

## EDS WEBINAR Brine Valorization Part II

Thursday 31. October 2024, 16:00-17:30 CET

**Moderator:**



**Ángel Rivero Falcón**

Senior Researcher in the Water Department at the ITC, Spain

**Background**

Ángel Rivero Falcón is a Senior Researcher in the Water Department at the ITC, where he has been working since March 2020. He is set to complete his PhD in desalination brine valorisation next year. His research, conducted within the DESAL+ LIVING LAB platform, focuses on developing technical solutions for desalination brine valorisation, identifying key challenges and limitations in the field. In addition, Ángel is actively involved in the design, development, and testing of several pilot plants. Before his current role, he spent over seven years as a Process Engineer in the UK.

### Abstracts / Program

- ❖ **Challenges and Opportunities for Resources Recovery in Seawater Desalination Plants**  
**Víctor Monsalvo**  
Aqualia - Head of Eco-efficiency area, Innovation and Technology Department
- ❖ **Brineworks' Novel Seawater Electrolyzer: A Breakthrough for Brine Valorization and Direct Ocean Capture at Low Cost**  
**Gudfinnur Sveinsson**  
Brineworks – CEO
- ❖ **The ingredients of a recipe for the circular economy of brines**  
**Fabrizio Vicari**  
ResourSeas – Innovation Manager



**Víctor Monsalvo**

Aqualia - Head of Eco-efficiency area, Innovation and Technology Department

**Bio**

Dr. Victor Monsalvo is Head of the Eco-efficiency Area at the Innovation and Technology Department of Aqualia. He leads an active team working on wastewater treatment and reuse, biowastes and biogas management, processes involved in drinking water and desalination. He got his PhD on Chemical Engineering from University Autonoma de Madrid and got a position as Assistant Professor in Chemical Eng. Department from 2005 to 2014, and visiting researcher in different Universities: Leeds (2007), Cranfield (2009), Sydney (2011) and Aachen (2013). Then, he was appointed as Head of Technological Area – Water in Abengoa Research until 2016. Involved in more than 50 public and private innovation projects (acting as Coordinator of national and

European H2020 projects). He has directed R&D contracts with private companies, (co) authored 8 patents (national and international), around 110 journal and referred conference papers, 1 book chapter and edited 4 books. Awards and recognitions received include the Comunidad #PorElClima (2020), AEDyR (2021), Salon del Gas Renovable (2021), Distinction Technology Idol GWI (2022) and Best Technical Paper World Congress IDA (2022). He has collaborated with different public and private entities on the organization and promotion of numerous national and international scientific and technical conferences.

**Abstract Title**

**Challenges and Opportunities for Resources Recovery in Seawater Desalination Plants**

Abstract (Seawater brine can be considered, instead of a waste, as an amazing source or raw materials, since almost all the elements of the periodic table are present. The recovery of valuable minerals and critical elements from sea brine could improve the economic viability of desalination plant and increase its sustainability. As recovery of critical materials from seawater reverse osmosis (SWRO) brine makes it necessary to deal with the majority ions, whose concentration is thousands of times higher than of some target high value compounds. This interference in the critical materials recovery is a challenge in the selective precipitation of Mg, when Ca is not effectively removed and partially precipitates with Mg salts to reduce the purity of the salt obtained significantly. Innovative methods are evaluated to recover critical raw materials, minerals and metals in Sea4Value project.

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**Gudfinnur Sveinsson**

Brineworks - CEO

**Bio**

Gudfinnur Sveinsson, CEO of Brineworks, has over nine years of experience in C-suite advising and technological innovation focused on sustainable development. With a master's degree from Columbia University's School of International and Public Affairs, he is leading Brineworks in revolutionizing sustainable energy solutions through innovative technologies for CO2 extraction and e-fuel production.)

**Abstract Title**

**Brineworks' Novel Seawater Electrolyzer: A Breakthrough for Brine Valorization and Direct Ocean Capture at Low Cost**

Abstract (Brineworks' novel electrolyzer technology significantly reduces the costs associated with acid and base production for CO2

removal from brine and seawater. The system is currently undergoing rigorous testing under aggressive brine conditions at the ITC test bed in Gran Canaria. With Brineworks' electrolyzer at its core, the company's Direct Ocean Capture process provides dual benefits for desalination brine: it partially mitigates the environmental impacts of brine disposal while producing valuable commodities that are crucial to decarbonizing industries, green CO2 and hydrogen (H2). Equally effective for seawater, this technology is scalable on a global level, positioning it as a critical solution for e-Fuel production. E-Fuels require both CO2 and H2 as inputs, which Brineworks' electrolyzer efficiently extracts from seawater, ensuring a reliable supply chain for the future of sustainable fuels. The key to Brineworks' innovation lies in its low capital expenditure (capex), high throughput electrolyzer, which can operate seamlessly with renewable energy sources. By harnessing this technology, Brineworks is poised to revolutionize sustainable energy solutions, driving the transition to a low-carbon economy.

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**Fabrizio Vicari**

ResourSeas – Innovation Manager

**Bio**

Fabrizio Vicari is an accomplished engineer with a background in electrochemistry and a PhD in the field. Fabrizio has contributed significantly to the several brine management projects (e.g. SEArcularMINE, Rewaise and Brine To Value), focusing on the extraction of raw materials from brine with sustainable and economically viable solutions. Fabrizio's expertise extends to in-depth cost/benefit analysis and a deep understanding of the business economics related to these technologies. While maintaining his role as Innovation Manager for ResourSEAs, Fabrizio recently became CEO of MareMag, a company created to produce and sell magnesium minerals extracted from marine brines.

**Abstract Title**

**The ingredients of a recipe for the circular economy of brines**

From the chaos of the trend topics in the top-rated journals, few successful approaches are emerging as strategic tools to be used in the context of minerals extraction from brines. While their order and position into the flowsheet cannot be fixed a priori, their presence in an integrated brine treatment chain is becoming standard. The experience and results obtained by ResourSEAs with these ingredients will be presented along with perspectives on future developments.

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