CEAGU

JORNADA TÉCNICA

LA FORMACIÓN COMO PALANCA DE INNOVACIÓN EN EL SECTOR DEL AGUA

25 mayo de 2022

Castilla-La Mancha

UNIÓN EUROPEA
FONDO SOCIAL EUROPEO
INVIERTE EN TU FUTURO

GOBIERNO DE ESPAÑA
MINISTERIO DE EDUCACIÓN Y FORMACIÓN PROFESIONAL
MINISTERIO DE TRABAJO Y ECONOMÍA SOCIAL
SERVICIO PÚBLICO DE EMPLEO ESTATAL
SEPE

Castilla-La Mancha

CEAGU

LA FORMACIÓN Y SU IMPACTO EN LA ECONOMÍA CIRCULAR

CENTRO DE REFERENCIA NACIONAL

ENERGÍA ELÉCTRICA, AGUA Y GAS

25 mayo 2022

LA FORMACIÓN COMO PALANCA DE INNOVACIÓN EN EL SECTOR DEL AGUA

Patricia Zamora

Senior Project Manager

Aqualia

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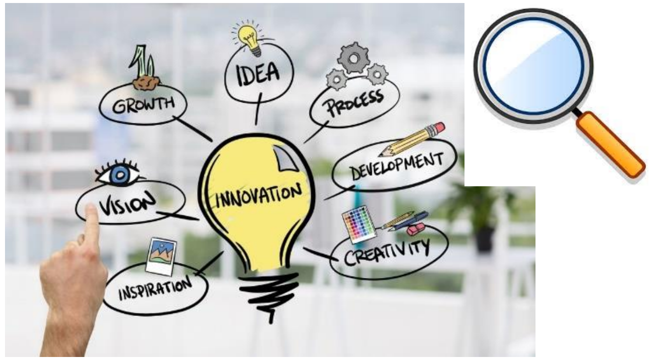
TRINOMIO UNIVERSIDAD-EMPRESA-ENTIDADES PÚBLICAS

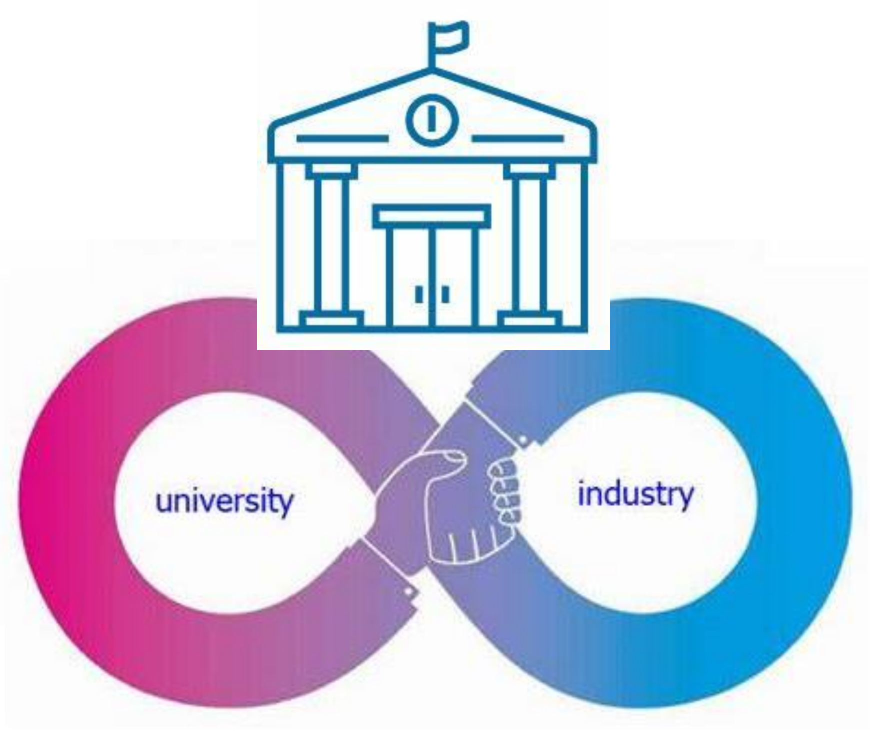
aqualia

Vigilancia tecnológica

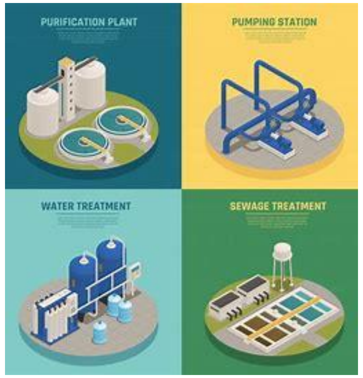


Acuerdos Propiedad intelectual

water utility



Escalado Infraestructura



Implantación

"This project has received funding from the Bio Based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 837998. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio Based Industries Consortium.".

BIO-BASED INDUSTRIES Public-Private Partnership

DEEP PURPLE

COLABORACIÓN CON UNIVERSIDADES Y CENTROS INVESTIGACIÓN NACIONALES

aqualia

Calidad

- MIMAM MBBR Hybacs (2010*)
  USAL - Salamanca
- INCITE MBR Trainasa (2012*)
  U. Vigo
  USC - Santiago de Compostela
- INCITE ELAN Trainasa (2012*)
  U. Vigo
  USC - Santiago de Compostela
- CDTI ELAN Vigo Aqualia (2013*)
  U. Vigo
  USC - Santiago de Compostela
- INNPACTO Filene (2014*)
  UCM - Madrid
- INNTERCONECTA Alegría (2014*)
  USC - Santiago de Compostela
- INNPRONTA Itaca (2014*)
  UAH - Alcalá de Henares
  UAL - Almería
  USC - Santiago de Compostela
- LIFE Remembrane (2015*)
  Leitat – Tarrasa (Barcelona)
- INNOVA Impactar (2015*)
  U. Cantabria - Santander
- INNOVA E3N (2017*)
  U. Cantabria - Santander
- LIFE Memory (2018*)
  UPV / UV - Valencia
- CONECTA PEME Medrar (2018*)
  USC - Santiago de Compostela
  U. Vigo
- CDTI WATER WORKS Pioneer STP (2018*)
  USC - Santiago de Compostela
- LIFE Methamorphosis (2019*)
  Instituto Catalán de la Energía - Barcelona
- LIFE Zero Waste Water (2024)
  UV - Valencia
  USC - Santiago de Compostela
- LIFE Infusion (2024)
  Eurecat - Barcelona
  IRTA - Tarragona
- LIFE Reseau (2025)
  ITG - A Coruña

Ecoeficiencia

- RETOS Renovagas (2017*)
  CNH2 - Puertollano
  CSIC-IPC - Madrid
  TECNALIA - San Sebastián
- CIEN Smart green gas (2018*)
  U. Girona - Girona
  USC - Santiago de Compostela
  UVA - Valladolid
  ICRA - Girona
- LIFE Answer (2019*)
  UAH - Alcalá de Henares
- H2020 Mides (2020*)
  IMDEA Agua - Madrid
  Leitat - Tarrasa (Barcelona)
  URJC - Madrid
  UAM - Madrid
  UPV - Valencia
- RIS3 IDEPA Valorastur (2020*)
  UNIOVI (Asturias)
- INTERCONECTA Advisor (2020*)
  AINIA - Paterna (Valencia)
- H2020 Scalibur (2022)
  ITENE - Paterna (Valencia)
- H2020 Rewatergy (2023)
  URJC - Madrid
- WATERWORKS Maradentro (2021)
  IDAEA - CSIC - Barcelona
  UPC - Barcelona
- H2020 BBI Deep Purple (2023)
  UAM - Madrid
  URJC - Madrid
  UVA - Valladolid
  ITENE - Paterna (Valencia)
- H2020 BBI B-Ferst (2023)
  ULE - León
- RIS3 IDEPA Re-Carbón (2021)
  INCAR - CSIC – Oviedo
  CINN - El Entrego (Asturias)
  CTIC - Gijón (Asturias)
- H2020 Sea4Value (2024)
  UPC - Barcelona
  Eurecat - Barcelona
- H2020 Ultimate (2024)
  Eurecat - Barcelona
- MISIONES Eclosion (2024)
  UVA - Valladolid
  UAM - Madrid
  U. Girona - Girona

