | Solution with pure oxygen | Savings |
|---------------------------|--|---|--------------|
| Technical solution | 3 pressure boosters of 11,000 m ³ /h incl. diffusion systems to be replaced every 5 years | 3 pressure boosters of 5,000 m ³ /h + 4 OXY INJECTOR-TURBOXAL 200 without any replacements (yearly maintenance only) | |
| Energy consumption (MW/y) | 3,100 | 1,500 | 1,600 |
| Operation cost (€/y) | 180 | 160 | 20 |
| Maintenance cost (€/k) | 300 | 200 | 100 |

STEP 2: Capacity increase with reduced CAPEX

- Objective : 50% more waste water to treat

| Solutions | Initial solution with air | Solution with air | Upgraded solution with pure oxygen | Savings |
|---------------------------|--|--|---|--------------|
| Technical solution | 3 pressure boosters of 11,000 m ³ /h incl. diffusion systems to be replaced every 5 years | New basin of 10,000 m ³ incl. settling tank and 2 pressure boosters of 11,000 m ³ /h | No new construction 2 pressure boosters of 5,000 m ³ /h + 6 OXY INJECTOR-TURBOXAL 200 | |
| Energy consumption (MW/y) | 3,100 | 4,650 | 2,250 | 2,400 |
| Operation cost (€/y) | 180 | 270 | 230 | 40 |
| Maintenance cost (€/k) | | 10,000 | 1,000 | 9,000 |

Related Offers

- Nexelia for Enhanced Biological Treatment**
- Nexelia for Advanced Oxidation**

Contact Us

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¹ Chemical oxygen demand (COD) is a measure of the capacity of water to consume oxygen during the decomposition of organic matter and the oxidation of inorganic chemicals such as ammonia. COD measurements are commonly made on waste water or natural water contaminated by domestic or industrial wastes.