



Welcome to Omya

Jarrold Massam – Market Development & Innovation Director, Water & Energy



THINKING OF TOMORROW

INTRODUCTION TO OMYA

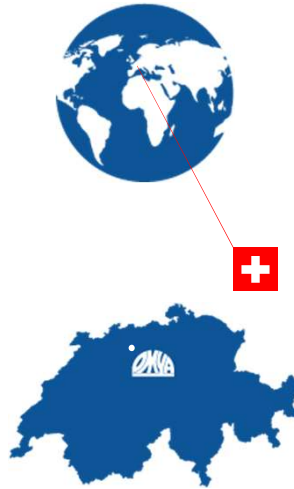
Facts & Figures

130 years of history

Privately-owned **Swiss**
corporation

4 CHF billion turnover

Ownership of **mineral deposits**
all around the globe



More than **175** plants
in over **50** countries

Headquarters in
Oftringen, Switzerland



8,000
employees

Omya Water & Energy

Our Markets

Printing & Writing



Construction



Technical Polymer Applications



Packaging



Consumer Goods



Agriculture & Forestry



Water & Energy



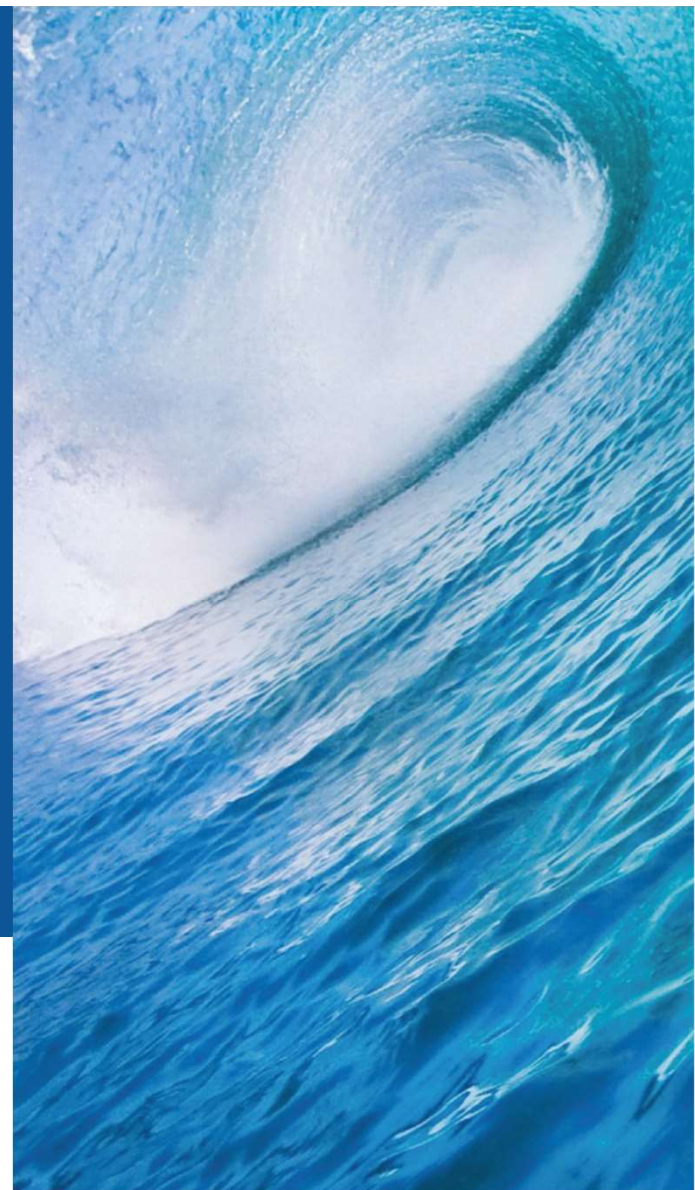


Omya Advanced Remineralization Process (OARP)



THINKING OF TOMORROW

omya.com



Why Post Treatment?

- Corrosive water damaging to infrastructure
- pH and other targets
- Health benefits of calcium (and magnesium) in drinking water
- Taste

Drawbacks of Current Processes

Direct Chemical Dosing	Lime Dosing	Calcite Contactors
Calcium Chloride (CaCl_2) Sodium Bicarbonate (NaHCO_3)	Lime ($\text{Ca}(\text{OH})_2$) Carbon Dioxide (CO_2)	Calcium carbonate chips (CaCO_3) Carbon Dioxide (CO_2)
High operating cost Unwanted counter ions Focused on LSI Difficult to maintain stability	High cost Waste by-product No Carbonate Difficult to maintain stability	Slow reaction kinetics Poor CO_2 efficiency Large plant footprint



Improve and Enhance from Current Processes

Calcite Contactors	Lime Dosing	Direct Chemical Dosing
Calcium carbonate chips (CaCO_3) Carbon Dioxide (CO_2)	Lime ($\text{Ca}(\text{OH})_2$) Carbon Dioxide (CO_2)	Calcium Chloride (CaCl_2) Sodium Bicarbonate (NaHCO_3)
Slow reaction kinetics Poor CO_2 efficiency Large plant footprint	High cost Waste by-product No Carbonate Difficult to maintain stability	High operating cost Unwanted counter ions Focused on LSI Difficult to maintain stability



Drastically increase kinetics
Allow controlled dosing of CO_2
Drastically reduce particle size



