VEOLIA

Orion™

Reliable and proven purified water technology with intelligent innovation in the age of sustainability.

WATER TECHNOLOGIES

The latest generation of innovative purified water treatment systems for the pharmaceutical, generics, healthcare and biotechnology markets.

The Orion™ is a premier, fully-validated standard system.

Meeting the quality standards of the current USP and Ph Eur for purified water and cold WFI

Fully compliant with FDA, cGMP and GAMP requirements

Manufactured and designed in accordance with the current ISPE guidelines for water and steam

Delivering critical high-performance in a sustainable manner is key for this high-technology product. Energy and water saving technology combined with operator friendly HMI information will be displayed to allow cumulative key operational parameters to be measured. Our improved skid design with easy to identify operational modes brings health and safety for user to the next level.

Multi-technology unit

The Orion comes as a skid mounted multi-technology system:

- Comprising of softening, reverse osmosis and continous electrodeionization (CEDI) as its core technologies which can be fully or partially hot water sanitized above 80° C.
- A diverse range of options are available including pre and post UV, UF for cold WFI, filtration and degassing.
- All systems follow our stringent sustainability manufacturing guidelines and are FAT tested prior to delivery.

Validation

Our validation package covers everything you require for your system to meet the manufacturing criteria such as cGAMP and in accordance with the current ISPE guidelines, as well as inspection bodies, including the FDA, MCA. The documentation follows the regimes, protocols and guidelines laid out by the regulatory authorities for a smooth progression from design qualification right through to successful completion of the performance qualification.

This range truly is a differentiated modular system offering the broadest flexibility by providing enhanced features and options to compliment each model. The Orion can meet your diverse range of product manufacturing requirements along with your evolving sustainability requirements.

Gamp MCA FDA ISPE Connecting Pharmaceutical Knowledge usp™

Models

Sustainability is at the core of the Orion. Energy and water efficiencies are displayed on all models and all materials of construction have been selected for optimum reuse and recyclability at the end of life.

Available in three models with a range of flow rates from 0.5 to 20 m³/h, the Orion is an evolution in modular water treatment.

The Orion combines compendial purified water and cold WFI through tried and tested process excellence with additional sustainability features at its core, creating an unrivalled water technology package.

C-SERIES

This is our classic Orion offering the core technology within the most economic investment package.

E-SERIES

Our mid-range Orion provides the standard features of reduced water-to-waste during recycle and conserves both water and energy use during recycle, meeting good environmental practices.

S-SERIES

Is our premier Orion meeting the ultimate requirements for sustainability. Optimizing our technology we can offer overall reduced energy and water consumption combined with long-term operational savings.

Environmental excellence and product efficiency

Embracing sustainable innovation

The Orion technology helps to address today's environmental challenges by helping you to reduce your water and energy consumption. All products and materials have been selected for optimum recyclability.

