



# Water & Energy



THINKING OF TOMORROW

# Commitment since 1884

Omya was founded in 1884 in Oftringen, Switzerland, under the name Plüss-Staufer. Gottfried Plüss and his father-in-law Adolf Staufer produced glazing putty by combining fine chalk with linseed oil. From the very start, the forefathers of Omya were committed to supplying the highest quality.

To keep their pledge, they soon acquired a chalk quarry in France and built their own chalk powder mill in Oftringen. These long-standing traditions are still valid today.

A second chalk quarry at Omey, France, led to the Omya brand name at the turn of the 20th century. A strict focus on customer needs quickly let the business expand in Switzerland and beyond.

Continuous innovation, stable ownership and a consistent long-term focus set the scene for the company's international expansion. High quality products and excellent customer relationships have made Omya a highly regarded global brand.

# About Omya

Omya is a leading global producer of industrial minerals, mainly mineral additives and pigments derived from calcium carbonate and dolomite, and a worldwide distributor of specialty chemicals.

Committed to implementing the principles of sustainability at all company levels, Omya provides value-added products and services from responsibly sourced materials to meet the essential needs of current and future generations.

Omya provides a wealth of product solutions and services that contribute to its customers' competitiveness and productivity in multiple industries:

**AGRICULTURE & FORESTRY**

**CONSTRUCTION**

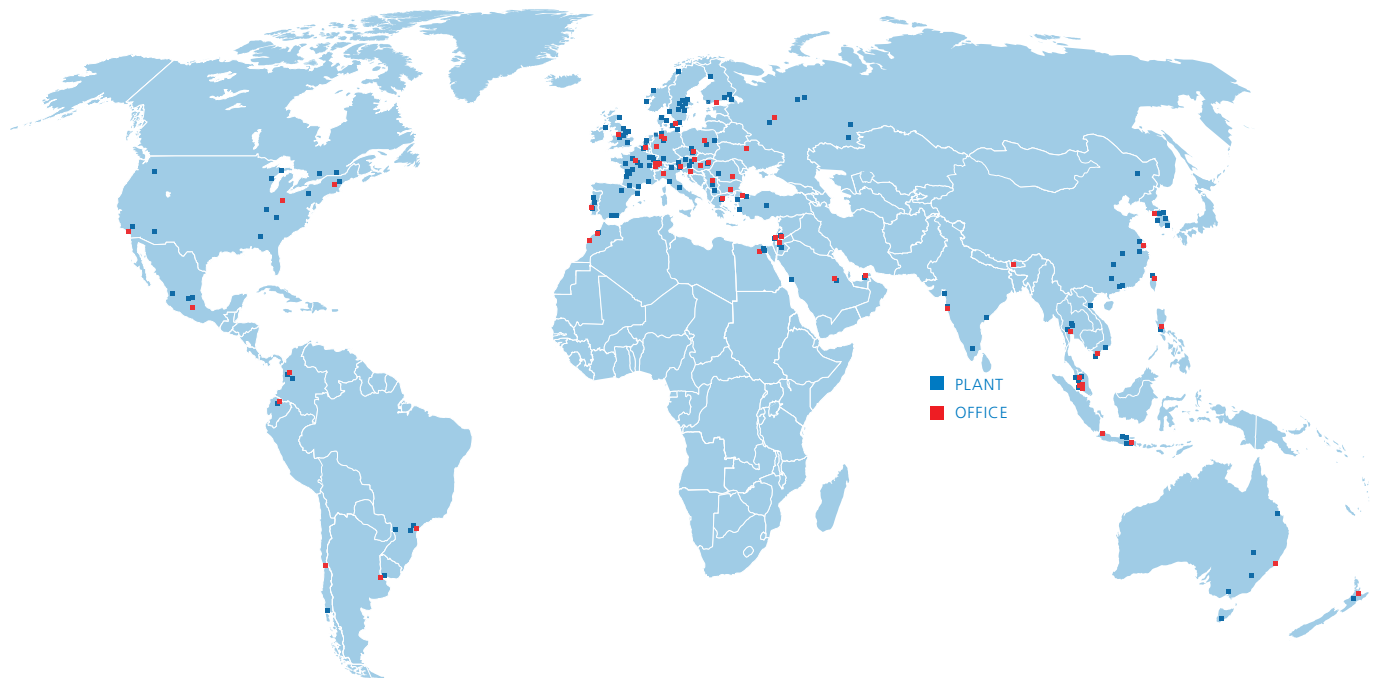
**CONSUMER GOODS**

**PACKAGING**

**PRINTING & WRITING**

**TECHNICAL POLYMER APPLICATIONS**

**WATER & ENERGY**



**Omya is present around the globe with 8,000 employees at more than 175 locations in over 50 countries.**

# Thinking of Tomorrow

**Omya values long-lasting relationships more than short-term results.**

**The company's promise »Thinking of Tomorrow« is based on three commitments:**



## CUSTOMER CARE

Serving our customers is the core value of the Omya brand. We are committed to exceeding our customers' expectations every day. Our teams of sales, technical and regulatory staff have a deep understanding of local markets and requirements.

They provide a uniformly high level of care for our business partners around the world. Our customers can rely on the highest quality of products, delivered to their premises within the agreed time. Whenever needed, they can count on the technical advice from our dedicated team of scientists and engineers; Whether for assistance with implementation, comprehensive lab analysis or reformulation support. Reliability, commitment and quality are the values we trust to establish long-lasting partnerships.



## INNOVATION

For Omya, innovation is much more than delivering new products to the market. Being placed at the very start of the value chain, we contribute to our customers' success through a process of co-creation, providing solutions that really work and pay off. Our value creation is based on the multi-decade experience of our experts who transfer science into practice.