Gestión inteligente

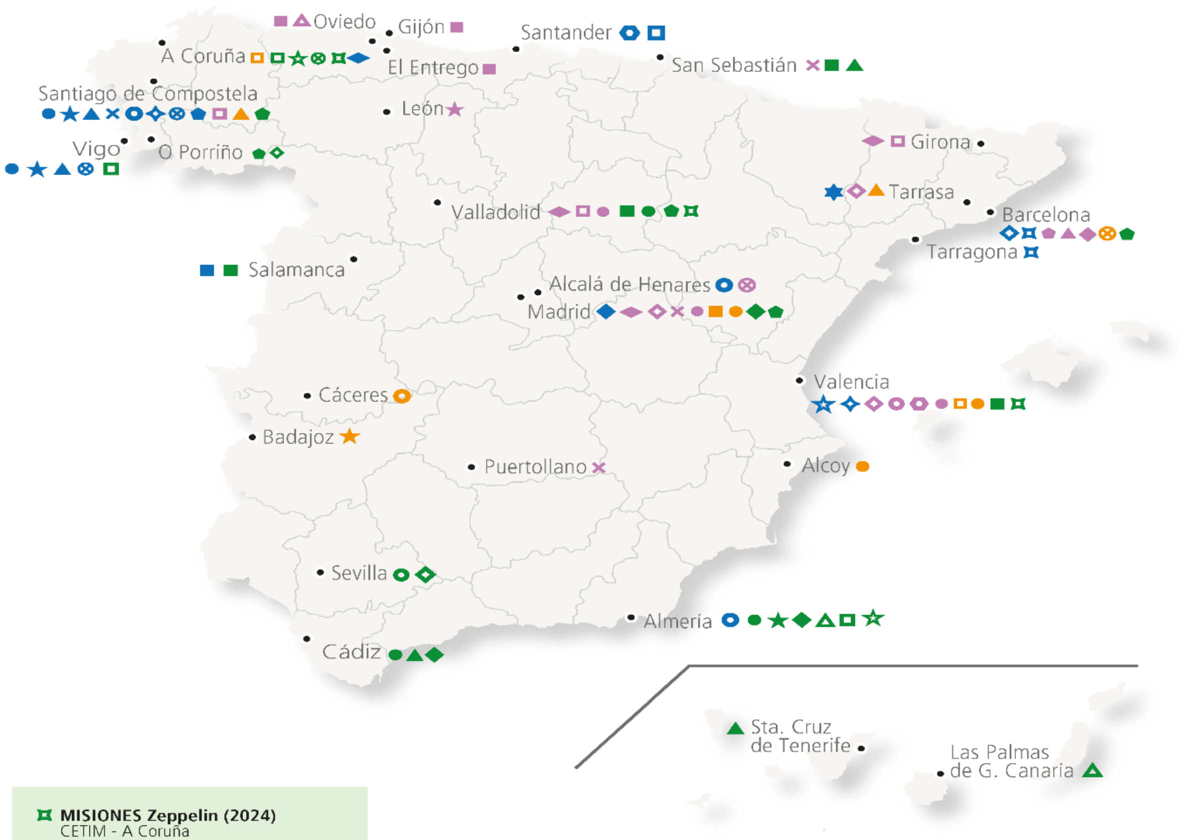
- INNPRONTA IISIS (2014*)
  IMDEA Agua - Madrid
  UPV - Alcoy
  UV / UPV - Valencia
- INNTERCONECTA Smartic (2014*)
  UEX - Badajoz
- CDTI WATER JPI Motrem (2017*)
  URJC Madrid
- LIFE Icirbus (2020*)
  Intromac - Cáceres
- D.I. Virtual CSIC UAB (2020*)
  UAB - Barcelona
  IIIA-CSIC - Barcelona
- H2020 Run4Life (2021)
  USC - Santiago de Compostela
  Leitat – Tarrasa (Barcelona)
- H2020 Rewaise (2025)
  UV - Valencia
  CETIM – A Coruña

Sostenibilidad

- CDTI Sólidos Sostenibles (2012*)
  AINIA - Valencia
  CEIT - San Sebastián
  USAL - Salamanca
  UVA - Valladolid
  UPV - Valencia
- CENIT Vida (2014*)
  Fundación Cajamar - Almería
  UCA - Cádiz
  UVA - Valladolid
- IDEA Regenera (2015*)
  UAL - Almería
- INNPACTO Downstream (2015*)
  ITC - Canarias
  TECNALIA - San Sebastián
  UCA - Cádiz
- FP7 All-gas (2018*)
  UAL - Almería
  UCA - Cádiz
  IMDEA Energía - Madrid
- LIFE Biosol water recycling (2018*)
  CENTA - Sevilla
- H2020 Incover (2019*)
  AIMEN - O Porriño (Pontevedra)
  UPC - Barcelona
  UVA - Valladolid
  IMDEA Energía - Madrid
- H2020 Sabana (2021*)
  UAL - Almería
  U. Las Palmas (Canarias)
- LIFE Ulises (2022)
  CIESOL - Almería
  UAL - Almería
  ENERGYLAB - Vigo
  CETIM - A Coruña
- LIFE IntExt (2023)
  AIMEN - O Porriño (Pontevedra)
  CENTA - Sevilla
- LIFE Phoenix (2023)
  CETIM - A Coruña
  CIESOL - Almería
  UAL - Almería
- H2020 Nice (2025)
  CETIM - A Coruña

20 Universidades

30 Centros de investigación



- MISIONES Zeppelin (2024)
  CETIM - A Coruña
  UPV - Valencia
  UVA - Valladolid

COLABORACIÓN CON UNIVERSIDADES Y CENTROS DE INVESTIGACIÓN INTERNACIONALES

22 Universidades

20 Centros de investigación

18 países (13 EU + 5 no-EU)

Calidad

- **CDTI BESTF2 Biowamet (2018)**
  Southampton U.- United Kingdom
  TU Delft - The Netherlands
- **CDTI WATER WORKS Pioneer STP (2018*)**
  TU Denmark - Denmark
  U. of Verona - Italy

