

Water purification

Why Electrolysis Needs Ultrapure Water

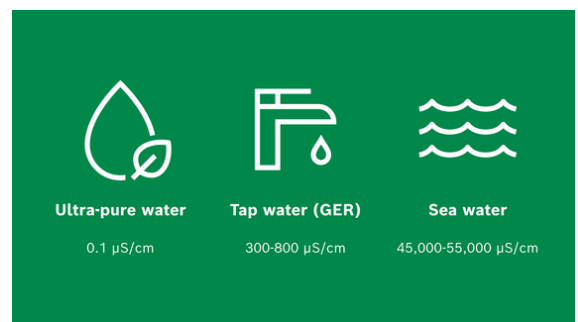


Green hydrogen made out of renewable energies promises a clean, sustainable energy future, often depicted as a simple equation: renewable electricity + water = low carbon fuel.

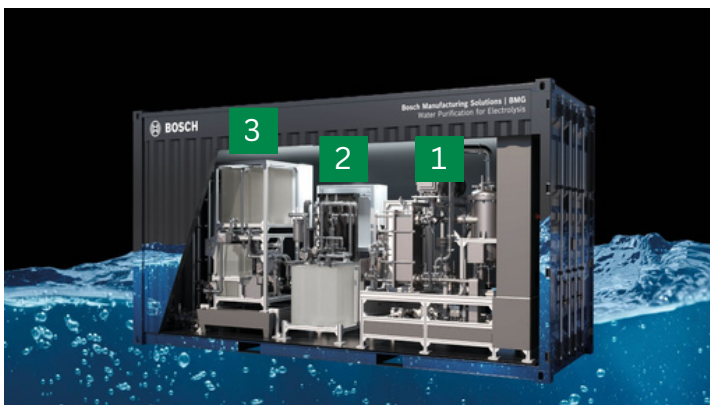
However, beneath this seemingly straightforward formula lies a critical, yet frequently underestimated, challenge: the immense demand for water. But not just any water – ultrapure water. What if the most crucial ingredient is the hardest to get right?

Why is tap water not suitable for electrolysis?

Running an electrolyzer on tap water harms its efficiency and lifespan. Contaminants like salts and minerals cause damaging side reactions, so electrolyzers require ultra-pure water with a low conductivity ($0.1 \mu\text{S}/\text{cm}$). Tap or sea water's high conductivity is harmful to the system.



The Solution: The Bosch Pure Water System



Bosch's containerized system delivers ultra-pure water for hydrogen production, even in harsh environments.

1. Mechanical Vapor Compression (MVC): Robust and efficient primary purification of saline water.
2. Electrodeionization (EDI) Unit: Final polishing step to achieve ultra-pure quality ($< 0.1 \mu\text{S}/\text{cm}$).
3. Anti-Scaling System: Ensures sustainable, chemical-free operation.

“If we do it right, hydrogen projects will not run us into conflicts, but instead they will offer a dual use case for water: turning saline sources into ultrapure water for hydrogen on one hand, and into drinking water for people on the other.”

Wolfgang Schleifenbaum, Head of Product Area Hydrogen at Bosch Manufacturing Solutions | BMG