Omya's innovations are designed to differentiate our customers' products from their competition and to create new value propositions.



## SUSTAINABILITY

Driven by our vision and our strong value-led corporate culture, we take on our role as a partner for a sustainable future, understanding the importance of our actions and our responsibility towards nature and society. At Omya, we take a full life-cycle perspective of our products and services and their contribution to society. Translating our customers' requirements into sustainable solutions with added value, we commit ourselves to sustainable business principles throughout the entire organizational structure – from mining and processing to management. We combine experience with innovation to minimize environmental impact, optimize logistics and ensure a safe and stable work environment for our employees.





**By 2025 1.8 billion people will face water scarcity and two thirds of the global population will be living in water-stressed conditions.**

(UN statistics)



## SUSTAINABILITY

**Sustainability is the key to future success on our journey of achieving our objectives.**

**With its variety of minerals and products, Omya has been enhancing the value of Water & Energy helping:**

- Streamline production processes
- Improve water characteristics
- Reduce the total cost of producing high quality water
- Lower the end-product carbon footprint

# Advanced Minerals & Specialty Products

## ENHANCING THE VALUE OF WATER & ENERGY

Omya has been supplying the Water and Energy industries for decades, with a variety of minerals and products. Over the years, we have acquired substantial expertise and profound experience of adding value to the Water and Energy Industries. We help streamline production processes, improve water characteristics, and reduce the total cost and energy of producing high quality water.

Omya combines advanced mineral technology, over 130 years of skill, and exclusive distribution partnerships. The comprehensive portfolio makes Omya uniquely able to serve our customers in ways that others can't.

## DEFINED BY OUR CUSTOMER'S NEEDS

Omya offers ground, precipitated, and modified Calcium Carbonates as part of its minerals portfolio. Our products are designed specifically for Water and Energy applications.

Our customers benefit from our in-depth market knowledge, regulatory support and innovation power. We support the treatment of water and the production of energy around the world, providing competitive and value-added answers to difficult questions.



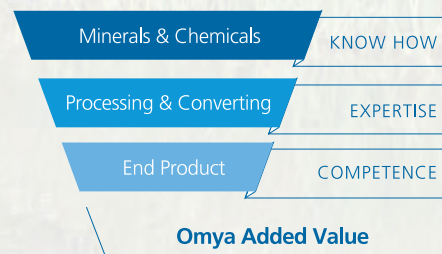




## PUSHING BOUNDARIES

### **Omya develops solutions where none exist.**

With innovative formulations and pioneering technologies, Omya is always striving to push the boundaries where we work. Whether that means new applications, new products or new technologies, our customers know that Omya is answering their most difficult questions.