Ecoeficiencia

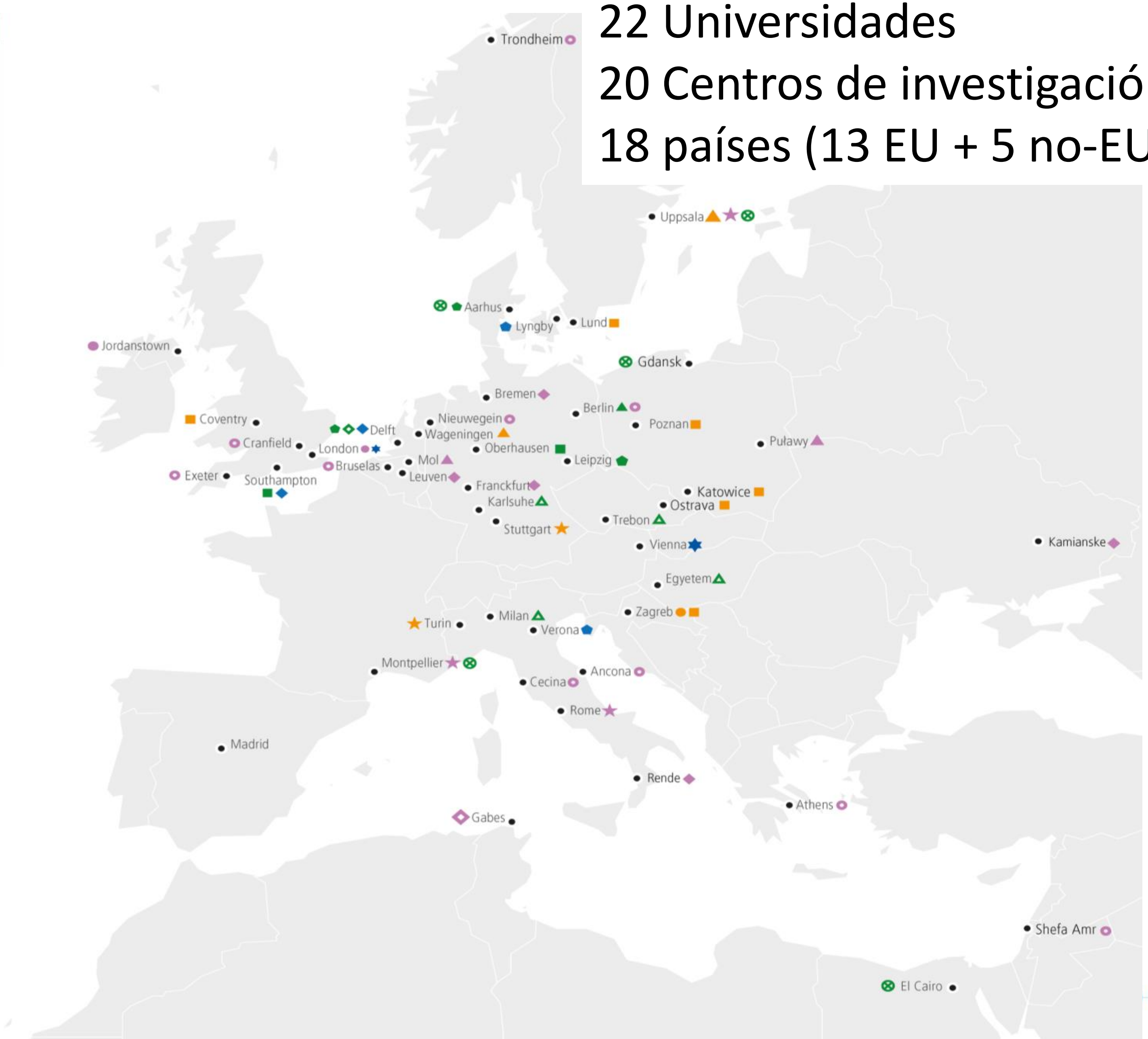
- **H2020 Mides (2020*)**
  Ecole Nationale d'Ingenieurs de Gabes - Tunisia
  IHE-UNESCO - The Netherlands
- **H2020 BBI Deep Purple (2023)**
  Brunel U. - United Kingdom
  Agro Innovation - Austria
- **H2020 Rewatergy (2023)**
  U. Cambridge - United Kingdom
  U. Ulster - United Kingdom
- **WATERWORKS Maradentro (2021)**
  CNR - Italy
  Swedish U. of Agricultural Sciences - Sweden
  Hydrosciences - France
- **H2020 BBI B-Ferst (2023)**
  VITO - Belgium
  IUNG - Poland
- **H2020 Sea4Value (2024)**
  LUT University - Finland
  U. Bremen - Germany
  DECHEMA - Germany
  Dniprovskij U. - Ukraine
  U. Leuven - Belgium
  U. Calabria - Italy
- **H2020 Ultimate (2024)**
  KWR WATER - The Netherlands
  KWB WASSER - Germany
  WATER EUROPE - Belgium
  U. delle MARCHE - Italy
  U. of Exeter - United Kingdom
  U. of Athens - Greece
  Cranfield U. - United Kingdom
  The Galilee Society - Israel
  CPTM - Italy
  Norwegian U. Sciences and Tech. - Norway

Gestión inteligente

- **FP7 UrbanWater (2015*)**
  U. Zagreb - Croatia
- **CDTI Water JPI Motrem (2017*)**
  U. Helsinki - Finland
  U. Stuttgart - Germany
  U. Torino - Italy
- **H2020 Run4Life (2021)**
  Wageningen U. - The Netherlands
  Swedish U. of Agricultural Sciences - Sweden
- **H2020 REWAISE (2025)**
  VSB U. Ostrava - Czechia
  Zagreb U. - Croatia
  Coventry U. - United Kingdom
  IETU - Poland
  Lund U. - Sweden
  Poznan U. Tech - Poland

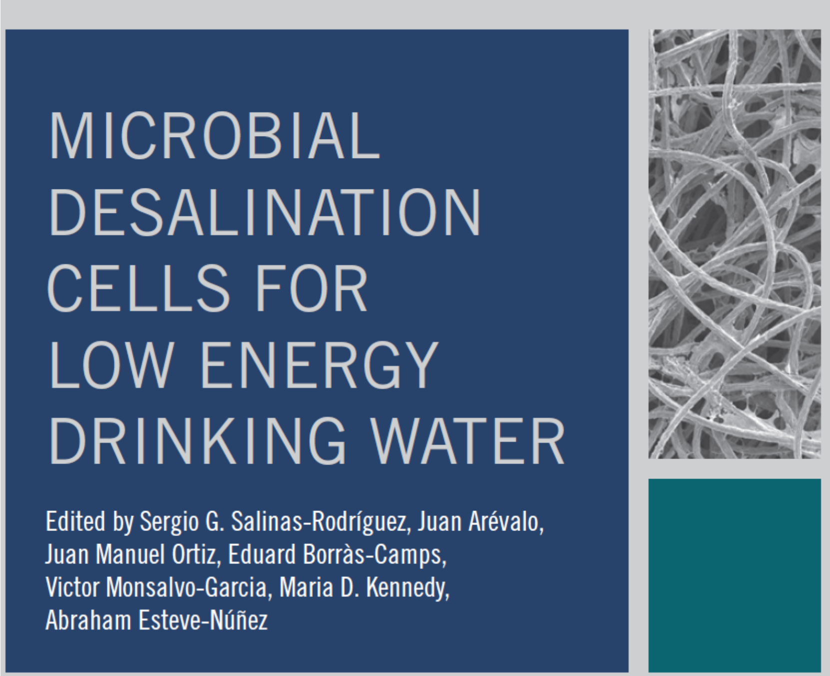
Sostenibilidad

- **FP7 Swat (2013*)**
  IGV - Germany
- **FP7 All-gas (2018)**
  Fraunhofer Gesellschaft Umsicht - Germany
  Southampton U. - United Kingdom
- **H2020 Incover (2019*)**
  Aarhus U. - Denmark
  Danish Technological Institute - Denmark
  Helmholtz Zentrum Für Umweltforschung - Germany
- **H2020 Sabana (2021)**
  U. Milanovltaly
  Széchenyi István U. - Hungary
  Karlsruher Institut fuer Technologie - Germany
  Mikrobiologicky Ustav - Centrum Algatech - Czechia
- **H2020 Nice (2025)**
  Gdansk U. of Technology - Poland
  Aarhus U. - Denmark
  INRAE - France
  Politecnico di Torino - Italy
  Swedish U. of Agricultural Sciences - Sweden
  Desert Research Center - Egypt



ARTÍCULOS CIENTÌFICOS CON OPIs COLABORADORAS

Año publicación	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Número	3	6	4	5	11	12	14	13	12	7



Journal of Membrane Science 575 (2019) 60–70

Contents lists available at ScienceDirect

Journal of Membrane Science

journal homepage: www.elsevier.com/locate/memsci

Volatile fatty acids concentration in real wastewater by forward osmosis

Gaetan Blandin[a,*], Bàrbara Rosselló[a], Victor M. Monsalvo[c], Pau Batlle-Vilanova[c], Jose M. Viñas[c], Frank Rogalla[c], Joaquim Comas[a,b]

[a] LEQUIA, Institute of the Environment, University of Girona, Spain
[b] ICRA, Catalan Institute for Water Research, Girona, Spain
[c] FCC Aqualia, Innovation and Technology Department, Av. del Camino de Santiago, 40, edificio 3, 4ª planta, Madrid, Spain

