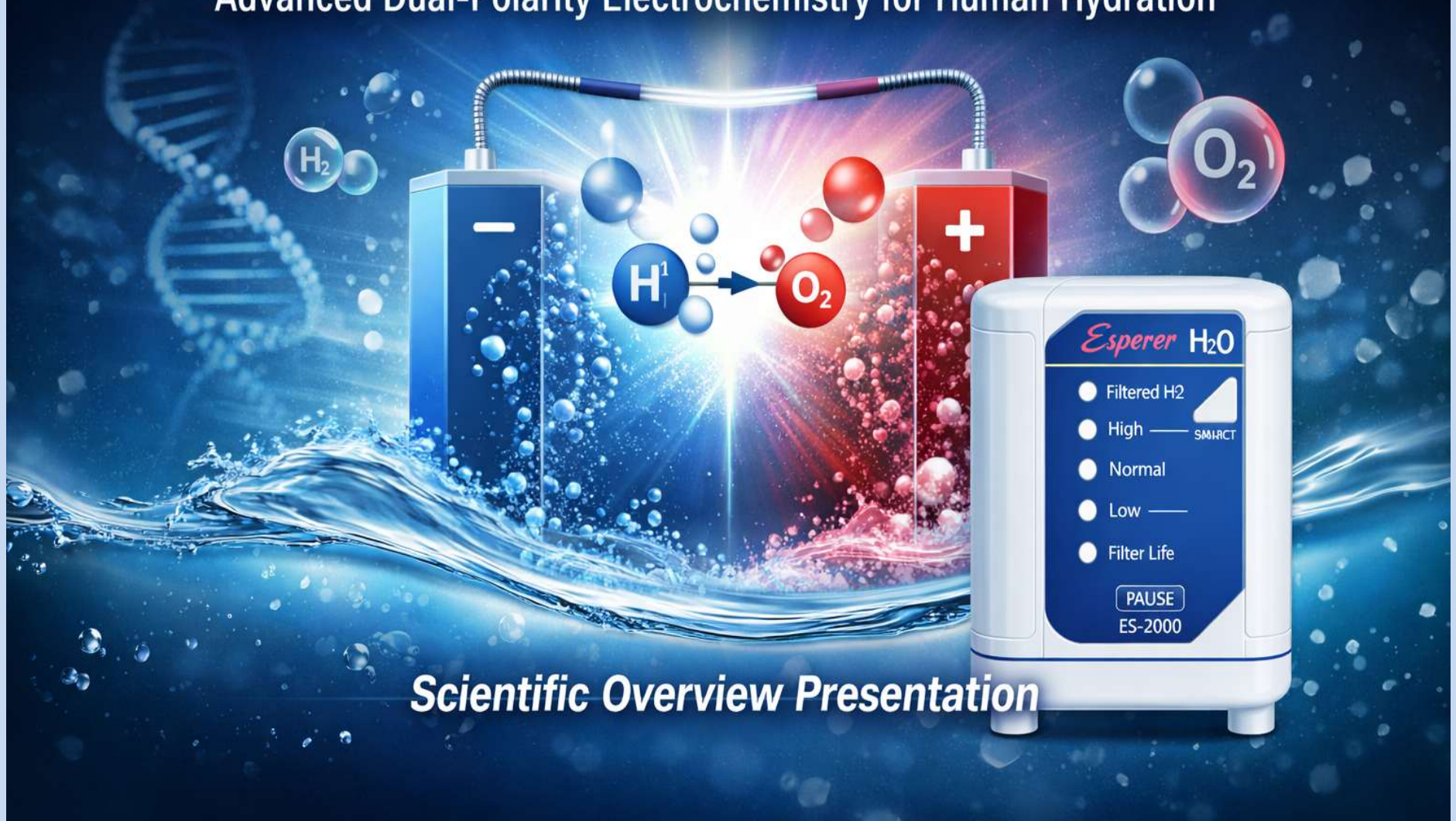


Neutral Functional Electrolyzed Water (FEW)