Omya's minerals and products significantly enhance water treatment and energy production processes, reduce energy consumption and lower the end-product carbon footprint.





# Technical Service & Support

## COMPREHENSIVE KNOWLEDGE & STATE-OF-THE-ART FACILITIES

For decades, Omya has cultivated a tradition of focused and dedicated technical service, supported by cutting edge technology in our laboratories. We support our partners across the world, offering customer-oriented guidance and helping them meet local and global demands.

State-of-the-art service laboratories and facilities mean our customers can depend on us, whether that means analytics, microscopy, microbiology, quality control or regulatory affairs. Our labs practice Electron Microscopy, Elemental analysis, near-field laser microscopy, spectroscopy, chromatographic characterization, and crystallographic analysis. Our capabilities are always improving, to ensure we always meet our customers' needs.





SURFACE & GROUND WATER

DESALINATION

INDUSTRIAL WASTE WATER

MUNICIPAL WASTE WATER

DRILLING & COMPLETION FLUIDS

FLUE GAS CLEANING

AIRBORNE POLLUTANT REMOVAL







enhanced  
by Omya

# Surface & Ground Water

Improve water quality & treatment performance  
with natural mineral products

The pH of naturally soft water tends to be slightly acidic. This means taste is impaired, and it is corrosive to production and distribution facilities. The lack of any buffer in the water can result in drastic pH changes, and more coagulants are needed when that water is treated later.

Our natural Calcium Carbonate products can help solve these problems. The addition of Omya's minerals helps improve the taste of the water, and reduces corrosion of production and distribution facilities. The buffering effect helps protect the water against drastic pH changes downstream, and helps to reduce the chemical demand for coagulation and flocculation during the treatment process.



## Specialty Chemicals & Minerals

### PARTNERSHIPS FOR GROWTH

Omya closely collaborates with leading chemical and specialty minerals manufacturers offering advanced water treatment solutions across the world.

Omya's water treatment distribution portfolio is constantly evolving, to reflect changing regulatory and improved water quality requirements and its corresponding needs of our customers.

### APPLICATIONS:

- *Mineralization*
- *Decarbonization*
- *Neutralization*
- *pH adjustmet*
- *Water purification*
- *Reverse Osmosis Antiscalants*
- *Reverse Osmosis Cleaning Chemicals*
- *Activated Carbon*
- *Aluminium Silicate*

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### Benefits

- *Improve regulatory compliance*
- *Optimize plant performance*
- *Decrease operating cost*



# Desalination Post-Treatment

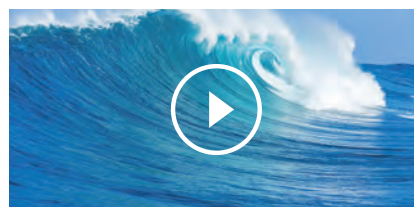
## Superior remineralization performance & final water quality

Omya has over 40 years of experience in re-mineralization of soft and desalinated water. Our Calcium Carbonate products, and the complementary distribution products we provide, have been ensuring the purity and suitability of drinking water in regions of water scarcity for decades.

Selected Omya products help to ensure that minerals absent in soft and desalinated water are replenished to make remineralized water fit for human consumption and irrigation. Omya's natural Calcium Carbonate products follow international standards for product quality such as DIN EN 1018 and NSF-60. This means our customers can use our products knowing they will produce high quality, safe, and healthy drinking water, as well as securing the integrity of their water distribution infrastructure.

