CONTACT

+34 942 07 81 47
comercial@apriasystems.es
www.apriasystems.es

Now also in social media:  

Consistent, comprehensive and operational solutions
Passion for innovation and service
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Introduction

Our main objective is to offer innovative alternatives for the chemical and related industries, providing to our customers bespoke solutions to fulfill the environmental regulations.

• SME innovative company specialized in consultancy and engineering services.
• Founded in March 2006 as a spin-off from R&D projects managed by the University of Cantabria.
• Activity strongly influenced by R&D actions.
• Highly specialized human resources.

Location

APRIA Systems S.L.
Parque Empresarial de Morero
Parcela P.2-12, Nave 1 - Puerta 5
39611 Guarnizo, Cantabria (SPAIN)
Mission, vision, and values

For us, each customer is special and requires bespoke solutions, always based on the latest technology that we contribute to develop and transfer to the market with a continuous effort in R&D.

APRIA Systems aims to contribute to the sustainability of the current production model through the knowledge, innovation, technology, creativity, capacity, and excellence.

Our team works to offer our customers suitable solutions for their needs, executing high-quality projects under the established terms and conditions.

APRIA Systems continuously updates and improves its know-how to offer cutting-edge solutions characterized by their optimal efficacy, yield, and environmental protection.

We strive to provide a tailored and close service for each client and project. Our service is flexible, adaptable, and easily transferable to our customers requirements and working methodology.

Our solutions aim to be well balanced in terms of economic, social, and environmental aspects. Our designs and proposals promote the minimization of raw material, energy consumption, and waste production, together with a high productivity and user-friendliness.
We offer innovative alternatives for the chemical and related industries, providing to our customers bespoke solutions to fulfil the environmental regulations.

APRIA Systems aims to contribute to the sustainability of the current production model through the knowledge, innovation, technology, creativity, capacity, and excellence.

- **Services**
  - Consultancy
  - Engineering

- **Products**
  - Based on membranes
  - Based on advanced oxidation
  - Other products

- **R&D actions**
  - Projects
APRIA Systems provides a tailored and close service for each client and project. Our service is flexible, adaptable, and easily transferable to our customers requirements.
ENGINEERING SERVICES

Conceptual advice
Design under customer specifications
Construction of the equipment and assembly
Start-up and experimental validation

Equipment: design and construction

Identification of feasible alternatives from a technical point of view
Hierarchy of existing alternatives
Funding opportunities
Conduction of tests and studies to define the critical parameters

Techno-economic feasibility projects
Membrane technology is commonly employed in advanced separation processes. The use of semipermeable membranes allows the generation of two streams: retentate and permeate.

The main advantages of this technology are:

- Increase the efficiency
- High quality of the treated waters
- Low reactive consumption
- Compact size
- Easy and stable operation
APRIA Systems designs and supplies, based on customer demands, membrane separation facilities, as single stage or integrated in hybrid processes, addressing a wide range of applications.

PRODUCTS BASED ON MEMBRANES

- Microfiltration (MF)
- Ultrafiltration (UF)
- Nanofiltration (UF)
- Pervaporation (PV)
- Forward osmosis (FO)
- Reverse osmosis (RO)
- Pressure retarded osmosis (PRO)
- Membrane distillation (MD)

Technologies offered:
- Online measurements: pH, O₂, Rx, etc.
- Process operation: continuous, discontinuous or alternating.
- Adaptable level of automation in the process
- Availability of pretreatment
- Configuration of the membrane modules

APRIA Systems designs and supplies, based on customer demands, membrane separation facilities, as single stage or integrated in hybrid processes, addressing a wide range of applications.
Advanced oxidation processes (AOPs) are characterized by the in-situ generation of chemical species with a high oxidation power (i.e. hydroxyl radicals). Innovative solutions proposed by APRIA Systems include, among others, photocatalysis and electrochemical oxidation.

AOPs are considered as sustainable treatment processes. The main advantages of these technologies are:

- Low generation of by-products
- Suitable for renewable energy resources
- Operation at ambient pressure and temperature
- High versatility
- Consumption of innocuous chemicals
PRODUCTS BASED ON ADVANCED OXIDATION

Photocatalysis equipment

APRIA Systems applies cutting-edge technology of light emitting diodes (LED) to enhance the activation of the photocatalyst with the lowest energy consumption.