Advanced Dual-Polarity Electrochemistry for Human Hydration



Scientific Overview Presentation

Esperer H₂O

- Filtered H₂
- High — SMIRCT
- Normal
- Low —
- Filter Life

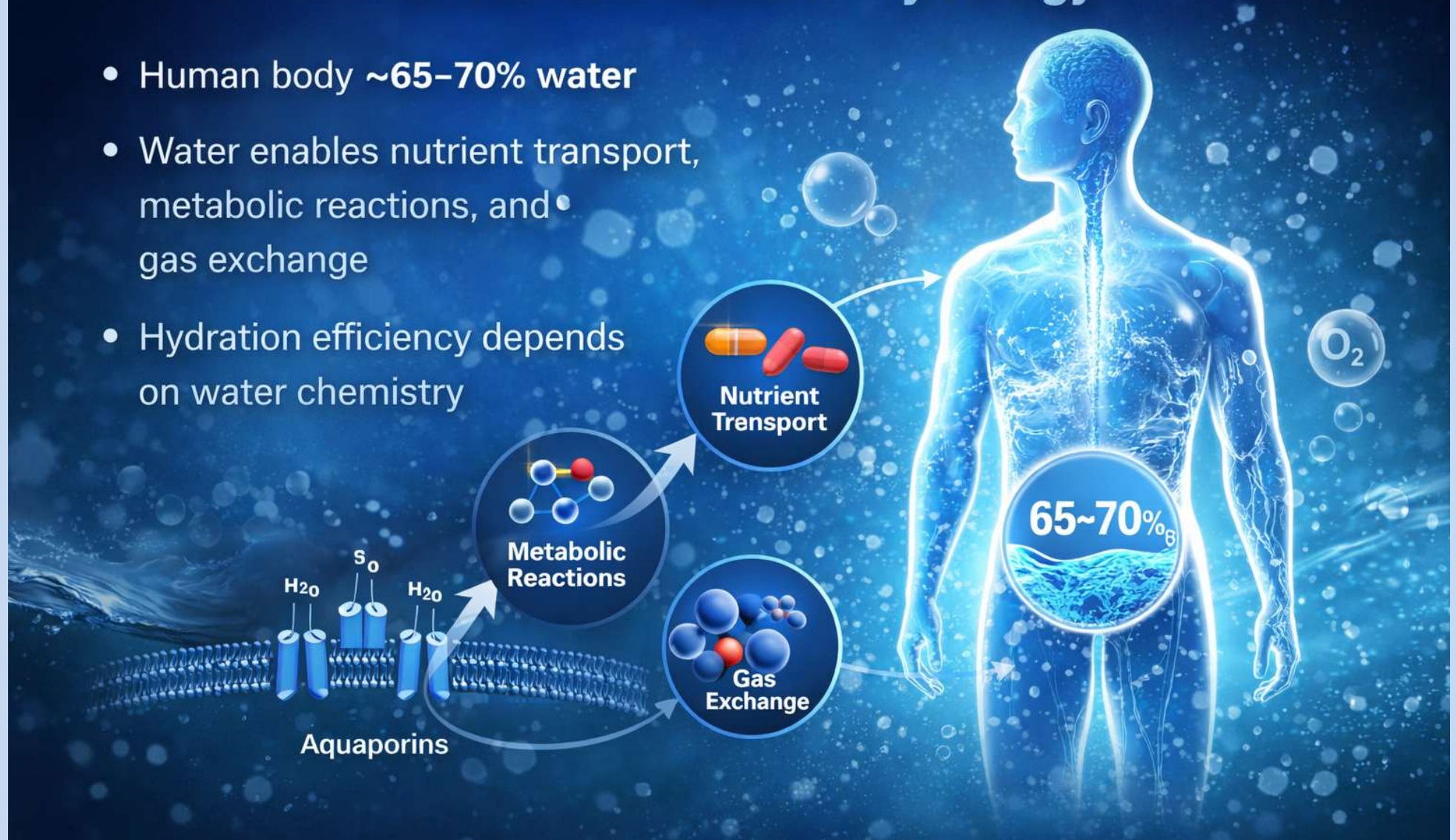
PAUSE
ES-2000

Water and Human Physiology

- Human body ~65–70% water
- Water enables nutrient transport, metabolic reactions, and gas exchange
- Hydration efficiency depends on water chemistry

Water and Human Physiology

- Human body ~**65–70% water**
- Water enables nutrient transport, metabolic reactions, and gas exchange
- Hydration efficiency depends on water chemistry



Global Water Challenges

- Modern water sources contain contaminants
- Examples: PFAS, pharmaceuticals, pesticides
- Trace contaminants can exist at ppt or lower concentrations

Global Water Challenges

- Modern water sources **contain contaminants**
- Examples: **PFAS**, pharmaceuticals, pesticides.
- Trace contaminants can exist at ppt or lower **concentrations**



Raw Water is Only an Ingredient

- Municipal, well, and surface water require preparation
- Filtration removes particulates
- Advanced purification removes chemicals and organics

Raw Water is Only an Ingredient

- Municipal, well, and surface water **require preparation**
- Filtration removes particulates
- Advanced purification removes chemicals and organics.



Water Preparation Process

- Carbon filtration removes organic compounds – absorbs PFAS and other chemicals
- Reverse osmosis removes dissolved solids
- Remineralization restores mineral balance

Water Preparation Process



Carbon Filtration

removes organic compounds -
- absorbs PFAS and other chemicals

Reverse Osmosis

removes dissolved
solids

Remineralization

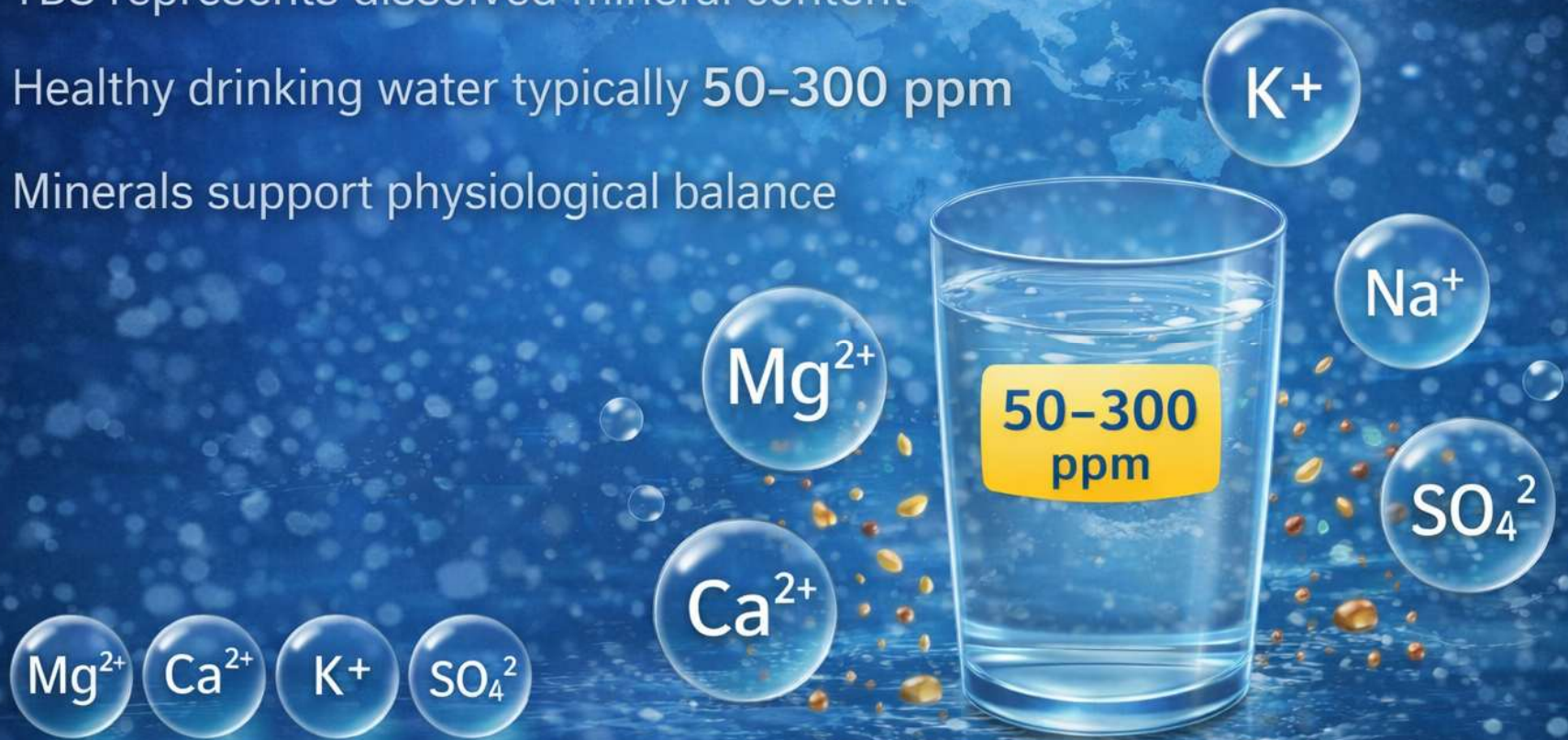
restores mineral
balance

Total Dissolved Solids (TDS)

- TDS represents dissolved mineral content
- Healthy drinking water typically 50–300 ppm
- Minerals support physiological balance

Total Dissolved Solids (TDS)

- TDS represents dissolved mineral content
- Healthy drinking water typically 50–300 ppm
- Minerals support physiological balance