ARTICLE INFO

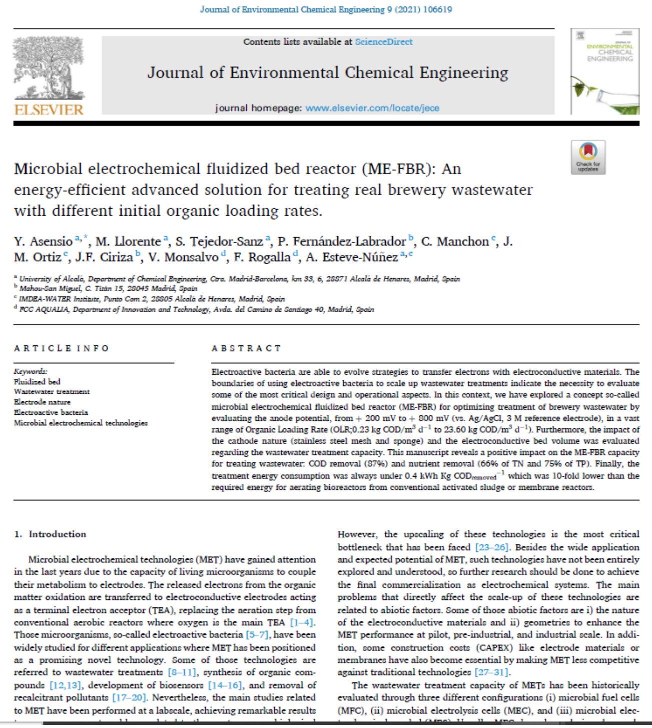
Keywords:
Forward osmosis
Water reuse
Desalination
Volatile fatty acids
Acetic acid
Concentration

ABSTRACT

Forward osmosis (FO) was studied as a concentration step for volatile fatty acids (VFA, especially acetic acid) to optimise downstream microbial desalination cell (MDC). First, it was demonstrated that water concentration factor (WCF) of wastewater (WW) above 10 (15–30) is achievable with seawater or brine as draw solution and similar flow for feed and draw solution. It was also observed that VFA rejection by FO membrane is highly connected to pH. At pH = 7.5 rejection rates above 80% are achievable working with domestic WW and therefore concentration of VFA by FO process is realistic. Nevertheless, concentration of VFA present in pre-treated real domestic WW proved to be more challenging with regards to fouling /biofilm formation which favours the biodegradation of VFA. Thanks to fouling mitigation (WW pre-filtration with microfiltration membrane and interbatch osmotic backwashing) and biodegradation strategies implemented (by applying N_2 sparging and avoiding air contact with the WW), VFA concentration (and especially acetic acid) from 60–80 up to 300–400 mg L^{-1} is possible. Maintaining high permeation flux, high VFA recovery and concentration factor of VFA during 20 batches of operation was achieved, being more difficult the stable operation of the FO concentration process at high WCF and VFA concentration.

1. Introduction

In the overall growing context of water scarcity, alternative methods to safely produce water at the lowest costs from seawater desalination or wastewater (WW) reuse are highly studied [1–4]. Moreover, integrating WW treatment and desalination in one plant can also result in potential economic benefits by synergistically lowering water intake costs and optimising energy efficiency of water treatment [5,6]. In that context, salinity gradient technologies such as forward matter by bioelectrogenic bacteria in the anode chamber [12–14]. The electric current obtained is used to promote ions migration through ion exchange membranes in a self-sustained desalination system. In MDC, in comparison with MEC, a third channel fed with the saline stream is coupled in-between cationic and anionic compartments separated by ionic exchange membranes. During MDC process, ions are removed from seawater and the resulting low salinity effluent can be further polished in a downstream RO system operated at low pressure and energy consumption.



Journal of Environmental Chemical Engineering 9 (2021) 106619

Contents lists available at ScienceDirect

Journal of Environmental Chemical Engineering

journal homepage: www.elsevier.com/locate/jece

Microbial electrochemical fluidized bed reactor (ME-FBR): An energy-efficient advanced solution for treating real brewery wastewater with different initial organic loading rates.

Y. Asensio[a,*], M. Llorente[a], S. Tejedor-Sanz[a], P. Fernández-Labrador[b], C. Manchon[c], J. M. Ortiz[c], J.F. Ciriza[b], V. Monsalvo[d], F. Rogalla[d], A. Esteve-Núñez[a,c]

[a] University of Alcalá, Department of Chemical Engineering, Ctra. Madrid-Barcelona, km 33, 6, 28871 Alcalá de Henares, Madrid, Spain
[b] Mahou-San Miguel, C. Titán 15, 28045 Madrid, Spain
[c] IMDEA-WATER Institute, Punto Com 2, 28805 Alcalá de Henares, Madrid, Spain
[d] FCC AQUALIA, Department of Innovation and Technology, Avda. del Camino de Santiago 40, Madrid, Spain

ARTICLE INFO

Keywords:
Fluidized bed
Wastewater treatment
Electrode nature
Electroactive bacteria
Microbial electrochemical technologies

ABSTRACT

Electroactive bacteria are able to evolve strategies to transfer electrons with electroconductive materials. The boundaries of using electroactive bacteria to scale up wastewater treatments indicate the necessity to evaluate some of the most critical design and operational aspects. In this context, we have explored a concept so-called microbial electrochemical fluidized bed reactor (ME-FBR) for optimizing treatment of brewery wastewater by evaluating the anode potential, from + 200 mV to + 800 mV (vs. Ag/AgCl, 3 M reference electrode), in a vast range of Organic Loading Rate (OLR;0.23 kg COD/m^3 d^{-1} to 23.60 kg COD/m^3 d^{-1}). Furthermore, the impact of the cathode nature (stainless steel mesh and sponge) and the electroconductive bed volume was evaluated regarding the wastewater treatment capacity. This manuscript reveals a positive impact on the ME-FBR capacity for treating wastewater: COD removal (87%) and nutrient removal (66% of TN and 75% of TP). Finally, the treatment energy consumption was always under 0.4 kWh Kg $COD_{removed}^{-1}$ which was 10-fold lower than the required energy for aerating bioreactors from conventional activated sludge or membrane reactors.

1. Introduction

Microbial electrochemical technologies (MET) have gained attention in the last years due to the capacity of living microorganisms to couple their metabolism to electrodes. The released electrons from the organic matter oxidation are transferred to electroconductive electrodes acting as a terminal electron acceptor (TEA), replacing the aeration step from conventional aerobic reactors where oxygen is the main TEA [1–4]. Those microorganisms, so-called electroactive bacteria [5–7], have been widely studied for different applications where MET has been positioned as a promising novel technology. Some of those technologies are referred to wastewater treatments [8–11], synthesis of organic compounds [12,13], development of biosensors [14–16], and removal of recalcitrant pollutants [17–20]. Nevertheless, the main studies related to MET have been performed at a labscale, achieving remarkable results

However, the upscaling of these technologies is the most critical bottleneck that has been faced [23–26]. Besides the wide application and expected potential of MET, such technologies have not been entirely explored and understood, so further research should be done to achieve the final commercialization as electrochemical systems. The main problems that directly affect the scale-up of these technologies are related to abiotic factors. Some of those abiotic factors are i) the nature of the electroconductive materials and ii) geometries to enhance the MET performance at pilot, pre-industrial, and industrial scale. In addition, some construction costs (CAPEX) like electrode materials or membranes have also become essential by making MET less competitive against traditional technologies [27–31].

