



# Sustainable Water Management for the Pharmaceutical and Cosmetics Industry

**WATER TECHNOLOGIES**



# Creating Water Solutions for the Pharmaceutical and Cosmetics Industry

*Veolia Water Technologies provide specialized water and wastewater treatment technology, thanks to our understanding of the unique requirements of the Pharmaceuticals and Cosmetics Industry, decades of experience and our worldwide expertise in water issues. We provide a full range of services including engineering, project management, design-build and maintenance services as well as long-term operation.*



## MEETING YOUR NEEDS

The production of Purified Water, Highly Purified Water, Pyrogen Free Water and Water For Injection to International Pharmaceutical standards and Compendial water meeting environmental regulations in the Cosmetics market is recognized as a critical process. Veolia Water Technologies' engineers develop solutions for pharmaceuticals clients that meet and exceed these standards by focusing on the clients' key requirements. VWT is also focusing on providing total water management of the facilities, including waste water treatment and reuse and recycling to utilities or other applications.



## Focus on proven Technologies for Compendial Validated Water supply



### Orion® - Purified Water Treatment System

Delivering critical high performance in a sustainable manner, the Orion® comes with a host of innovative and cutting edge technologies. This differentiated modular system offers the broadest flexibility providing features and options to complement each model.

- Manufactured and designed in accordance with ISPE guidelines for water and steam
- Guaranteed microbial compliance Hot Water Sanitisation >80°
- Operational Health and Safety
- Overall reduction of water and energy consumption through a reuse cycle
- Lifetime after sales and service support available



### Polaris - Water For Injection (WFI)

Polaris is the solution that fits biotechnology and pharmaceutical market expectations. Polaris offers a major step forward in WFI generation systems by incorporating efficient design solutions and effective pyrogen removal.

The Polaris range of WFI products is designed in accordance with GAMP, cGMP, ISPE and FDA guidelines to meet the product quality specifications.

The Polaris range includes:

- > **Polaris MED** multiple effect stills using falling wfilm technology to produce up to 10,000 l/h (with 3 bar industrial steam) of WFI from a Purified Water feed.
- > **Polaris VCD** vapor compression stills capable of producing up to 25,000 l/h of WFI from a softened mains water feed. They can be heated by steam or an electric immersion heater (depending on unit size), and an electrically powered vapor compressor provides the additional energy necessary to produce distilled water at a temperature between 25°C and 90°C depending on customer needs.
- > **Polaris CSG** thermo-siphon clean steam generator providing a robust & reliable solution for steam generation, compliant with regulatory steam and distillate quality tests. A swift response to high steam demand is guaranteed using high flow natural convection and labyrinth baffles ensure high purity with low velocity for carryover protection.