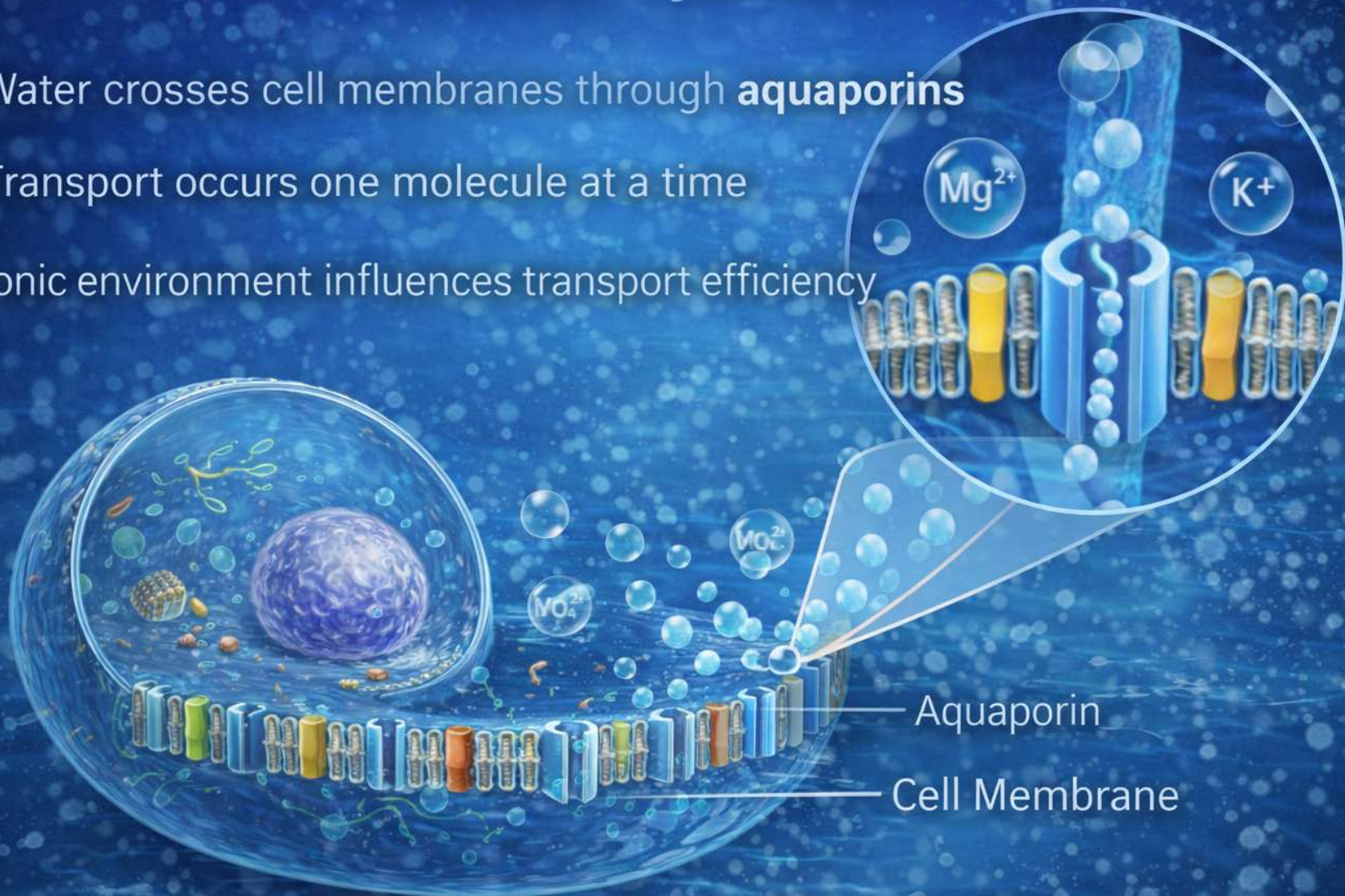


Cellular Hydration

- Water crosses cell membranes through aquaporins
- Transport occurs one molecule at a time
- Ionic environment influences transport efficiency

Cellular Hydration

- Water crosses cell membranes through **aquaporins**
- Transport occurs one molecule at a time
- Ionic environment influences transport efficiency

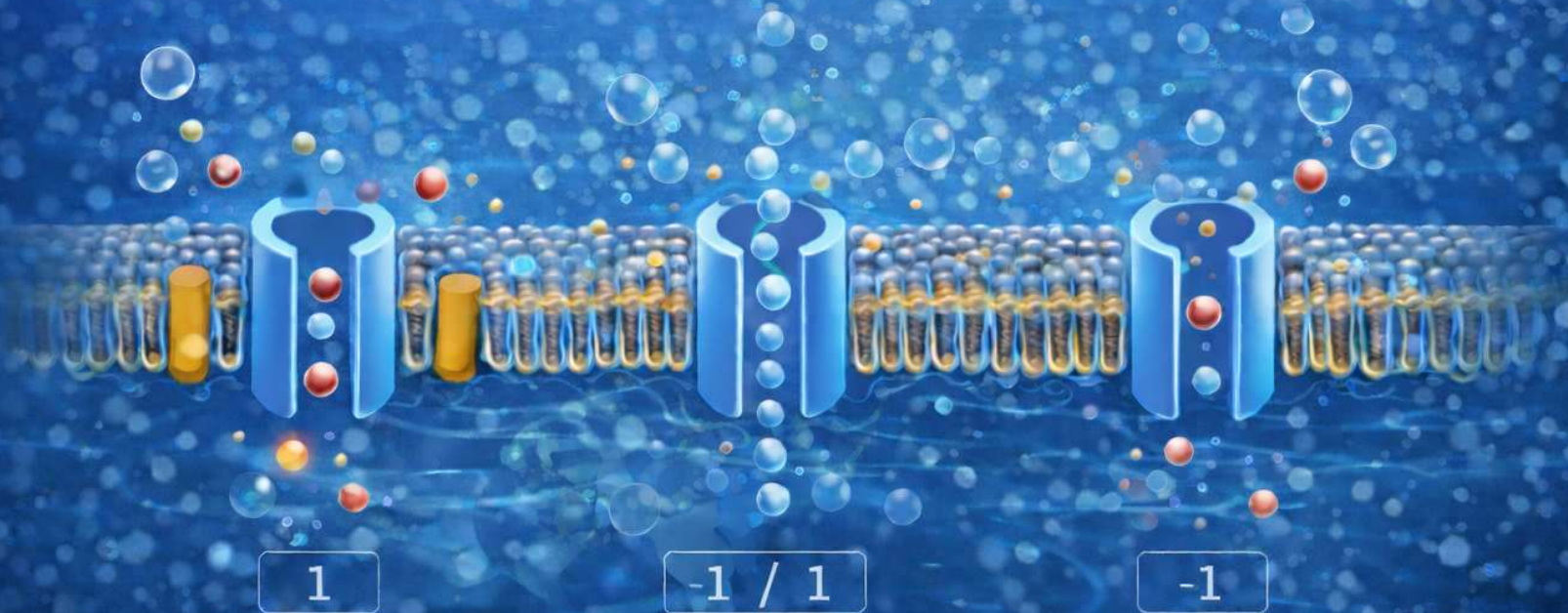


Aquaporin Transport

- Selective channels in cell membranes
- Allow controlled water movement
- Dependent on molecular compatibility
- Single H₂O molecule as 1 / -1 to 1 (Neutral FEW) / -1

