Technical Dossier

Founded in 2009, AERIS TECNOLOGÍAS AMBIENTALES S.L. is a spin-off of the Autonomous University of Barcelona constituted by experts of the GENOCOV research group.

AERIS was born with the aim of helping industries and public entities to improve the environmental quality of their liquid and gaseous effluents by means of state-of-the-art treatment technologies.

The AERIS team has vast experience in the design of industrial installations, process engineering and technologies for the purification and energetic seizing of gases and liquids.

AERIS has numerous national and international references in a wide range of sectors, which has allowed to consolidate our prestige and to generate experience and knowledge that allows us to guarantee the constructive and operational quality of our products.

GAS TREATMENT

DEODORIZATION

The different bioreactor models developed by AERIS are, compared to the equivalent traditional technologies, a highly reliable and economical alternative.

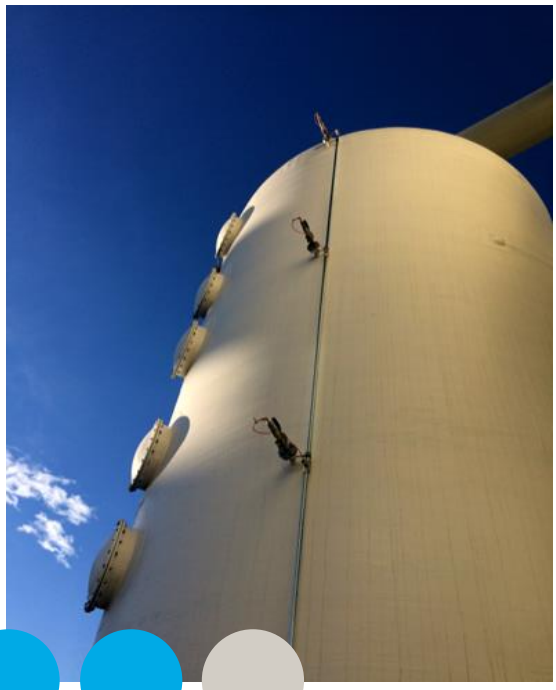
In addition to the design and implementation of *ad hoc* systems, AERIS offers the possibility to retrofit existing chemical scrubbers, thus increasing efficiency and reducing costs.

Biological deodorization processes have numerous advantages over traditional alternatives, such as:

- High operating savings
- Stable efficiency >99 %.
- Zero (or minimal) chemical reagent requirement
- Minimal or zero consumption of tap water
- Zero production of secondary contaminants
- Minimal maintenance

VOCs REMOVAL

Due to the complexity of most Volatile Organic Compound (VOC) emissions, each problem must be evaluated individually. AERIS comprises experts with vast research and industrial experience who are trained to assess each specific situation and to design the most appropriate treatment technology for each case.



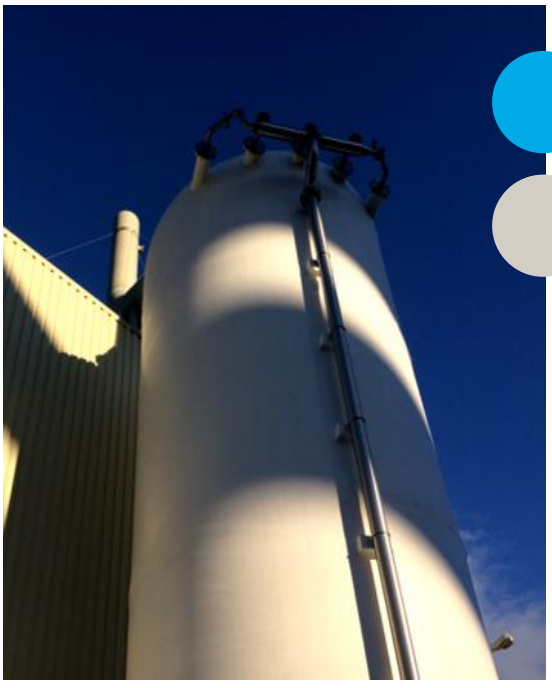
The systems offered by AERIS include several models of conventional biofilters, biotrickling filters and bioscrubbers.