### *Remineralization Benefits*

- *Stable & healthy drinking water*
- *Achieve regulatory compliance*
- *Corrosion prevention*
- *Protect water infrastructure*



Omya Advanced  
Remineralization  
Process



[www.omya.com/oarp](http://www.omya.com/oarp)



## INNOVATION

### **Omya Advanced Remineralization Process (OARP)**

A new advanced remineralization process for the desalination market has been developed using Omyaqua®, a high quality micronized calcium carbonate. The Omya Advanced Remineralization Process (OARP) is offered to customers based on CAPEX & OPEX needs in greenfield or retrofit projects

and is also available as containerized, modular “plug-n-play” solution.

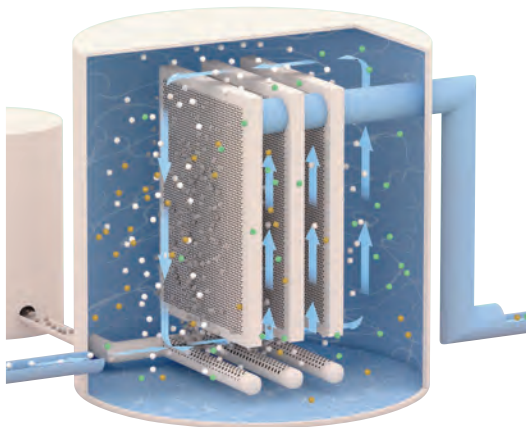
Fast dissolution kinetics and efficient CO<sub>2</sub> utilization, combined with cutting-edge process control allows immediate adaption to changes in desalination plant flow rate, ensuring consistent and high

quality drinking water.

A major advantage of the OARP process is the absence of generation of any backwash waste water. This removes the requirement for backwash waste water treatment and sedimentation systems and thus allows for a zero-waste generating and handling process.

# Omya Advanced Remineralization Process (OARP)

## Membrane Calcite Reactor

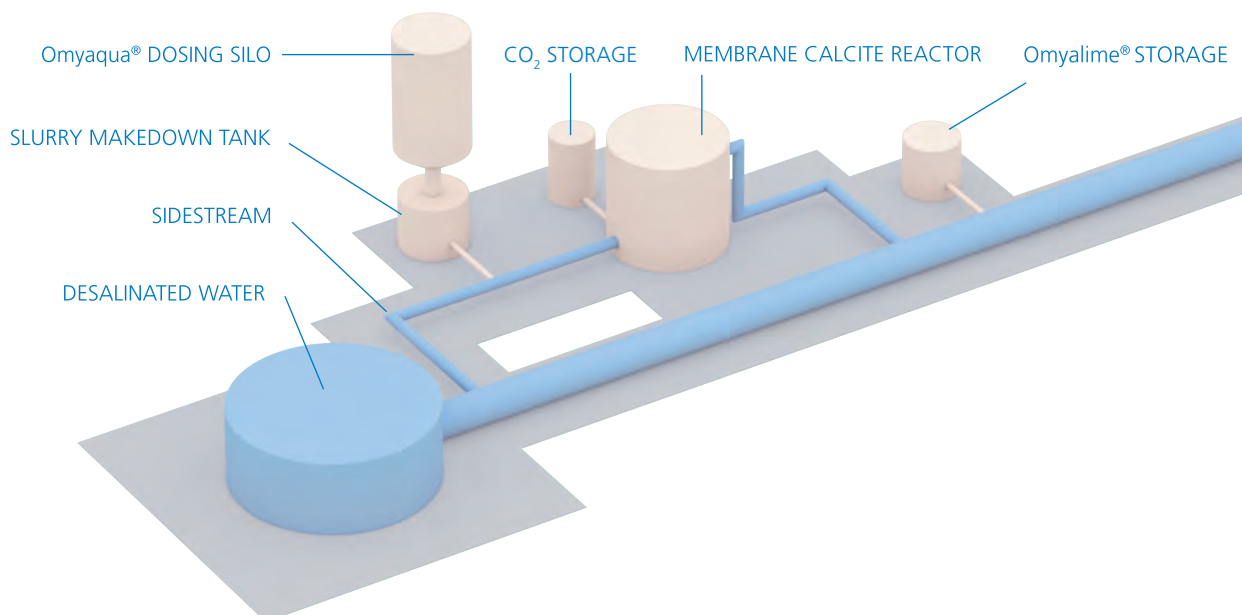


- Produces a concentrated, turbidity-free calcium bicarbonate solution
- Membrane can be backwashed without loss of water or products, resulting in a zero-waste process.