Aquaporin Transport

- Selective channels in cell membranes
- Allow controlled water movement
- Dependent on molecular compatibility
- Single H₂O molecule
- Neutral FEW
- -1 to 1



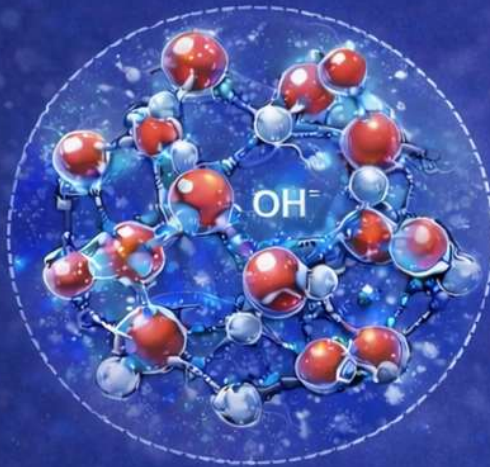
Water Molecular Structure

- Untreated water forms clusters of molecules low in molecular mobility
- Cluster size greatly influences molecular mobility
- Electrochemical process re-structures maximizing molecular mobility

Water Molecular Structure

From Clusters to Maximum Molecular Mobility

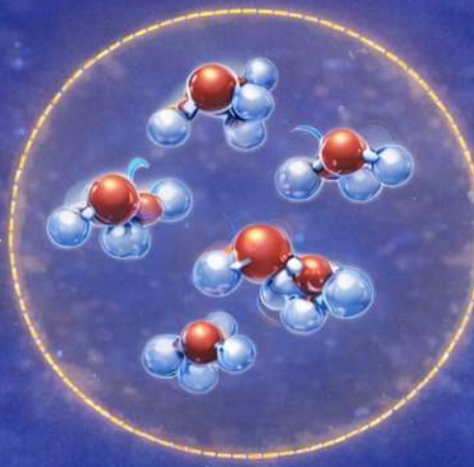
Untreated Water
Forms Clusters
Low Molecular Mobility



13 Molecule Cluster Self-ionizing
[OH⁻ H₃O⁺]

Large Cluster Size → **Low Mobility**

Nano Electrolysis
Reduces Clusters
Increases Mobility



Smaller Clusters → Increased Mobility
1.37 IP nano



Smaller Clusters → Increased Mobility

Electrochemical Process
Re-Structures Water
Maximizing Molecular Mobility



Single Molecule-Max Mobility
6.45 IP Ionic

No Clusters - Max Mobility

 = Water Molecule (H₂O)  = Molecular Mobility

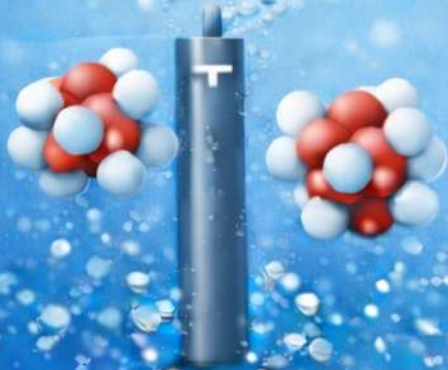
Electrochemistry of Water

- Electrolysis splits water molecules
- Produces hydrogen and oxygen species
- Creates energized ionic environment

Normal Electrolysis vs Dual-Polarity Electrolysis (FEW)

Normal Electrolysis

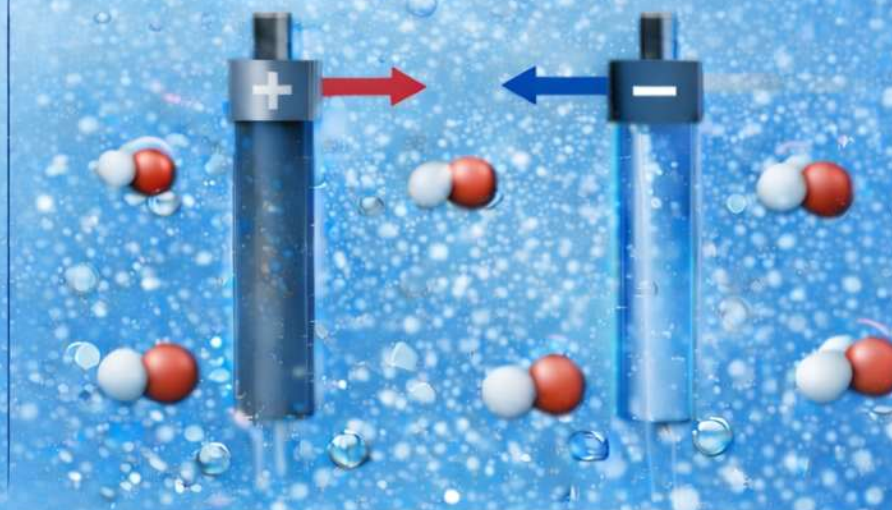
- Powered cathode produces hydrogen gas
- Local alkaline electrolyzed water
- Hydrogen nano bubbles



Alkaline Electrolyzed Nano Water

Dual-Polarity Electrolysis (FEW)

- Dual polarity electrolysis
- Maintains neutral chemistry
- Produces energized ionic environment
- Dissolved hydrogen gas



