



**TNCHE Asia 2024 Conference**  
**" Decarbonization, AI and Digital Transformation**  
**for Sustainability in Process Industries "**  
**Presenter's Biodata & Abstract**



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**Title of Presentation:** Climate Intelligence (Doing more for less – Digital applications to unlock the value of water in industrial processes)



**Presentation Abstract:**

In many industrial processes water plays a vital role in production. From heat transfer, cleaning, power production, formulation to facilitating mass transfer operations, this simple molecule plays an incredible role in ensuring manufacturers can make the products the world demands.

Having said this, water is often overlooked when it comes to seeking out energy efficiency improvements as part of producers' decarbonization goals. This is a missed opportunity as water is typically responsible for 35-45% of all energy transfers on site. When those transfers are suboptimal, the impact is felt across the production site as efficiency losses or even production constraints. These same water-systems can also cause production related issues due to unmanaged risks of water-side corrosion, fouling, scaling, and microbial growth. Producers want to use less water, less energy and of course minimize water-related risks.

Balancing the competing needs of water conservation, energy efficiency and maximum productivity, whilst minimizing risks has always been challenging, but with many producers declaring emissions reduction targets between now and 2030, and net zero targets towards 2050, a novel approach is needed to unlock the potential in water to safely drive decarbonization.

Ecolab and Siemens partnered in 2022 to combine their respective domain expertise in chemistry and chemical engineering-based models to bring a comprehensive digital twin into cooling water for the first time. In this presentation we discuss the chemistry, engineering techniques and computational science used in the model, the impact this can have on reducing site emissions, and how this digital transformation will change the way water is managed in manufacturing plants.

[Ecolab Climate Intelligence overview](#)  
[Climate Intelligence YouTube video](#)