- Adjustable UV wavelength and radiant flux.
- Adaptable photoreactor volume and configuration.
- Online measurements: pH, O₂, Rx, etc.
- Process operation: continuous, discontinuous or alternating.
- MF system for the recovery of the photocatalyst for its reuse.

The configuration of the photoreactors and their materials are adapted to the customer needs.
**Electrochemical oxidation equipment**

APRIA Systems has developed a process based on electrochemical oxidation, achieving a content reduction in terms of organic matter and recalcitrant compounds (phenols, cyanides, etc.) by means of specific electrodes.

- Adjustable electrode area.
- Selectable electrode materials: BDD, Pt, RuO₂, etc.
- Online measurements: pH, O₂, Rx, etc.
- Process operation: continuous, discontinuous or alternating.

The characteristics of the cells are adapted to the customer needs.

Some examples of available options are:

- Nb/BDD anode and Ti cathode.
- Ti/Pt anode and Ti cathode.
- Ti/RuO₂ anode and Ti cathode.

Our experience and know-how in the electrochemical oxidation technology has allowed the development of a novel water treatment process at pilot plant scale called ELOXIRAS®.
ELOXIRAS® is an innovative process for the treatment and reutilization of marine and brackish water, developed to contribute to enhance the productivity and to reduce the environmental impact of recirculating aquaculture systems (RAS).

It is based on the electrochemical oxidation technology, generating a mixed oxidant without the addition of chemicals, only by applying an electrical potential between two electrodes in water.
Stages of the treatment process

Pre-treatment by filtration of the water up to a minimum level of 50 μm.

Main treatment by means of electrochemical oxidation reactors for the removal of ammonia, nitrite, organic matter, and pathogens.

Post-treatment for the removal of by-products by activated carbon.

Every ELOXIRAS® series has a vast range of standard models, allowing to cover a wide range of treatment capacities.

Boosting your recirculating aquaculture systems with innovative water treatment technology.
Market applications

MINI Series
Focused on small scale RAS facilities for final commercialization of adult aquaculture species. It offers compactness and adaptable treatment capacity.

HYBRID Series
Focused on new or existing large RAS facilities. It offers an increase in current production capacity, also achieving lower water use.

LOGISTIC Series
Focused on typical truck or well-boat transport operations from hatcheries to growing facilities. It offers major autonomy for long distances and larger biomass capacity thanks to its compact design.

BIO Series
Focused on quarantine and bio-security facilities for any RAS scale. It offers an enhanced control of pathogens (bacteria and viruses) due to the disinfection capabilities, also contributing to achieve high isolation levels.
OTHER PRODUCTS

APRIA Systems is a technology provider for the chemical industry and for research and teaching purposes, developing customized equipment based on customer needs.
R&D ACTIONS

**Energetic Sustainability at the SUDOE Region:**
- **Project:** PEMFC-SUDOE Network
- **Budget:** €1,812,666.67
- **Timeline:** July 2016 - June 2019

**SCIFI 4 DRAS - Sistema CiberFlaco para la depuración de piscifactorías RAS**
- **Budget:** €431,649.22
- **Timeline:** July 2016 - January 2018

**HYLANTIC - Atlantic Network for renewable generation and supply of hydrogen to promote high energy efficiency**
- **Budget:** €2,500,000.00
- **Timeline:** October 2017 - September 2020

**GRADISAL - Aprovechamiento de la energía contenida en el gradiente salino, EGS, mediante la tecnología EDR (electrodiálisis reversa)**
- **Budget:** €401,697.99
- **Timeline:** December 2016 - March 2019

**EOLUTION - Tecnología híbrida de electrooxidación y ozono de bajo consumo energético para la reutilización de aguas de proceso**
- **Budget:** €383,608.85
- **Timeline:** December 2016 - March 2019

**HYLANTIC - Atlantic Network for renewable generation and supply of hydrogen to promote high energy efficiency**
- **Budget:** €2,500,000.00
- **Timeline:** October 2017 - September 2020

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**LIFE2acid - Acidification Network**
- **Budget:** €1,812,666.67
- **Timeline:** July 2016 - December 2020

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