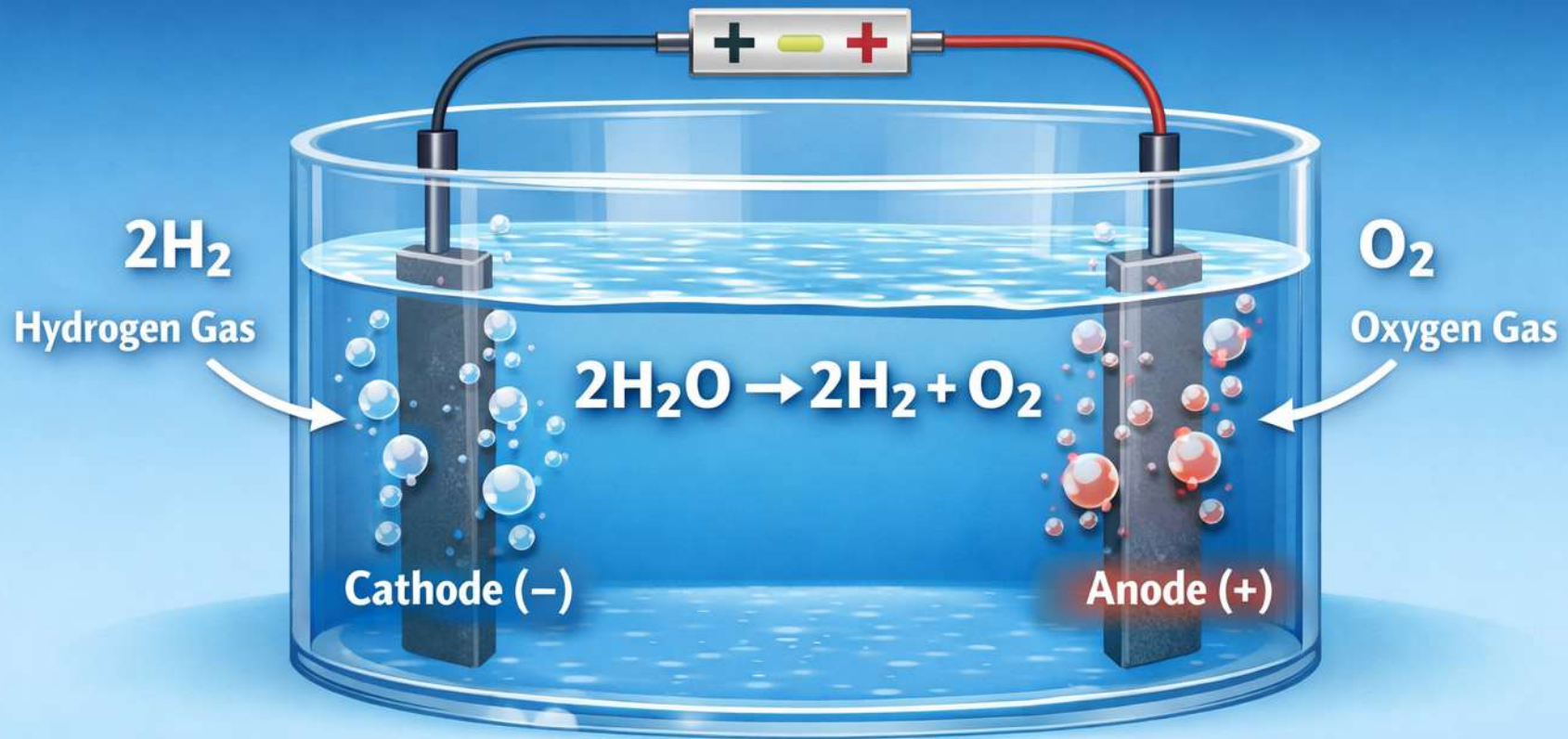
Neutral Electrolyzed Ionic Water

Dual-polarity electrochemistry producing a balanced ionic environment and high molecular mobility.

Basic Electrolysis Reaction

- $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
- Hydrogen acts as electron donor
- Oxygen species influence oxidative balance

Basic Electrolysis Reaction



Hydrogen acts as
Electron Donor

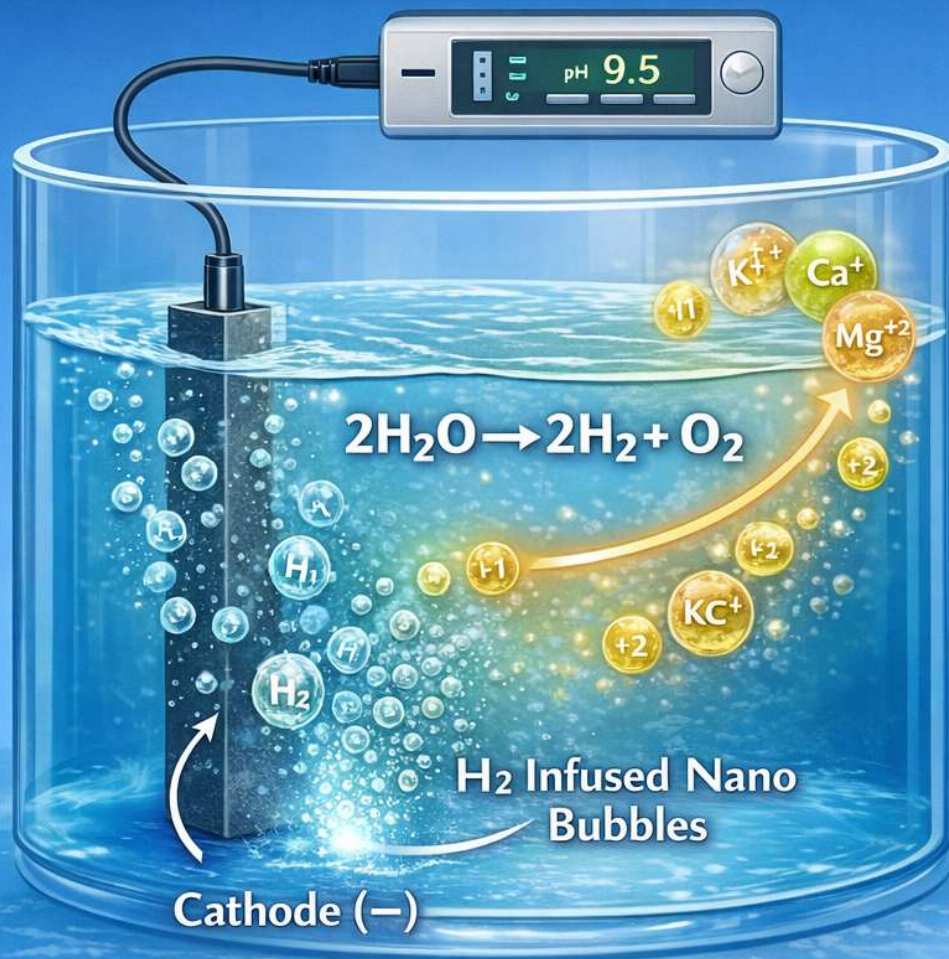


Oxygen Species Influence
Oxidative Balance

Single-Polarity Alkaline Ionizing Electrolysis Systems

- Alkaline ionizers use single polarity negative charge
- They reduce the natural cations by applying energy at the cathode
- Produce unbalanced infused hydrogen nano bubbles
- Slightly increase the Ionic Product to 1.37 IP
- Operate at high pH values

Single-Polarity Alkaline Ionizing Electrolysis Systems



- ✓ Alkaline ionizers use single polarity negative charge
- ✓ They reduce the natural cations by applying energy at the cathode
- ✓ Produce unbalanced infused hydrogen nano bubbles
- ✓ Slightly increase the Ionic Product to 1.37 IP
- ✓ Operate at high pH values