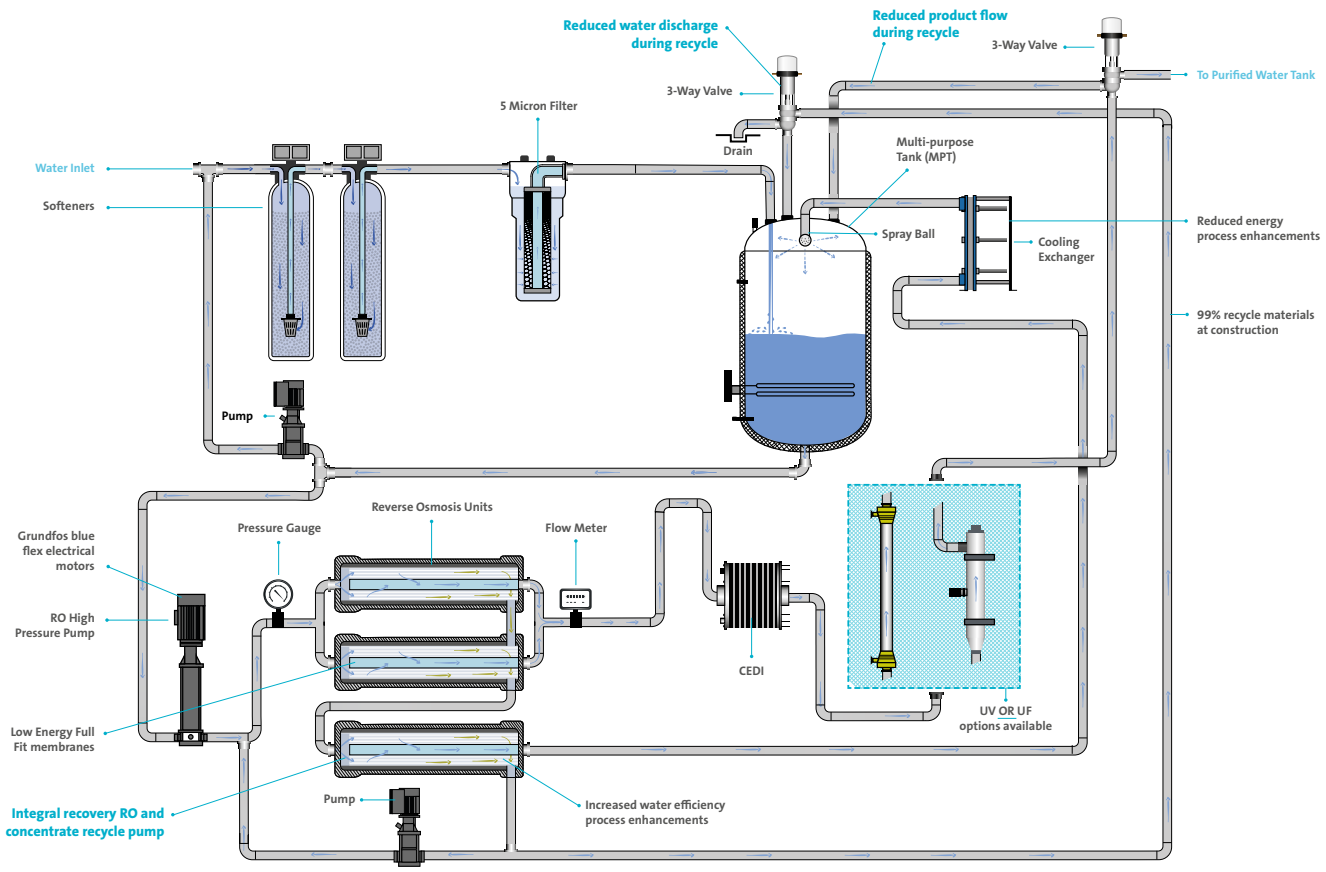
Carbon footprint: up to 30% reduction of CO_2 released during operation

Water footprint: up to 40% recovered

Environmental footprint: 99% of materials used with recyclable potential

Chemical footprint: minimal chemicals used during operation

Sustainability enhanced performance



- Health and safety operational status lights
- Manufactured within environmental ISO9001:2015
- Chemical free sanitization
- End of life components recycle guide