## Slurry Makedown Tank



- *Omyaqua*® micronized Calcium Carbonate is mixed with desalinated water to form a  $\text{CaCO}_3$  suspension
- *Omyaqua*® suspension dosed into the sidestream



# Industrial Waste Water

## Advanced and eco-friendly water treatment solutions

Industrial waste water presents unique challenges to the cleanliness of natural waterways. Not only must the water itself be treated to a standard that will pose no environmental risk, but the chemicals and processes used to treat it must also be environmentally neutral and sustainable.

Omya's products meet this challenge. Based on natural minerals, they pose no environmental risk to natural waterways and increase the sustainability of the industrial process as a whole.

Mineral products developed by Omya are utilized in liquid-solid separation, dewatering and adsorption processes and provide for improved removal of various contaminants such as heavy metals. These products have been developed to provide a more sustainable and eco-sensitive alternative to traditional environmental critical water treatment chemistry.

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### *Benefits*

- *Improved solids extraction*
- *Minimized sludge volume*
- *Improved regulatory compliance*
- *Reduced environmental impact*
- *Non-hazardous*
- *Easy to handle, store and dose*



## SUSTAINABILITY

Omya has developed sustainable industrial neutralization processes and products for the metal finishing industry. These efficiently control the precipitation of heavy metals, consequently creating added value for the customer by either

allowing the reuse of recovered heavy metals, as well as reducing the amount of final sludge to be disposed of. As added value, this significantly reduces the environmental impact of the entire finishing process. Omya's industrial solutions

improve customers waste treatment processes, by reducing treatment and disposal cost as well as improve environmental compliance. Sustainability is therefore promoted on multiple fronts.





# Municipal Waste Water

Natural minerals improve performance in activated sludge processes

Municipal Waste Water Treatment facilities face tough challenges in dealing with the unpredictable nature of wastewater from populated regions. The dynamic nature of municipal wastewater means the plant itself must be flexible to follow such dynamics, in order to respond appropriately, and prevent any negative impact to the environment.

Activated Sludge Treatment is a ubiquitous process, and is critical to ensure the water is safe for release. However, the process can quickly be rendered ineffective, if the ability of the plant to absorb changes in water quality is compromised.

Omya's Calcium Carbonate products help support the function of municipal wastewater treatment plants, by protecting against the detrimental impact caused by varying influent water quality.

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## *Benefits*

- *Stabilized Bioflocs*
- *Reduced turbidity*
- *Increased hydraulic capacity*
- *Improved dewatering properties*
- *Improved nitrification*

# Drilling & Completion Fluids

Omya's Calcium Carbonate products help protect the wellbore and minimize formation damage

For the oil and gas industry, Omya has developed a range of marble and other Calcium Carbonate products, to meet the challenges encountered in drilling and completion operations.

Omya offers specifically sized, high purity, marble-based Calcium Carbonate for use in drilling and completion fluid applications.

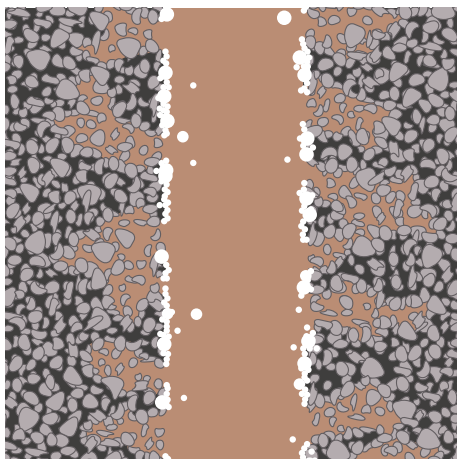
Omya's products can be used effectively as bridging agents, weighting agents, for loss circulation control and for wellbore stress management.