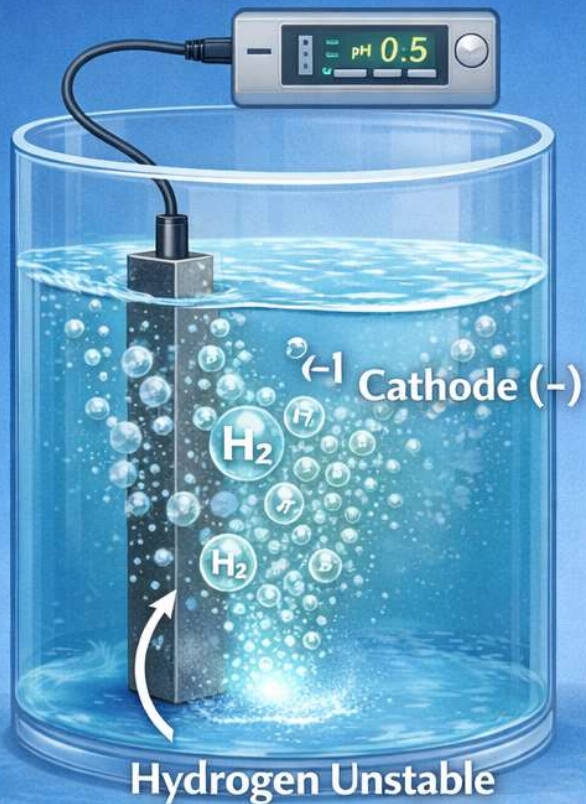
1.37 IP

Slightly Increased Ionic Product

Characteristics of Single-Polarity Alkaline Electrolysis

- Hydrogen stability may be limited
- pH imbalance may occur
- Gas infusion rather than dissolved stabilization

Characteristics of Single-Polarity Alkaline Electrolysis



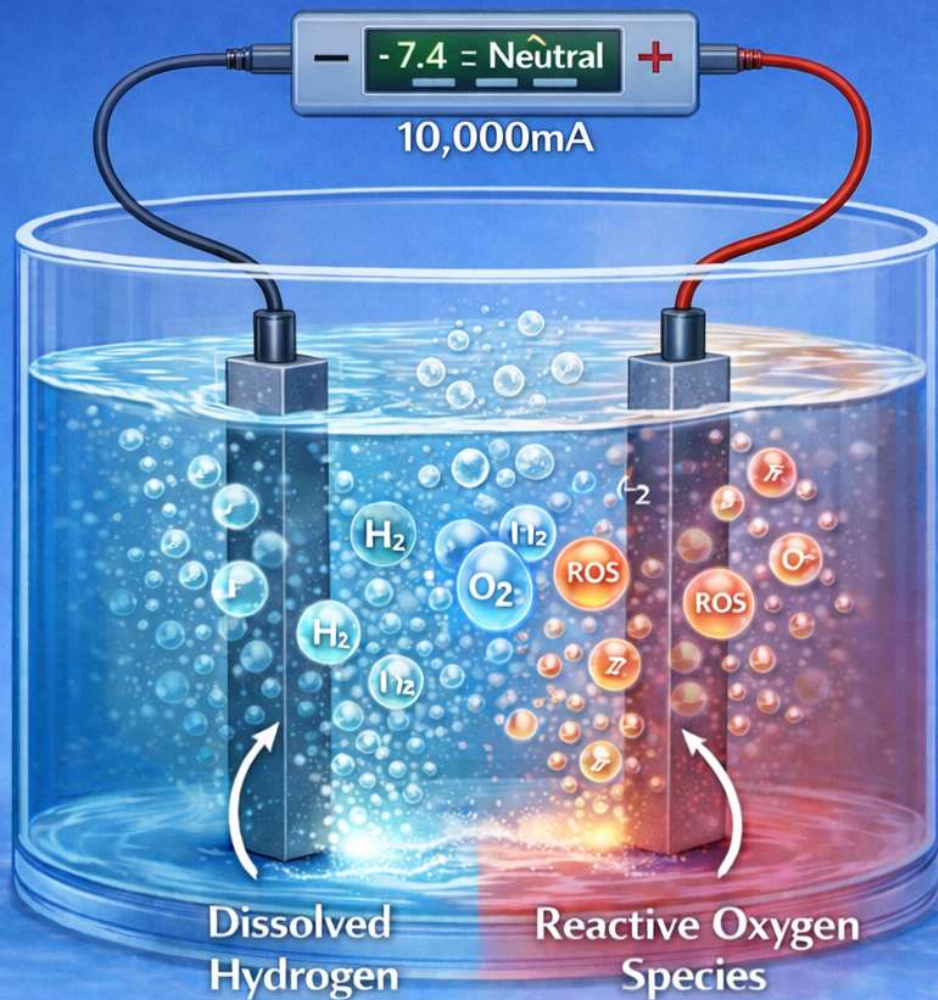
- ✓ Hydrogen stability may be limited
- ✓ pH imbalance may occur
- ✓ Gas infusion rather than dissolved stabilization



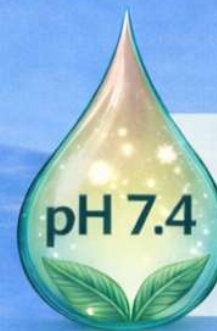
Dual-Polarity Electrochemistry

- 10,000mA applied energy to both anode (oxidizing anions) and cathode (reducing cations) for 6.45 Ionic Product stored stabilized energy.
- Generates dissolved hydrogen at the cathode, balancing reactive oxygen species at the anode, creating oxygen as the byproduct.
- Allows precise electrochemical control of Neutral 7.4 pH stabilization

Dual-Polarity Electrochemistry



- ✓ 10,000 mA applied energy to both anode (oxidizing anions) and cathode (reducing cations) for 6.45 Ionic Product stored stabilized energy!
- ✓ Generates dissolved hydrogen at the cathode, balancing reactive oxygen species at the anode, creating oxygen as the byproduct.
- ✓ Allows precise electrochemical control of Neutral 7.4 pH stabilization