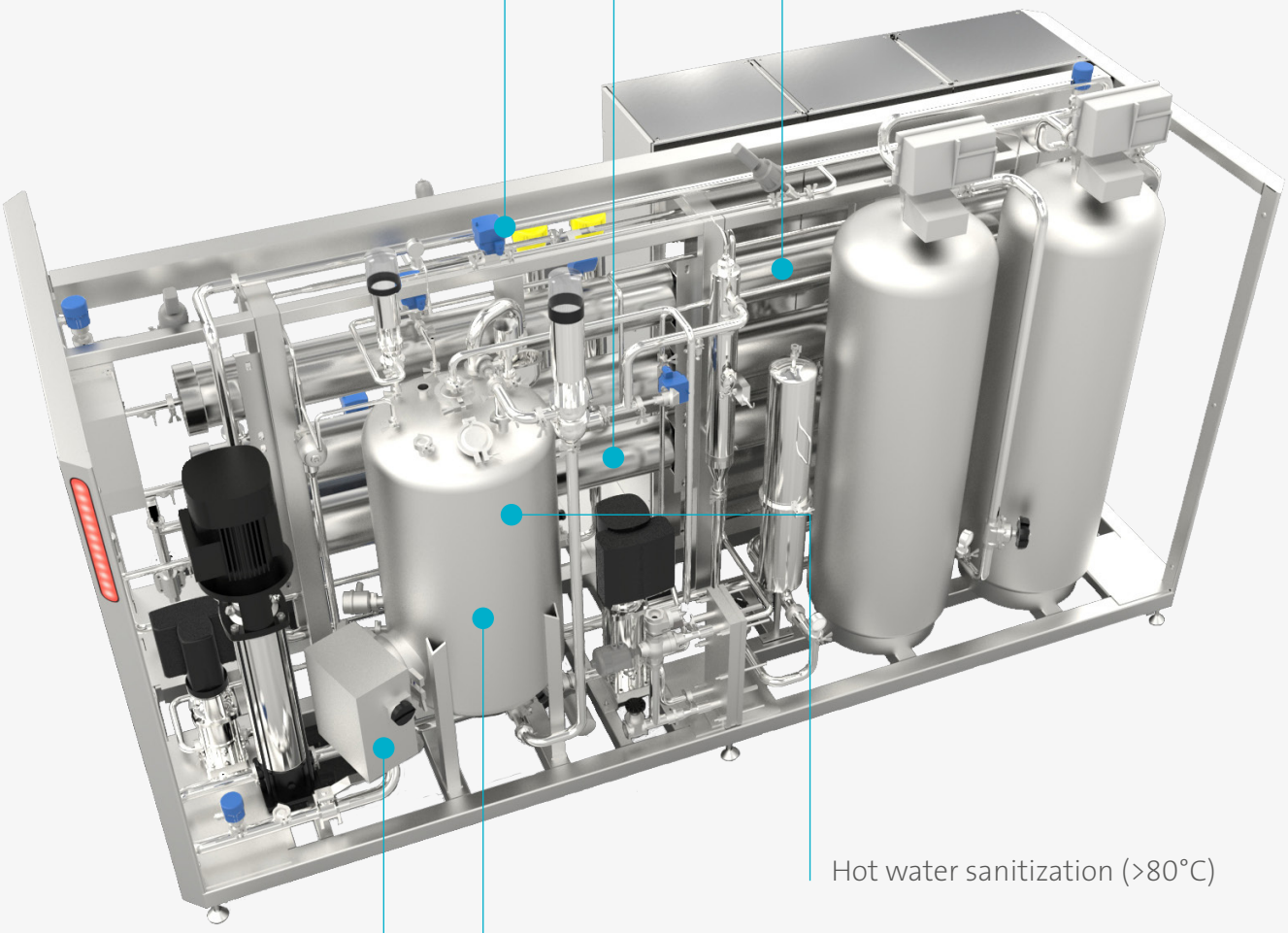
A sustainable product

Control and instrument features

Reliable and proven purified water technology with intelligent innovation in the age of sustainability.

- Colored operational status lights
- HMI & PLC: Allen Bradley plus S7 Siemens options
- Sustainability display for energy savings with trending
- Multi-level service access button
- Ethernet communication card
- Hubgrade digital solutions portal and remote monitoring

Process and mechanical features



System operating parameters

Model	Unit	500	1000	2000	4000	6000
Permeate nominal flowrate	m³/h	0.5	1	2	4	6
Nominal feed flowrate	m³/h	0.625[1] - 0.560[2]	1.25[1] - 1.12[2]	2.5[1] - 2.24[2]	5[1] - 4.48[2]	7.5[1] - 6.72[2]
RO recovery	%	75 - 90				
Typical design flux	l/h/m²	21 to 45 (depending on source water)				
Typical salt rejection	%	RO >96% - CEDI >99%				

Model	Unit	9000	12000	15000	20000
Permeate nominal flowrate	m³/h	9	12	15	20
Nominal feed flowrate	m³/h	13.5[1] - 10[2]	15[1] - 13.35[2]	18.75[1] - 16.70[2]	25[1] - 22.25[2]
RO recovery	%	75 - 90			
Typical design flux	l/h/m²	21 to 45 (depending on source water)			
Typical salt rejection	%	RO >96% - CEDI >99%			

[1] C Series. [2] S Series.

System dimensions

Model	Unit	500	1000	2000	4000	6000
Total installed length	m	1.40	1.40	1.40	1.60	1.60
Total installed width	m	3.60	3.60	3.60	4.00	4.00
Total installed height	m	2.10	2.10	2.10	2.35	2.35
Weight	kg	2100	2300	2600	4700	6000

Model	Unit	9000	12000	15000	20000
Total installed length	m	1.80 - 1.41	1.80 - 1.49	2.00 - 1.81	2.00 - 1.89
Total installed width	m	5.00 - 1.82	5.00 - 1.98	5.00 - 2.45	5.00 - 2.60
Total installed height	m	2.30 - 2.70	2.30 - 2.75	2.30 - 2.45	2.30 - 2.60
Weight	kg	5600 - 3600	6400 - 4500	7200 - 5500	8000 - 7000

For models 9000 and above: Orion main skid - softening skid.