## Turnkey solution for the pharmaceutical and cosmetics industry

### 1 PRE-TREATMENT & PROCESS WATER

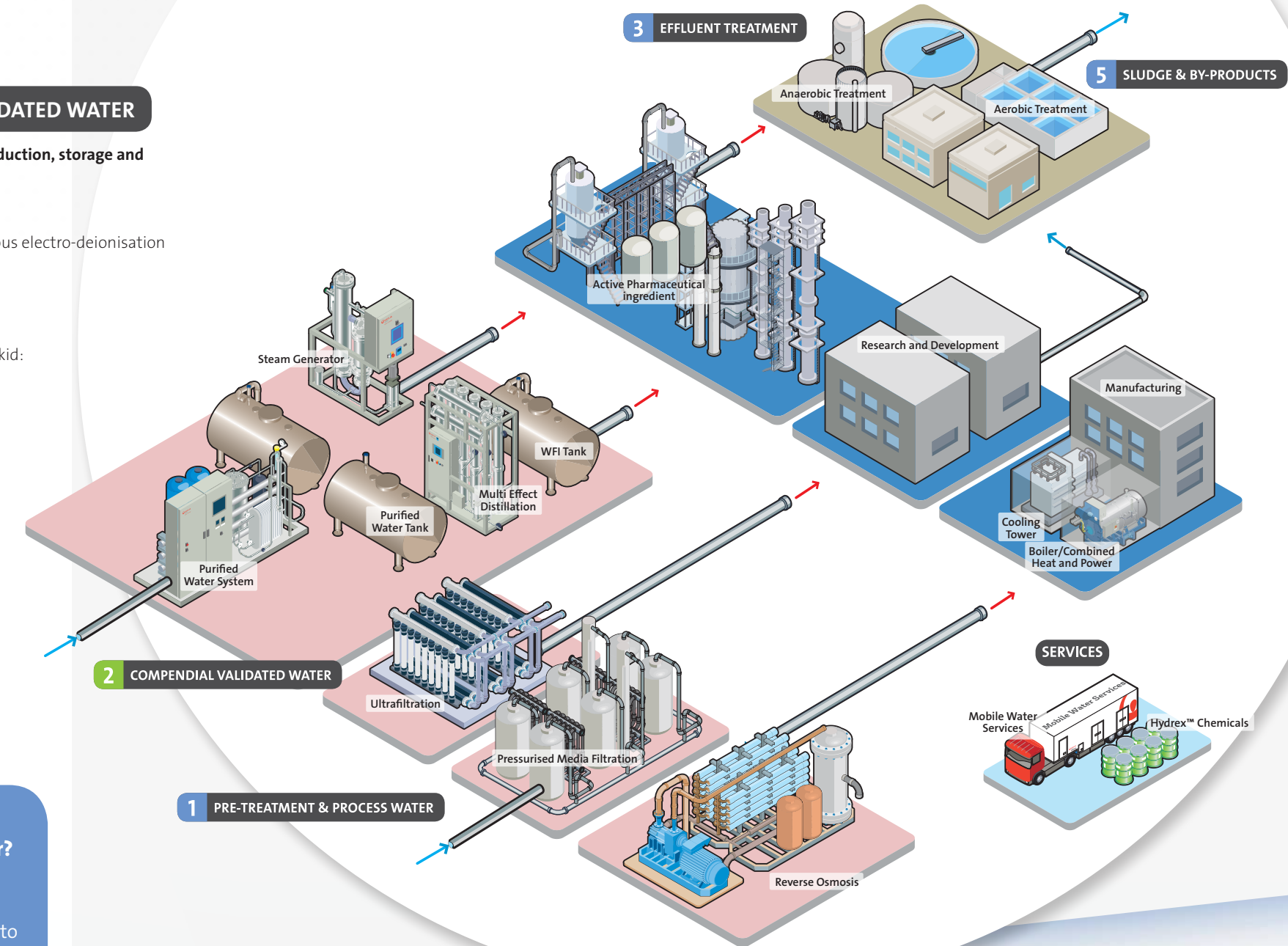
- Screen, drum & disc filtrations
- Ultrafiltration
- Multi media filtration: sand, activated carbon
- Reverse osmosis
- Photo oxidation Ultraviolet
- Water treatment chemical

### 2 COMPENDIAL VALIDATED WATER

- > **Critical and validated water production, storage and distribution**
- > **Pyrogen-free water**
- > **Pharmacopoeia compliant**
  - Reverse Osmosis and Continuous electro-deionisation
  - Distillation:
    - Multi effect distillation
    - Vapour compression
    - Clean steam
  - Distribution and sanitisation skid:
    - Thermal and ozonation

### 4 WATER RECYCLING & REUSE

### 6 WASTE TO RESOURCE / WASTE TO ENERGY



### Do you know... what is your True Cost of Water?

We can carry out an economic evaluation of risks and benefits related to water use at your facilities.