The wastewater treatment capacity of METs has been historically evaluated through three different configurations (i) microbial fuel cells (MFC), (ii) microbial electrolysis cells (MEC), and (iii) microbial elec-

PROPIEDAD INTELECTUAL

PATENTES Y MODELOS DE UTILIDAD

9 patentes concedidas
1 modelo de utilidad

Tipo de protección	Nombre corto	OPI colaboradora
Patente	Proceso Anammox ELAN	Universidad Santiago Compostela
	ELSAR	Universidad Alcalá de Henares
	SAnMBR	Universidad de Valencia Universidad Politécnica de Valencia
	AQUAELAN	Universidad Santiago Compostela
	MDC	IMDEA Agua
	Cristalización estruvita	Universidad Santiago Compostela
	ADVANSIST	Universidad Rey Juan Carlos
	Reactor a presión	Universidad de Valladolid
	DARE	Universidad de Girona
Modelo utilidad MU	ICIRbus	INTROMAC

PROPIEDAD INTELECTUAL

REGISTRO DE MARCAS

6 marcas registradas

Tipo de protección	Nombre corto	Enunciado
Marca	ELAN®	Eliminación Autótrofa de Nitrógeno
	ANPHORA®	Anaerobic PHOtotropic RAceways
	ARON®	Autotrophic Removal of Nitrogen
	LEAR®	Low Energy Algae Reactor
	ABAD Bioenergy®	Absorcion- Adsorcion
	AQUAVITE®	Estruvita/vivianita

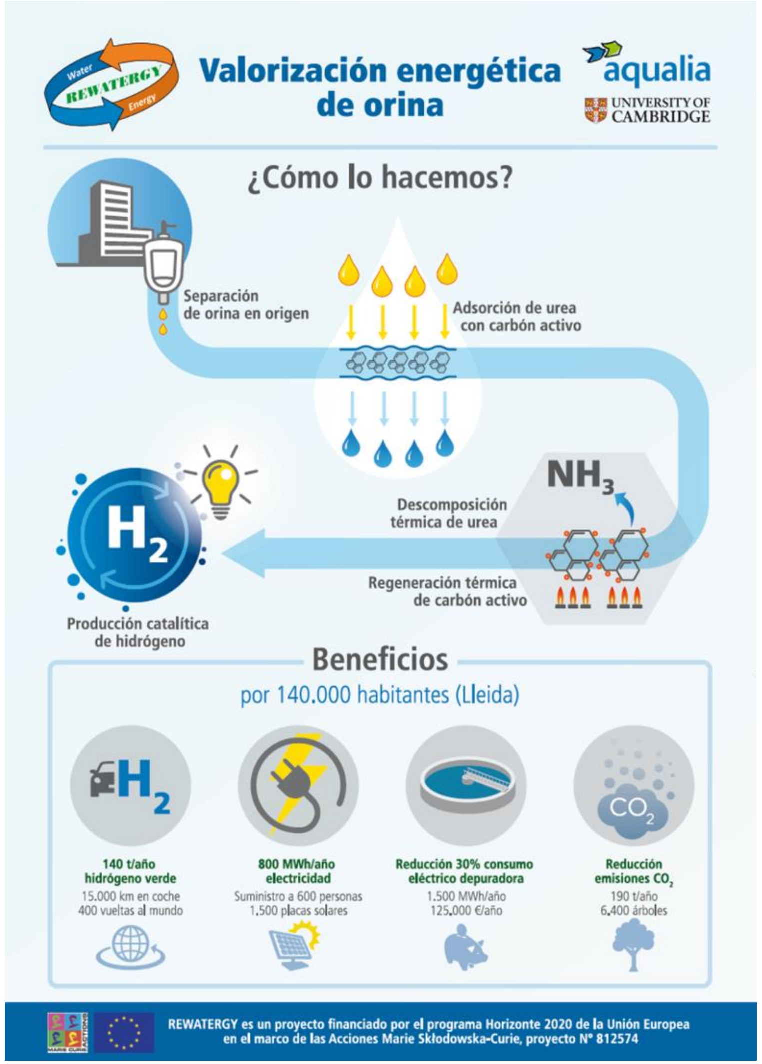
PROYECTOS COLABORATIVOS: PROYECTO REWATERGY

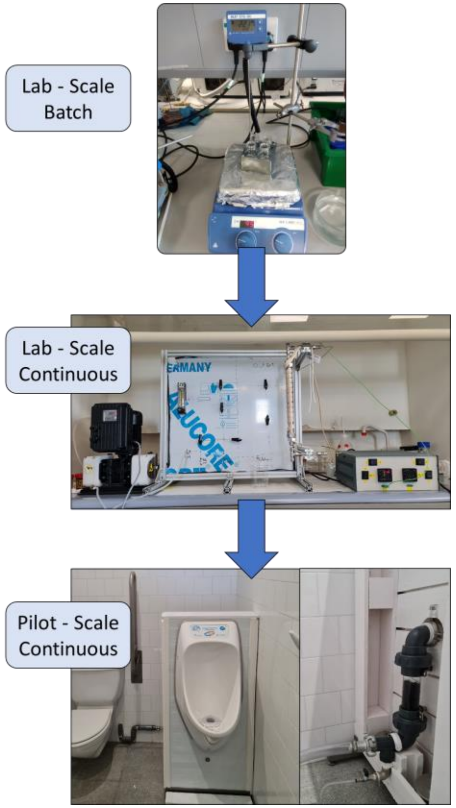
Acción Marie Curie para formación de doctorados industriales europeos (Programa H2020)

Partenariado industrial-académico (18 meses universidad + 18 meses empresa)

2 líneas de trabajo:

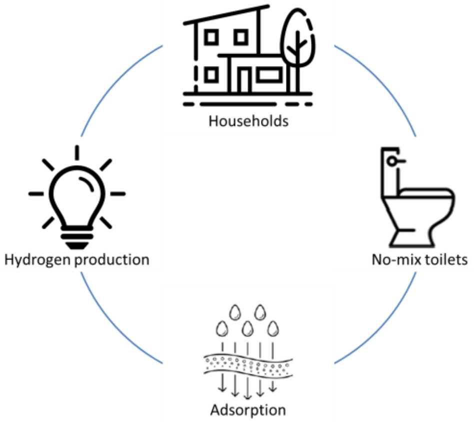
- Recuperación de nitrógeno (urea) y energía (H_2) en EDAR y urinarios.
- Regeneración de agua depurada mediante sistema fotoelectroquímico

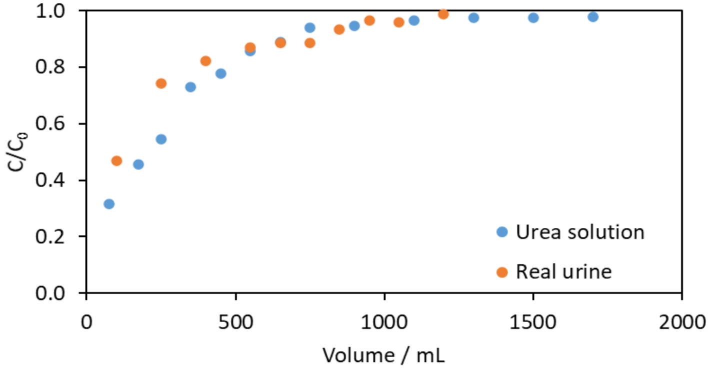


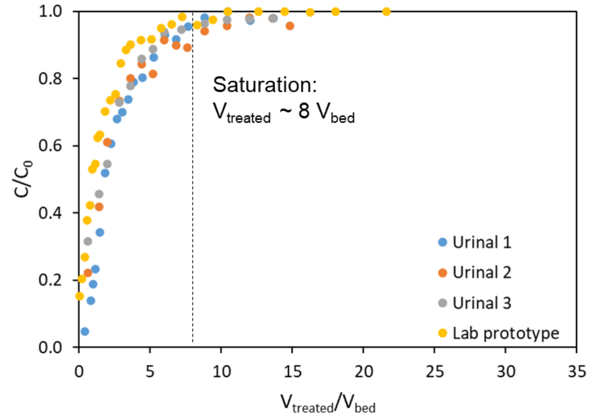


SIMBIOSIS AGUA-ENERGÍA: PROYECTO REWATERGY

- Recuperación de nitrógeno (urea) y energía (H_2) en EDAR y urinarios (EDAR Lleida)