System dimensions

Model	Unit	500	1000	2000	4000	6000
Feed	in	1	1	1	1½	1½
Treated water	in	¾	¾	1	1½	1½
Instrument air	mm	8				
Drain	OD	63	63	63	63	63
Cooling water	in	1 (for E or S Series only)				

Model	Unit	9000	12000	15000	20000
Feed	in	1	1	1	1½
Treated water	in	¾	¾	1	1½
Instrument air	mm	8			
Drain	OD	75	75	110	110
Cooling water	in	1 (for E or S Series only)			

Materials of construction

Softeners	Plastic or stainless steel
Soft water tank	HDPE/GRP/ABS
Skid	Stainless steel
Multi-purpose tank	Stainless steel
Control cabinet	Stainless steel or painted carbon steel

Feed water requirements[3]

Parameter	Unit	Value
Minimum water temperature	°C	5
Maximum water temperature	°C	30
Minimum supply pressure	barg	4
Maximum supply pressure	barg	6
Max silt density index (SDI)	-	<3
Maximum inlet turbidity	NTU	<1
Maximum inlet TDS	mg/l	Up to 800 ppm
Max inlet total hardness	mg/l $CaCO_3$	<500 (with softeners) <10 (feed to the RO membranes) <1 (feed to the CDI modules)
Max inlet CO_2	mg/l	Up to 30 ppm if treated through membrane degasser (option)
Max inlet silica	mg/l	Up to 20 ppm
Max inlet TOC	mg/l	<1
Max inlet free chlorine Cl_2	mg/l	< 0.25

[3] Orion system design program (SDP) must be performed based on specific water analysis and project data.

Typical treated water quality

Parameter	Unit	Value
Average conductivity	µS/cm	< 0.2
TOC	ppb	<100
Bacteria	cfu/100 ml	< 10
Endotoxins	EU/ml	< 0.125

Environmental conditions

Parameter	Unit	Value
Minimum ambient temperature	°C	5
Maximum ambient temperature	°C	40
Maximum humidity	%	80

Power requirements

Parameter	Unit	Value
Voltage	V	380-420
Frequency	Hz	50-60
Phases	-	3

Our services made simple

Aquaservice™ will support you to maintain ongoing system compliance with regulations and maximize system uptime. Our engineers and technical support team are GMP trained and used to working in regulated environments.

Your bundle, your choice

All the benefits of Aquaservice are included as standard. Flexible service bundles provide lifetime cover for your system and the peace of mind that comes with having a reliable regulated water treatment service that you can trust.

Our recommendation

Based on our experience in delivering water treatment services in regulated

Aquaservice

On site response time*

Range of on site response time in the event of a breakdown to meet your critical production needs.

Compliance*

- Performance qualification maintenance contract
- Service engineer training records and maintenance procedures
- Instrumentation calibration
- Full system sanitization
- Water sample analysis
- Endoscopy
- Passivation/de-rouging/ de-scaling
- Training

Note: additional ad-hoc services may be included based on installed system requirements.

** Subject to local capabilities. Please contact your local Veolia Water Technologies representative to confirm available services.*

"Our commitment to achieve environmental excellence and product efficiency"

Our vision

Our commitment to sustainability is at the heart of everything we do. This is reflected not only in our effort to embed environmental and socially responsible business practices but by taking the opportunity to adapt and improve our products and services to meet the needs of our environmentally-conscious customers looking to achieve a sustainable future. Being the benchmark company for ecological transformation, we support our customers in achieving their sustainable goals and this is demonstrated by the new Orion.

Embracing sustainable innovation

The new Orion helps address environmental challenges by enabling customers to reduce water and energy use. With up to 40 percent of water recovered, customers see a tangible benefit of reusing water in their process stream while improving the environmental performance of their operations. The Orion is a sustainable solution for pharmaceutical applications offering the potential to reduce overall water consumption through its water reuse cycle and energy consumption owing to more energy-efficient pumps. An additional benefit is the product's recyclability for when it reaches the end of its life.

industries.

Consumables and parts*

- Specified consumables
- Specified seals
- Specified chemicals
- Specified critical parts

Remote support*

- Manual data upload and monitoring
- Remote monitoring and alarm managed by our in-house experts
- Access to our specialists for process expertise support
- Data analytics, performance improvement recommendations and technical reports
- Customizable KPIs and algorithms to monitor and predict performance

Enhanced response (all inclusive)*

- All parts included
- Breakdown - priority response and labor included

To learn more

distributed by

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