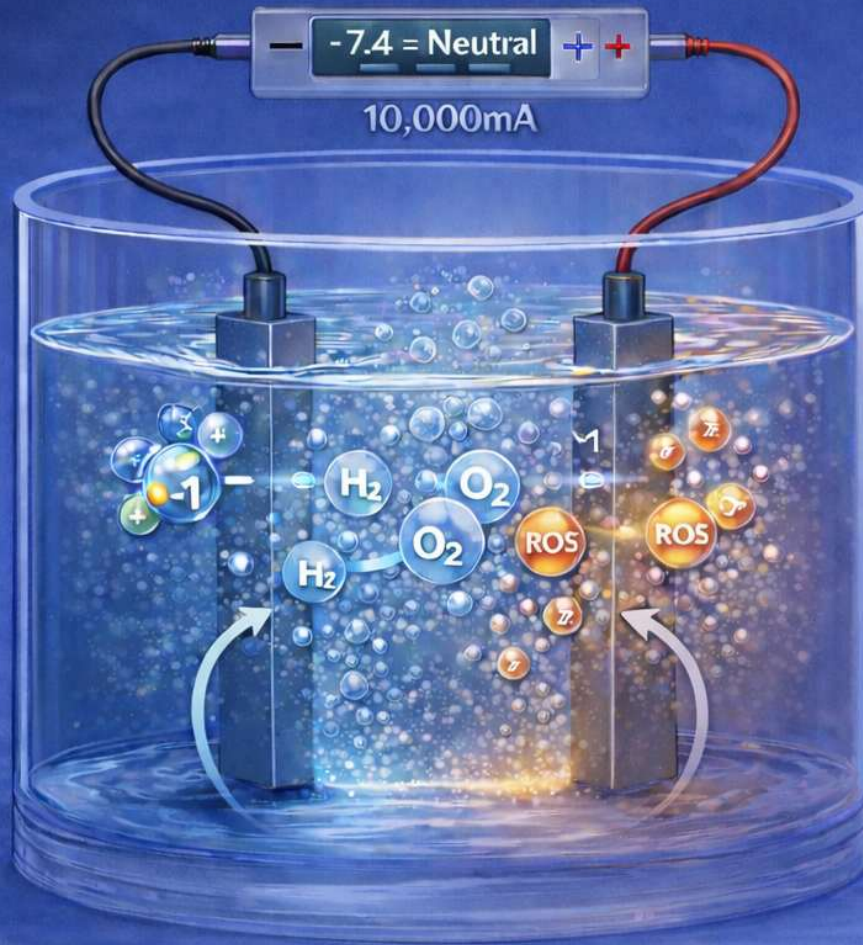


6.45
Ionic Product
Stored Energy

Functional Electrolyzed Water (FEW)

- Water processed through dual polarity electrolysis
- Balanced dissolved gases of hydrogen and ROS producing oxygen biproduct
- Dual Polarity Single Ions made by bonding 1 acidic and 1 basic ion at 10,000mA
- Energy stored to 6.45 IP for optimized absorption requirements -1/1
- Neutral 7.4 pH range specifically to optimal human compatibility

Characteristics of Functional Electrolyzed Water (FEW)



- ✓ Water processed through dual polarity electrolysis
- ✓ Balanced dissolved gases of hydrogen and ROS producing oxygen biproduct
- ✓ Dual Polarity Single Ions made by bonding 1 acidic and 1 basic ion at 10,000mA
- ✓ Energy stored to 6.45 IP for optimized absorption requirements -1 / 1
- ✓ Neutral 7.4 pH range specifically to optimal human compatibility



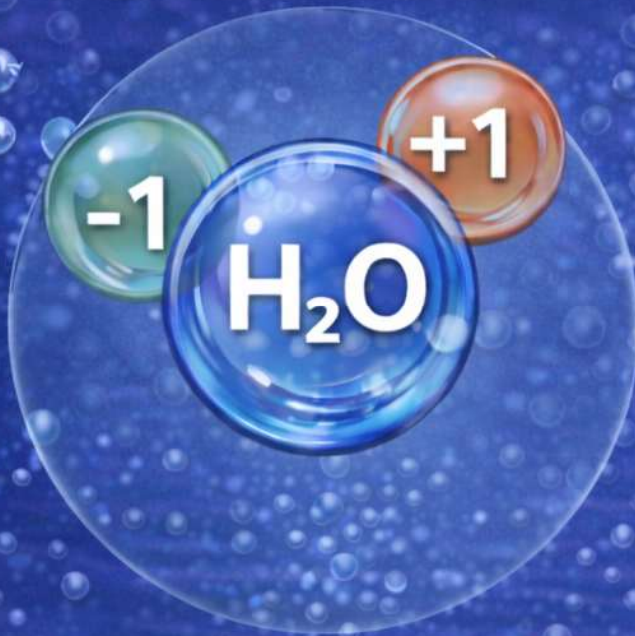
6.45 Ionic
Stored Energy

Ionic Balance

- Bonded -1/1 ion absorption availability
- Balanced neutral electrochemical environment
- Stability of dissolved gases

Ionic Balance

-1 / 1 Bonded Ion

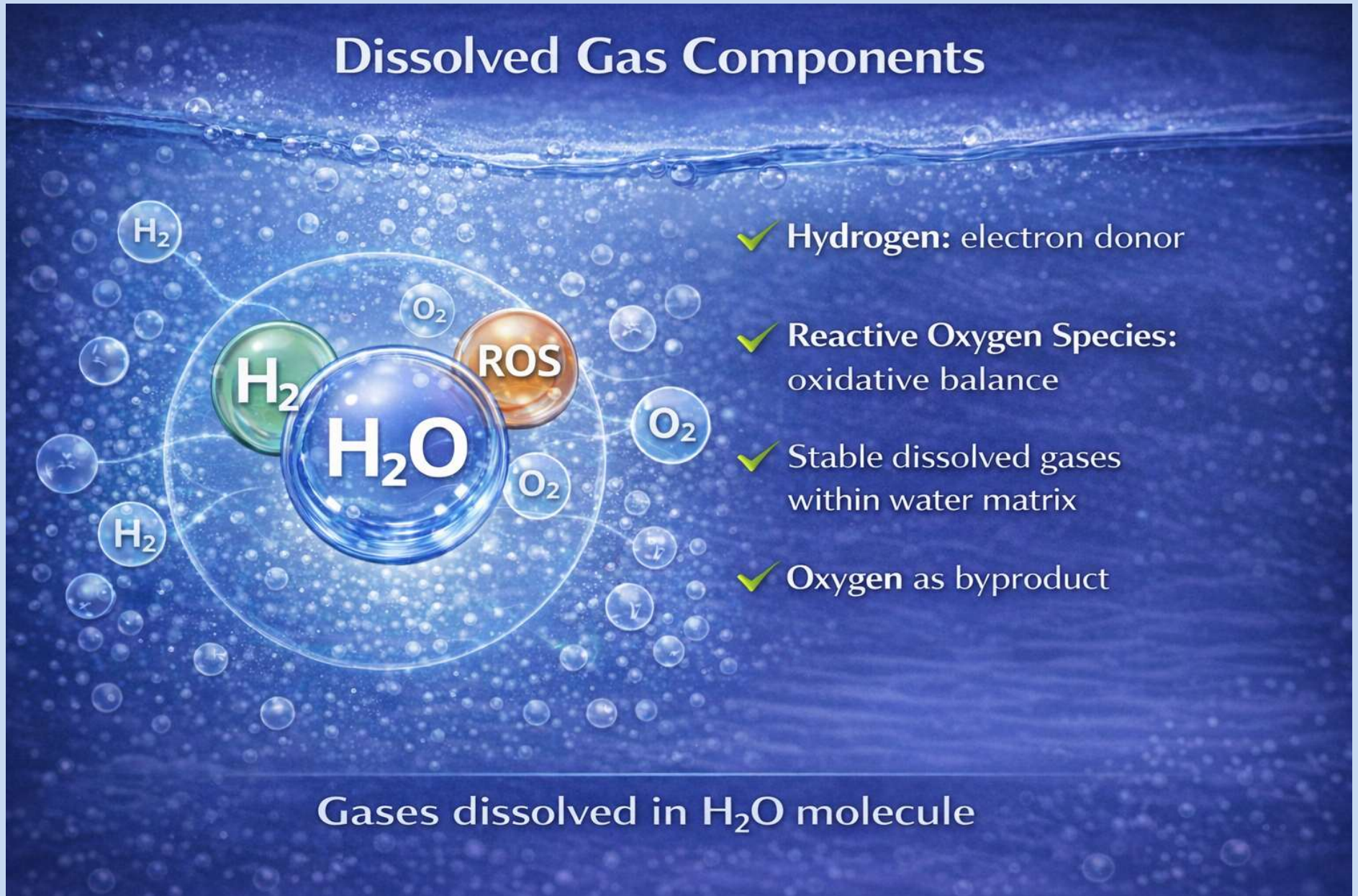


- ✓ Bonded -1/1 ion absorption availability
- ✓ Balanced neutral electrochemical environment
- ✓ Stability of dissolved gases