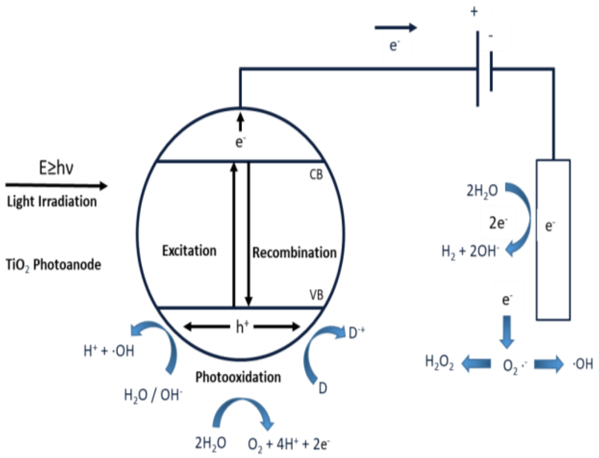


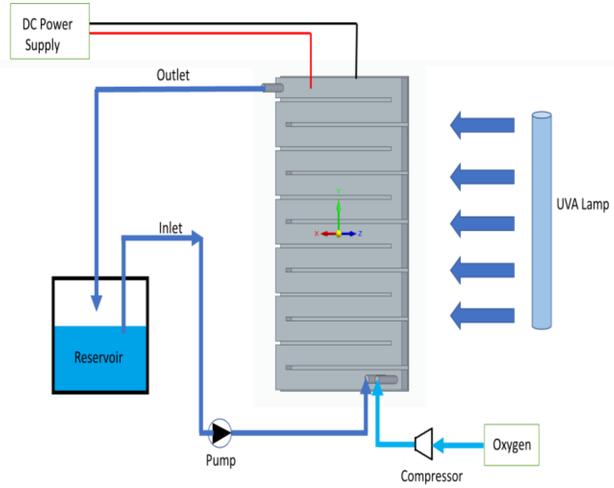




Adsorción de urea → Termo desorción de urea → Descomposición de urea en NH_3 y CO_2 → Descomposición catalítica de NH_3 a H_2

- Regeneración de agua depurada mediante sistema fotoelectroquímico (EDAR Guadalete, Jerez de la Frontera)





Óxido de grafeno-TiO_2

Lámpara UVA-LED

FORMACIÓN EN EL PROYECTO REWATERGY

EVENTOS DE FORMACIÓN DOCTORANDOS INDUSTRIALES

19 cursos y 8 eventos de formación

T5

Intermediate showcase workshop (Univ. Cambridge)
C11: Writing Skills (Univ. Cambridge + Univ. Ulster)
C16: Ethics: Good research practice (URJC)
C20: Open Access in Science and Research (Programa Got Energy Talent MSCA COFUND)

T7

C5: Integral water cycle management (Aqualia)
C13: Business development (Aqualia)
C23: Career Planning (Univ. Cambridge)

Oct-2022

T8

Final showcase and international workshop (Aqualia & URJC)

T9

C19: Communicating your research (Univ. Cambridge)
C21: Time management (Univ. Cambridge)
C20: Networking and team working (Univ. Cambridge)

REWATERGY – Training event 7

Integral water cycle management

Aqualia

Webinar

Date (9th and 10th November)

www.rewatergy.eu

AGENDA

DAY 1

9:00 – 9:10 Welcome & introduction (Victor Monsalvo, Head of Eco-efficiency Area)

9:10 – 10:50 Session I: Safe drinking water
- 9:10 – 9:30 Monitoring of microalgae in water reservoirs — Samuel Cires – Universidad Autónoma de Madrid
- 9:30 – 9:50 Advanced oxidation of cyanotoxins in drinking water — Macarena Muñoz – Universidad Autónoma de Madrid
- 9:50 – 10:10 Pre-treatment in drinking water treatment — Naiara Hernández – Aqualia
- 10:10 – 10:30 New insights and technologies in water quality monitoring — Luis Navarro - Hach
- 10:30 – 10:50 Questions and answers

10:50 – 11:10 Break

11:10 – 12:10 Session II: Sea and brackish water
- 11:10 – 11:30 Innovative concepts in water desalination — Juan Arevalo – Aqualia
- 11:30 – 11:50 Brine valorization at SWTPs — Fany Bautista– Aqualia
- 11:50 – 12:10 Questions and answers

REWATERGY – Training event 7

Business development

Aqualia

Webinar

Date (11th November)

www.rewatergy.eu

ROUTE TO CONNECT

Link to Business Development seminar

AGENDA

9:20 – 9:30 Welcome & introduction (Victor Monsalvo, Head of Eco-efficiency Area)

9:30 – 11:30 Business development at Aqualia: challenges & opportunities
- 9:30 – 9:50 Core elements of an effective compliance management system — Gema Grande Martín - Aqualia
- 9:50 – 10:10 MENA projects and new business opportunities — Carlos García Díaz - Aqualia
- 10:10 – 10:30 Reform cycle — Mark Muller - Aqualia
- 10:30 – 10:50 Project validation and capital budgeting — Juan José Gayete Zamora - Aqualia
- 10:50 – 11:10 Why an in-house engineering department in a water cycle company? — Adrián Rodríguez Rodríguez - Aqualia
- 11:10 – 11:30 Questions and answers

11:30 – 11:45 → Video about Guijuelo Biofactory

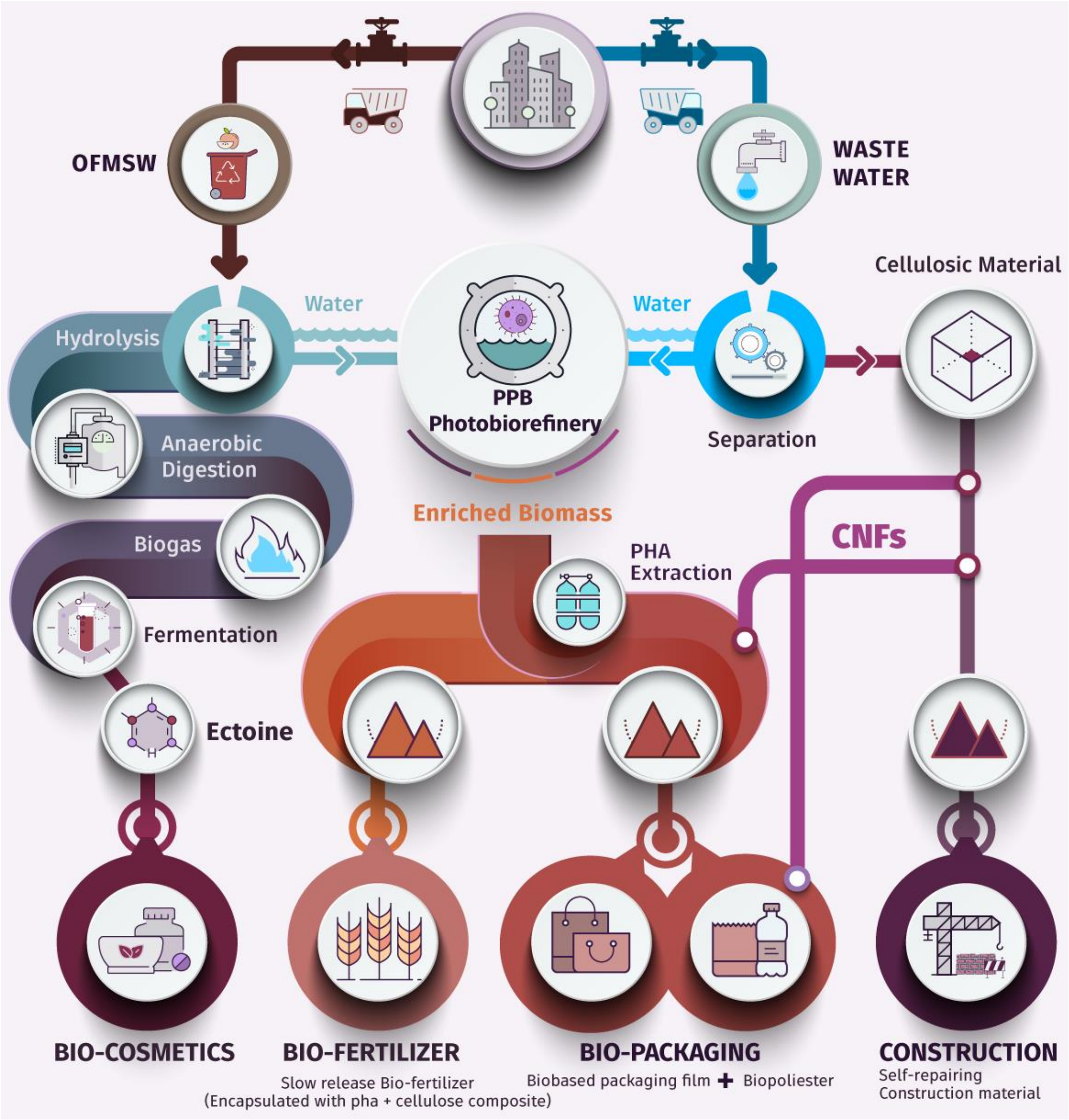
13:00 – 16:30 Analysis of Case studies – Integration in water cycle management, BD and Canvas (Antonio Menéndez – Aqualia)