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## *Benefits*

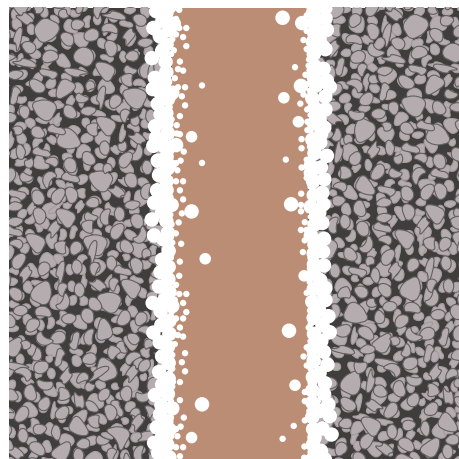
- *Flexibility in particle sizes allow optimum design*
- *High acid solubility*
- *High Calcium Carbonate content*
- *Consistent quality*
- *Global supply*

## Ineffective bridging



Ineffective bridging results in a poor filter cake that leads to invasion of fluid into the rock causing damage to the formation.

## Effective bridging



Effective bridging with appropriately sized Omyadrill products helps to provide a good filter cake that can easily be removed, leaving an undamaged formation.





## CUSTOMER CARE

### The Omya Advantage

With over 175 plants across the world, Omya is uniquely able to respond to our customer's needs, where and when they need us. Supported by a world-class team of experts, and enabled by cutting edge R&D and technical support, our scientists and engineers are able to devise answers to our customers' most difficult questions. With our own fleet of sea vessels, Omya is uniquely positioned to deliver our products where and when they are needed, no matter how challenging the obstacles.





# Flue Gas Cleaning

## Sustainable and efficient flue gas desulfurization (FGD)

When coal is combusted in power stations the sulfur contained within is released as sulfur dioxide ( $\text{SO}_2$ ). Sulfur dioxide is released into the atmosphere and converted to sulphuric acid, a component of acid rain, which lowers the pH of soil and freshwater bodies, resulting in substantial damage to the natural environment. Flue-gas desulfurization (FGD) is the removal process of sulfur dioxide ( $\text{SO}_2$ ) from flue gas emissions. Stricter environmental regulations are forcing many utilities to improve their FGD system allowing them to further reduce sulfur dioxide ( $\text{SO}_2$ ).

Omya's efficient Calcium Carbonate products are used in the FGD process where they react with the sulfur dioxide to form calcium sulfate (gypsum). Depending on the process and the properties over 98% of the sulfur can be removed. Using selected Omya Calcium Carbonates with the required

high purity, whiteness and a precise particle size distribution, the gypsum can subsequently be used as an additive in cement, as a source of sulfur in fertilizers or in plasterboard manufacturing. This helps to increase cost efficiency of the FGD process.

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### *Benefits*

- *Efficient elimination of Sulfur*
- *Improved cost efficiency*
- *Low stoichiometry*
- *Better emission regulations compliance*
- *Improved sustainability and carbon footprint*

# Airborne Pollutant Removal

## High-performance sorbents for mercury removal in coal fired utilities and industrial boilers

Removing airborne pollutants from industrial exhaust gases is necessary to ensure that powerful toxins and hazardous compounds such as mercury and dioxins do not enter the atmosphere.

Omya offers different types and grades of natural mineral products as well as selected specialty products, designed to remove airborne pollutants.

With air quality regulations becoming more and more stringent, it is critical that all measures are taken to improve the quality of air and environment. The unique characteristics of these products helps operators stay within the regulatory limits, even under rapidly changing conditions.

Selected products can be used as a buffer, to insure against an unforeseen variation in the composition of airborne pollutants. Exceptional adsorption properties ensure a high removal efficiency, meaning contaminants can be safely and easily captured, without being released to the environment.

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### *Benefits*

- *Efficient removal of heavy metals and other contaminants*
- *High flexibility to suit changing operating conditions*
- *Easy to handle and apply*



## Omya Water & Energy

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THINKING OF TOMORROW

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**THIS PAPER CONTAINS  
OMYA PIGMENTS**