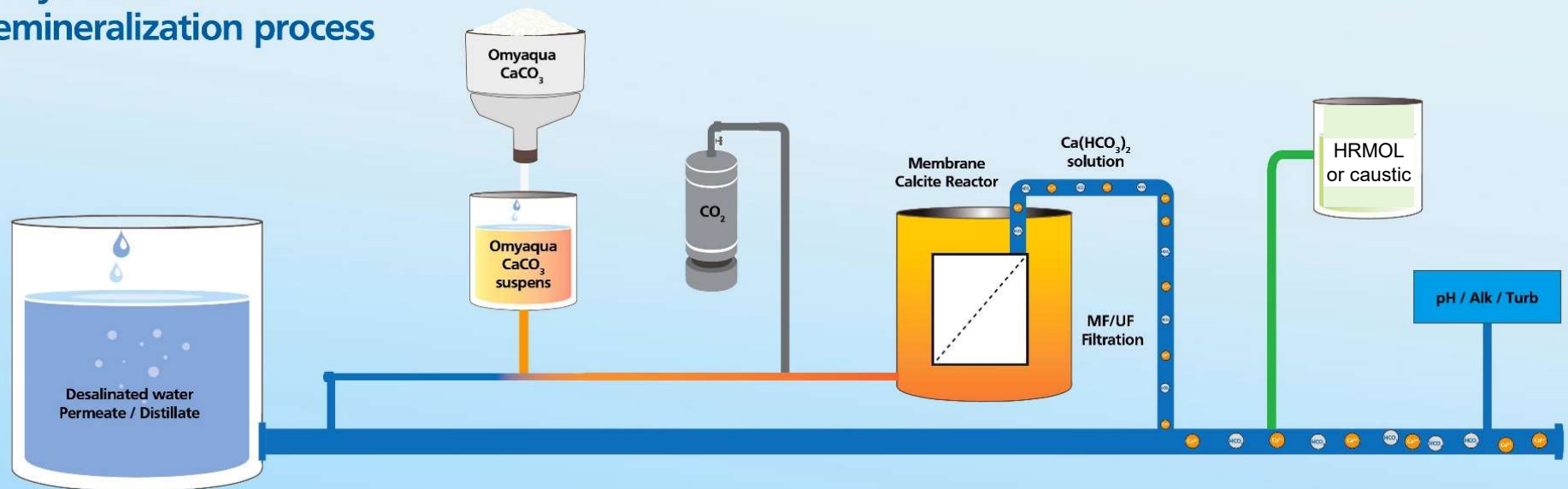
Significantly reduce amount
Use high purity product
Accurate dosing control



Significantly reduce amount
Accurate dosing control

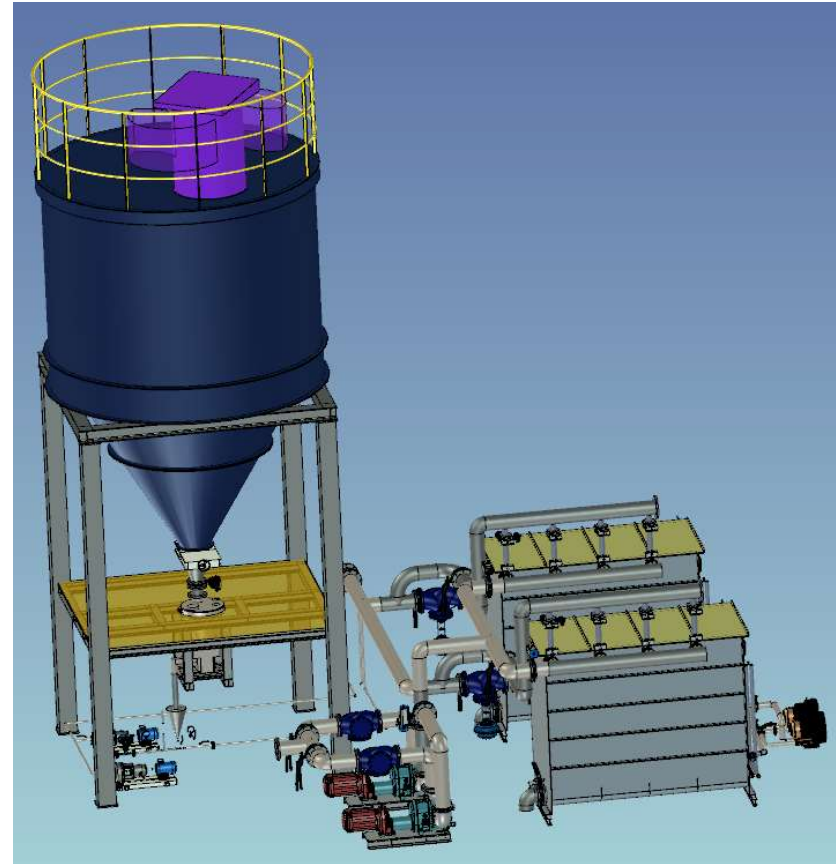
Omya Advanced Remineralization Process

Omya advanced remineralization process



Advantages of OARP

- Fully adaptable post-treatment
- High CO₂ efficiency (↓\$)
- Turbidity free water
- Reduced plant footprint (↓\$)
- Reduced CAPEX and/or OPEX (↓\$)
- Modular design



OMYA ADVANCED REMINERALIZATION PROCESS

Pilot & Demonstration



Padre Dam AWT



■ For your next project?

Technical & Commercial Proposals

- Retrofit of existing installations to provide cost savings to the facility.
- Greenfield, new and upcoming projects.



Omya Advanced Remineralization Process

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Thank you

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Innovation*

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