REWATERGY Project

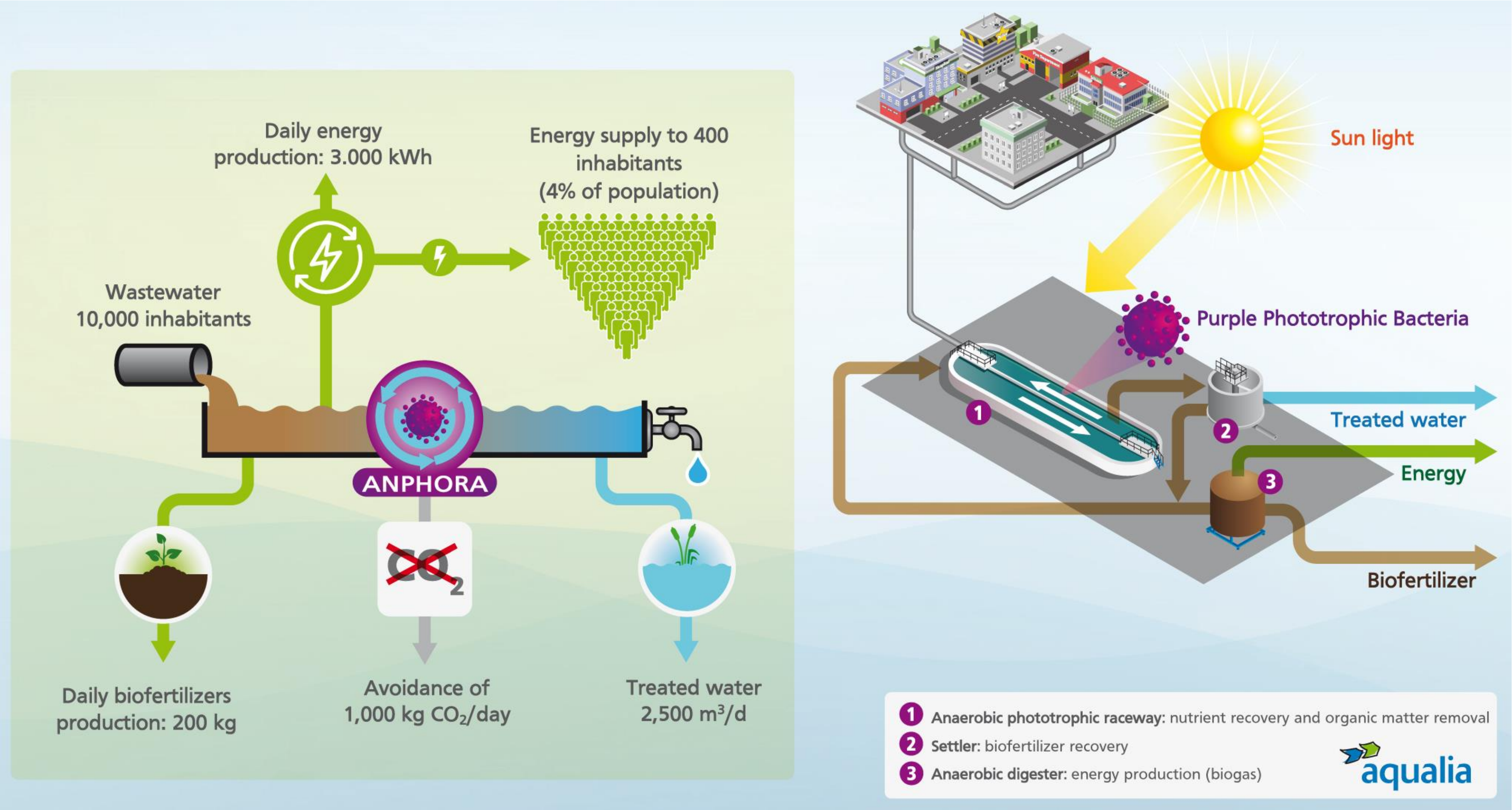
PROYECTOS COLABORATIVOS: PROYECTO DEEP PURPLE

Desarrollo y demostración de **fotobiorrefinería** multiplataforma para la obtención de **bio-productos** a partir de **agua residual y FORSU**:

- biofertilizantes
- cosméticos
- Material auto-reparante de construcción
- bioplásticos (biopoliésteres y embalaje)



ANPHORA®: SISTEMA DE TRATAMIENTO DE AGUAS BASADO EN LUZ SOLAR



ESCALADO DE LA TECNOLOGÍA ANPHORA®

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No 018398329
OFICINA DE PROPIEDAD INTELECTUAL DE LA UNIÓN EUROPEA
CERTIFICADO DE REGISTRO
Se expide el presente Certificado de Registro para la Marca de la Unión Europea que se identifica a continuación. Las menciones y las informaciones relativas a tal marca han sido inscritas en el Registro de Marcas de la Unión Europea.
ANPHORA
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CERTIFICATE OF REGISTRATION
This Certificate of Registration is hereby issued for the European Union trade mark identified below. The corresponding entries have been recorded in the Register of European Union trade marks.
El Director Ejecutivo / The Executive Director
Christian Archambeau
www.euipo.europa.eu

2015. Escala laboratorio

10 L

URJC (Madrid)

Agua residual sintética + acetato

2016. Escala pre-piloto

1.4 m³

URJC (Madrid)

1 m³/d

Agua residual sintética + acetato

2018. Escala pre-piloto

1.4 m³

EDAR Estiviel (Toledo)

1 m³/d

Agua residual urbana

2018. Escala piloto

70 m³

EDAR Estiviel (Toledo)