AERIS also offers hybrid systems, which combine biological and physical-chemical processes.

In addition, it is possible to convert physico-chemical systems into biological systems, which are more economical and efficient.

These systems guarantee sufficient treatment efficiency to meet legal requirements at a minimum price and with very low footprint, electricity and reagent requirements.

All our equipment has been tested in a wide variety of industrial installations, always with optimum performance.



BIOGAS DESULPHURIZATION

AERIS designs and commercializes several models of biological systems for the treatment of H_2S from energy-rich gases, such as biogas.

For any of these systems and processes, removal efficiencies above 99% and minimum maintenance costs can be guaranteed.

Some advantages of these processes are:

- Treatment efficiency > 99%.
- Minimal consumption of chemical reagents
- Packing material durability > 15 years
- Improved control of the oxygen supply, eliminating explosion risks
- Minimal maintenance
- Possibility of recovering the extracted salts

WATER TREATMENT

COD REMOVAL

In AERIS we develop biological, physico-chemical and combined systems that allow for the efficient and economic treatment of liquids with high organic matter loads and/or slowly biodegradable organic matter.

Our technologies lead to effluents with a minimum organic load and, often, an energy-rich gas.

Improvements achieved in previous projects include:

- Substantial increase in COD removal
- Reduced operating costs
- Low-cost incorporation of a nutrient removal process in COD treatment systems
- Conversion of effluent to biogas, with its corresponding energy recovery
- Increased process automation
- Removal of highly recalcitrant or inhibitory compounds
- Effluent discoloration
- Development of unified waste management models

WATER TREATMENT

WASTEWATER REUSE

AERIS has extensive experience in research, development and industrial application of technologies for the elimination of pollutants from domestic and industrial wastewaters. Each of our technologies is designed based on the specific needs of the client, seeking maximum efficiency and minimum costs.

The final objective of these processes is the production of treated water with sufficient quality to be used in accordance with the requirements of current regulations.

WATER TREATMENT

BIOLOGICAL TREATMENT OF NUTRIENTS

AERIS has several specific products for the removal of nitrogen and phosphorous compounds from wastewater. These systems have been developed on the basis of the company's intense research activity.

Among others, AERIS exclusively markets the patented ANFIBIO® process, developed by experts at the Universitat Autònoma de Barcelona. This process allows the nitrification/denitrification of ammonium in a very wide range of concentrations without producing nitrate. The following are some of the advantages of this process with respect to classical nitrification/denitrification :

- Treatment efficiency >99 %.
- Savings >25 % in aeration
- 40 % savings in organic matter use for denitrification
- Compact and space-saving system

R&D

AERIS, as a spin-off of the Autonomous University of Barcelona, arises from the cohesion of several world-leading research groups in different environmental areas. The research vocation of its members shows in the significant number and scope of the R&D projects in which the company participates.

As partners in research projects, AERIS can offer:

- Execution of advanced research tasks in the environmental field
- Design and construction of pilot plants
- Operation and testing of environmental treatment systems on any scale
- Process modelling
- Field analytics
- Management and analysis of technical information
- Administrative management support

Since 2015, the company holds the Innovative SME Seal by the Spanish Ministry of Economy and Competitiveness.

PROCESSES IMPROVEMENT

AERIS is composed of a core group of researchers with more than 20 years of experience in the field of biological treatment of pollutants. Therefore, AERIS has the most advanced knowledge in this field, which enables us to provide the most suitable technologies for each specific situation. In particular, AERIS has extensive experience in the conversion of physico-chemical treatment systems into bioreactors.

The implementation of process improvement projects is carried out in close collaboration with the customer. The benefits of this implementation include:

- Significant operational savings
- Fast and cost-effective conversion process
- High treatment efficiency and stability
- Zero (or minimal) consumption of chemical reagents
- Risk reduction
- Possibility to utilise the waste stream
- High reduction in electrical and reagent consumption

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