### 3 EFFLUENT TREATMENT

- > **Meet strengthened local discharge regulations**
- > **COD, BOD, TSS, toxicity, chemical removal**
- > **Endocrine (EDCs) and pharmaceuticals (PPCPs) removal**

### 4 WATER RECYCLING & REUSE

- > **Preserve natural resources**
  - Tertiary filtration
  - Multimedia filtration
  - Evaporation and crystallisation
  - Membranes: nanofiltration, reverse osmosis

### 5 SLUDGE & BY-PRODUCTS

- > **Residuals management**
- > **Energy recovery**
- > **Product reuse (land disposal, composting, storage)**
  - Drainage, centrifugation, filtration
  - Anaerobic digestion (biogas recovery)
  - Drying
  - Fluidised bed incineration

### 6 WASTE TO RESOURCE / WASTE TO ENERGY

- > **Biogas generation for CHP, boiler**
- > **Nutrients recovery**
- > **Solvents recovery (phenol, ethanol, benzene, methanol)**
  - Anaerobic treatment
  - Liquid / Liquid extraction
  - Macro porous polymer
  - Biopolymer
  - Electrodialysis

## Pharmaceutical Wastewater Solutions

As Veolia Water Technologies is the world leader in wastewater solutions, we have developed a unique portfolio of treatment technologies that fit the industrial market. We design and build turnkey plants for treating complex pharmaceutical wastewaters from API, biotech facilities or either galenic processes. Whatever the manufacturing process is and wherever the facility is located, we can treat the wastewater.

### When waste become resources

#### Applications

#### Pharmaceutical

- > Biogas production from wastewater with Biothane anaerobic treatment
- > Effluent detoxification with AnoxKalmes MBBR

#### Healthcare

- > COD reduction by 600 times of toothpaste effluent with BIOSEP MBR

#### API

- > Reduction of incinerated API wastewater by 90% with EVALED evaporator
- > Chemicals or solvents recovery with exchange media technologies (MPPE and LLX)

## A world of experience

### Vistakon

Contact Lense, Ireland

- > Industrial Process Water
- > Capacity: 16 m³/h
- > Processes: Hot water sanitisable carbon filters, RO, CEDI

### Procter & Gamble

Healthcare, China

- > Industrial Wastewater
- > Capacity: 10 m³/day
- > Processes: Evaporation/Crystallization

### Septodont

Healthcare, France

- > Industrial Process Water
- > Capacity:
  - Purified water: 2.5 m³/h
  - Water for injection: 1.7 m³/h
- > Processes: Reverse Osmosis, Electrodialysis, Degassing membrane, Distiller Multiple Effects

### Coopervision

Contact Lense, United Kingdom

- > Industrial Process Water
- > Capacity: 800 l/h
- > RO recovery system

### PISA Laboratories

Laboratory, Mexico

- > Industrial Process Water
- > Capacity: 56 m³/h
- > Processes: RO, CEDI, Media Filtration

### L'Oréal

Cosmetics, India

- > Industrial Wastewater
- > Capacity: 0.83 m³/h
- > Processes: Zero Liquid Discharge (ZLD) system



### Services

Increasing the overall lifecycle of the water treatment facilities by providing our clients with maintenance service contract aiming at an extended equipment lifetime and an effective implementation of standard operational protocols.

### Reliability

Avoiding costly downtime through proven technologies and local service.

### Efficiency

Reducing cost while improving manufacturing efficiency without compromising process security and product quality.

### Compliance

**Pharmaceutical market** - latest USP, JP and Ph Eur standards, cGMP requirements, GAMP validation control systems, FDA requirements, ISPE Engineering Guide, CE marking, IPPC environmental requirements.

**Cosmetics market** - European Cosmetic Directive 1223/2009, ISO 22716 (2007) "Cosmetics - Good Manufacturing Practices" (GMP), SO 29621 (2010) Cosmetics - Microbiology.

### Validation

Offering the guarantee with our validation package that all the needs required for the successful qualification of your water treatment system, by both the manufacturer and industry inspection bodies such as FDA and MCA are met.

### Dependability

Delivering the project on time through proven and often standardized technologies that avoid additional costs, reduce the risk of schedule slip and improving safety statistics

### Regulation

Providing all of the technologies for safe, environmentally compliant day-to-day wastewater treatment plant operations, regardless of size. Our solutions contribute to customized, efficient and cost-effective solutions covering the complete wastewater treatment cycle.



Resourcing the world

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