10 m³/d

Agua residual urbana

2022. Escala demo

300 m³

EDAR Linares (Jaén) &

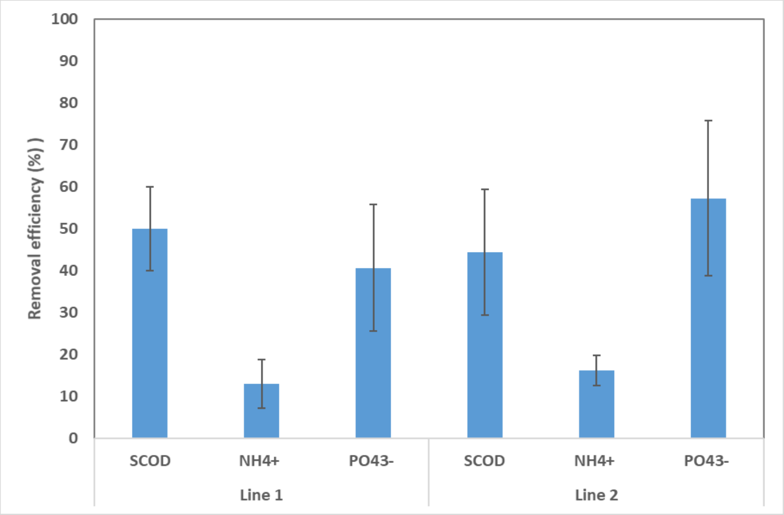
EDAR Badajoz

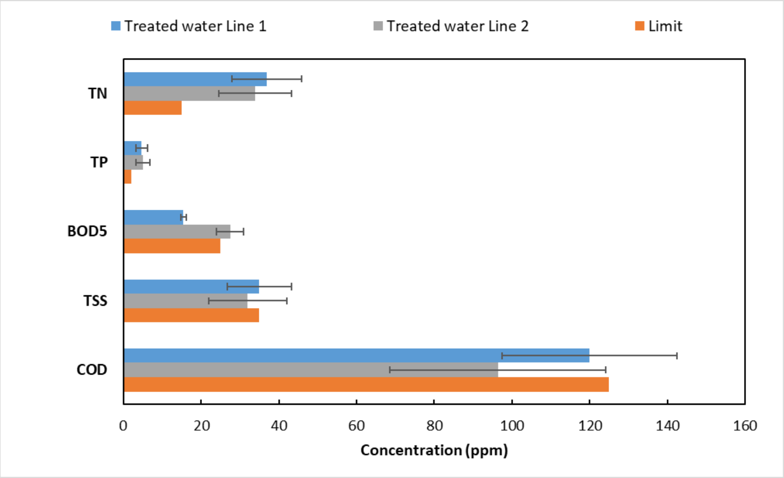
350 m³/d

Agua residual urbana

TRATAMIENTO DE AGUA RESIDUAL LOW COST & BIOFERTILIZANTE

- Alimentación con agua residual tras primario.
- **El efluente cumple con límites de vertido en DQO, SST y DBO5.**





NPK 100/25/27

Peletización

Ensayos agronómicos


DEEPRD 2022
Ficha de información de seguridad del producto

SECCIÓN 1: Identificación de la sustancia o la mezcla y de la sociedad o la empresa

1.1. Identificador del producto

Forma del producto	:	Mezcla
Nombre del producto	:	DEEPRD 2022
Código de producto	:	DEEPRD 2022
Grupo de productos	:	Investigación y desarrollo científicos

1.2. Usos pertinentes identificados de la sustancia o de la mezcla y usos desaconsejados

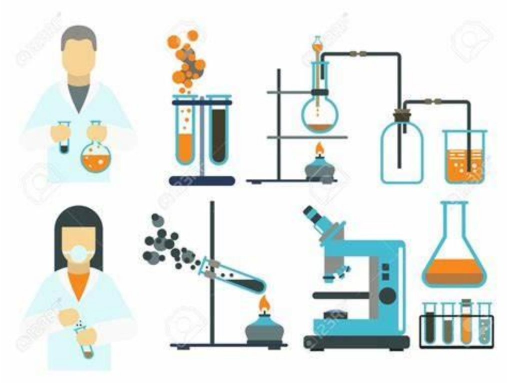
1.2.1. Usos pertinentes identificados

Categoría de uso principal	:	Uso profesional
Función o categoría de uso	:	Fertilizantes

	Fango activo EDAR	Fango PPB
Turbidez (UNF)	10.2	3.2
MLSS (g/L)	2.2	0.4
IVF (ppm)	100	51

LAS PERSONAS COMO EJE DE LA INNOVACIÓN

Convenios de prácticas para estudiantes de grado con Universidades



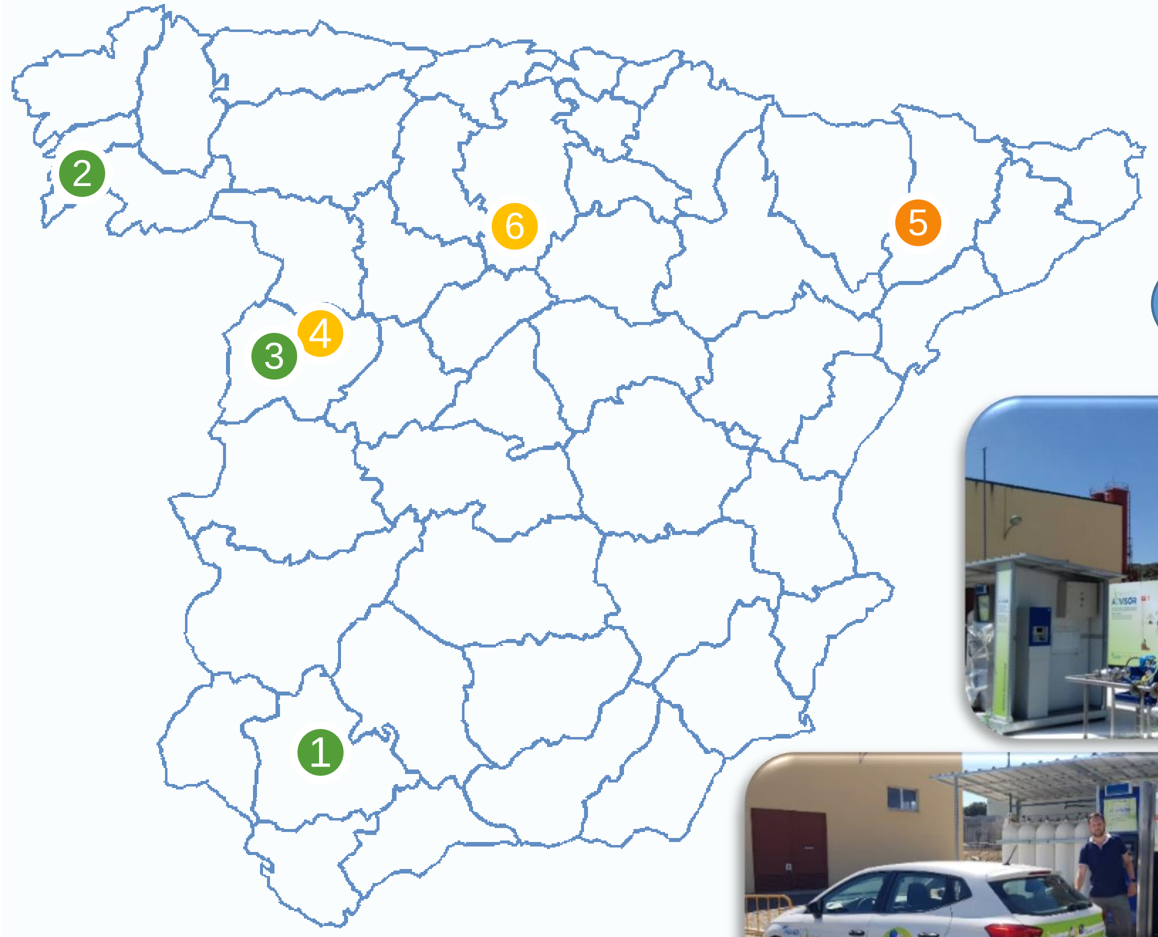
Lectura de tesis doctorales

Incorporación de doctores a la estructura empresarial

17 doctores, 4 de ellos mujeres

DE PEQUEÑOS PROYECTOS A GRANDES REALIDADES

En operación · En construcción · Estudios lab/industriales



ABAD Bioenergy®

CODIGESTIÓN EN AQUALIA

1. Aguas glicerinosas
   Zumos y refrescos caducados
   Cerveza caducada
2. Grasas EDAR
   Lodos orgánicos industria transformación productos pesqueros
3. Lodos orgánicos matadero
4. Grasas EDAR tratamiento alcalino
5. Aguas glicerinosas
6. Estudio cosustratos:
   - Lodos industria cosmética
   - Lodos industria láctea
   - Residuos de quesería
   - Lodos bebidas
   - Lodos cárnicos

Castilla-La Mancha

CEAGU

Muchas gracias