Dissolved Gas Components

- Hydrogen: electron donor
- Reactive Oxygen Species: oxidative balance
- Stable dissolved gases within water matrix
- Oxygen as byproduct
- Gases dissolved in H₂O molecule

Dissolved Gas Components



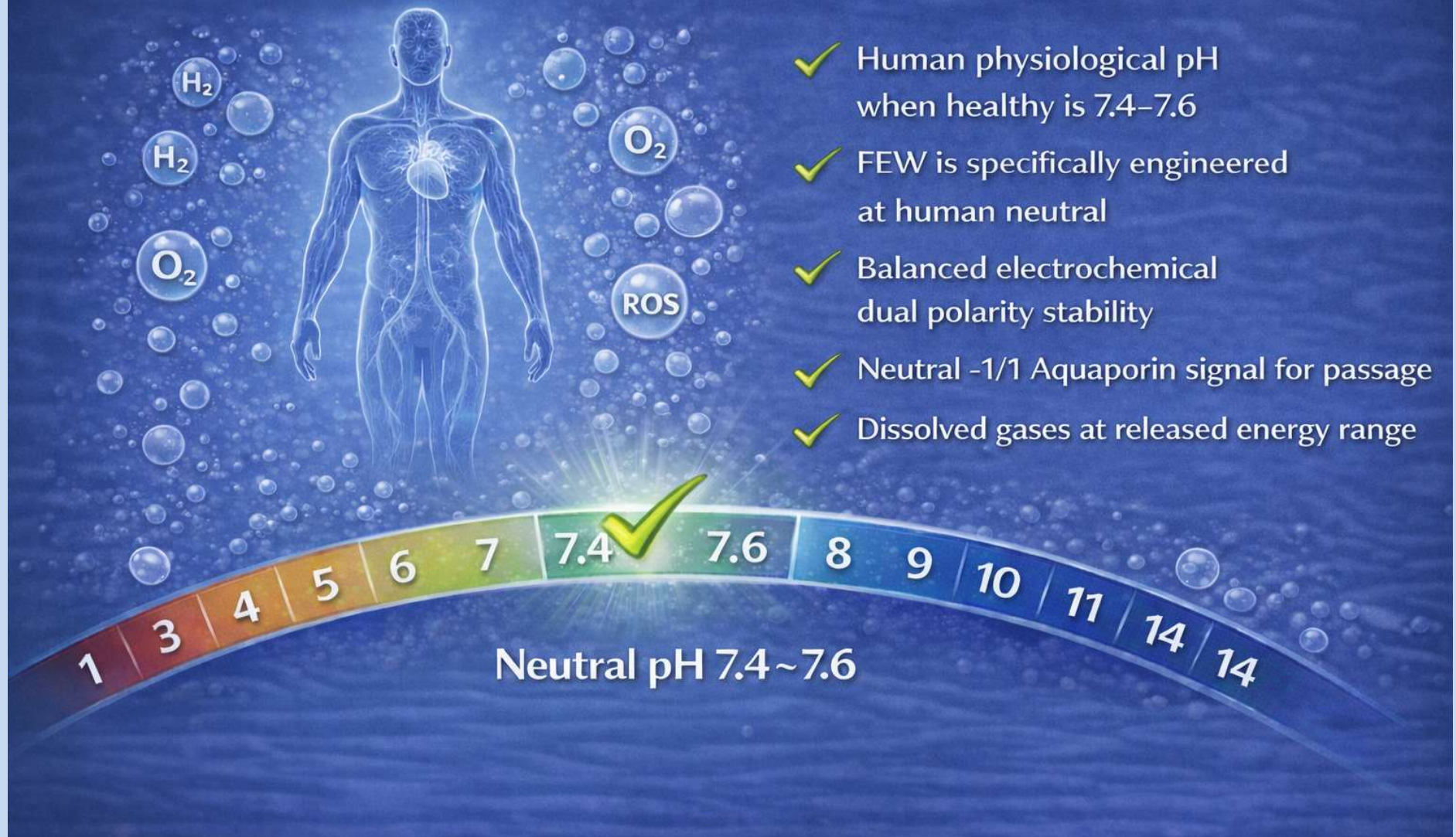
- ✓ **Hydrogen:** electron donor
- ✓ **Reactive Oxygen Species:** oxidative balance
- ✓ **Stable dissolved gases** within water matrix
- ✓ **Oxygen** as byproduct

Gases dissolved in H₂O molecule

Target Human Neutral 7.4 ~ 7.6 pH Range

- Human physiological pH when healthy is 7.4–7.6
- FEW is specifically designed at human neutral
- Balanced electrochemical dual polarity stability
- Neutral -1/1 Aquaporin signal for passage
- Dissolved gases at released energy range

Target Human Neutral 7.4 ~ 7.6 pH Range



Key Takeaways

- Water chemistry affects hydration efficiency
- Advanced preparation improves water quality
- Dual-polarity electrochemistry enables FEW
- FEW aims to produce balanced ionic water for consumption

Key Takeaways



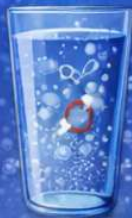
✓ Water chemistry affects hydration efficiency



✓ Advanced preparation improves water quality



✓ Dual-polarity electrochemistry enables FEW



✓ FEW aims to produce balanced ionic water for consumption

FEW System Workflow

- Raw water input
- Coconut Carbon Block Filtration pre-treatment
- 60 PSI Pump
- CSM Reverse Osmosis Purification
- RO Purified Water Storage Tank
- Re-Mineralization / pH Neutralization
- Dual-Polarity Electrolysis by Esperer.H2O
- Coconut Carbon Block Filtration Finishing
- Functional Electrolyzed Water Output



FEW System Process Diagram

Raw Water

5M Particle Filter

5M Coconut Carbon Block

CSM Reverse Osmosis

Re-Mineralization

Dual-Polarity Electrolysis

10M Coconut Carbon Block

FEW Output



Thanks for sticking it out



By: Paul E. Seaver

Pres. PBSWC Inc.



Human Neutral - Negative