

ORION® TTS

Total Thermal Sanitisation



The ORION® TTS provides total thermal sanitisation for maximum microbial control. This ultimate water treatment solution for the Pharmaceutical industry features all the proven benefits of the successful ORION® products including:

- Designed, manufactured and validated to GAMP
- Reduced validation hours through standard validation package
- Meets or exceeds USP and Ph Eur water quality specifications

Plus

- Total System Hot Water Sanitisation including pre-treatment

Developed with the Pharmaceutical Industry for the Pharmaceutical Industry

Research customer needs



Designed in consultation
with Pharmaceutical
engineers and end users.

Develop user requirement specification



The URS describes clearly and
accurately what the industry
requires from the system.

Functional design specification



The FDS describes the functions
the system will perform and
the facilities required to meet
the specification.

Design qualification



The DQ provides documented
evidence that the key aspects
of the design adhere to the URS.

Hardware and software design specifications



The HDS and SDS describe
the hardware and software
components and their
arrangements including the PLC.

Installation and operation qualifications



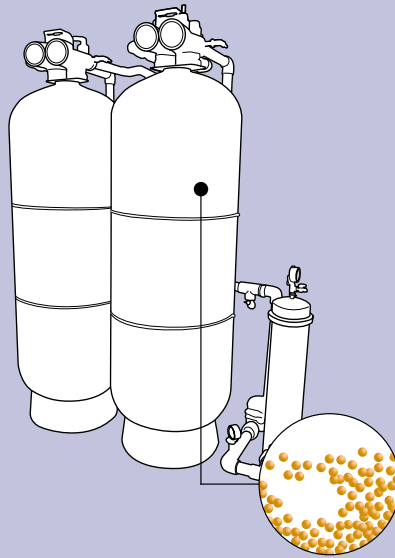
The IQ and OQ provide
documented evidence that
the system is installed and
operates as intended.

ORION® TTS system



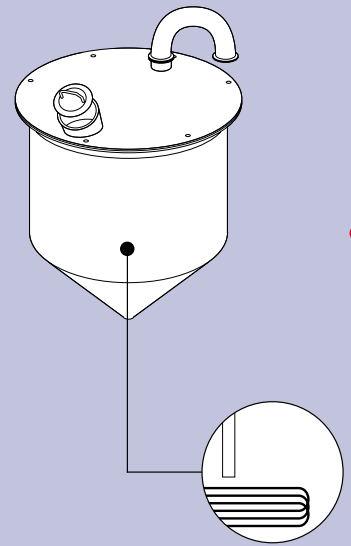
The result is a pre-validated
system that is fully compliant
with Pharmaceutical standards.

Your Complete Water Purification Package



1. Pre-Treatment

The ORION® TTS provides pre-treatment hot water sanitisation at 85°C. The stainless steel softener and micro-filtration stage serve to pre-condition the process feedwater. An ingenious hardness sensor operating without chemicals allows operation even with feedwaters of varying hardness. To maximise microbial control, the entire pre-treatment is regularly sanitised as part of the ORION®'s fully automatic hot water sanitisation regime.



2. Multi-Purpose Tank

The stainless steel multi-purpose tank combines a flexible hydraulic design with integrated microbial control. This approach eliminates a complicated pipework system and avoids the risk of hydraulic shocks and cross contamination. The multi-purpose tank also operates as an integrated CIP station for occasional system cleaning.

Integrated Risk-Management

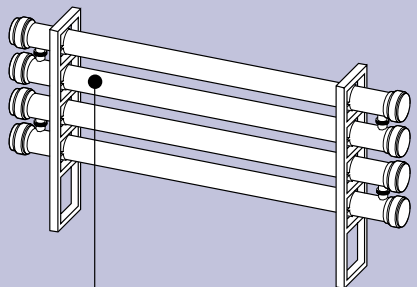
The ORION® TTS offers ultimate process security through its ingenious control and automation philosophy. The control system, developed in full compliance with the stringent GAMP regulations, is operated via an intuitive full-colour HMI screen protected by multi-level passwords. The ORION® TTS system is fully automatic and will complete full hot water sanitisation cycles at pre-programmed intervals. Pressures and flow rates are automatically regulated to compensate for changes in temperature or water quality. The membrane performance is continuously monitored and analysed to give advance warning if fouling has been detected. A CIP program can then be initiated at a convenient time. The operator SOP is displayed on the HMI.

Quality for a Lifetime

The ORION® TTS includes many features to ease the regular operation and maintenance of the plant. A well-designed sampling valve and tundish arrangement enables inter-stage sampling and reduces messy spills. Routine monitoring is simplified by a PLC download facility. The unit is designed for easy service accessibility, reducing downtime during scheduled maintenance visits. A full range of service maintenance and spare parts contracts over flexible time periods are offered. The ORION® TTS Production and Test Facility operates under ISO 9001:2000 accreditation to assure consistent product quality.

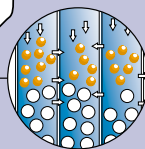
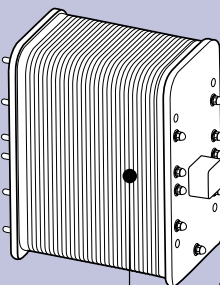
Total Thermal Sanitisation

Standard Options



3. Reverse Osmosis

The Reverse Osmosis unit uses the latest hot water sanitisable advanced membrane technology to remove up to 97% of dissolved inorganics and over 99% of total dissolved organics, colloids and particles. Reverse Osmosis also provides excellent removal of microbial species.



4. Continuous Electro Deionisation CDI-LX

The CDI-LX continuously provides high purity water whilst withstanding hundreds of hot water sanitisation cycles. By applying voltage across chambers of cation and anion resins, regeneration is continuous and chemical free. The patented design of resin-filled concentrate cells eliminates the need for an additional concentrate recycle pump, reduces power consumption and avoids the disadvantages of brine infusion.

ORIONcare

The ORIONcare service package is tailored to meet your requirements and gives you access to our worldwide network of experienced service engineers. This pre-emptive service plan schedules the replacement of parts, enabling better production planning and budgeting. Our dedicated service team is there for you day or night, all year round, offering a rapid response, whatever your needs.



Pre-Treatment Options

- Base Exchange Softeners*
- Carbosoft (combined activated carbon and softener unit)

Process Options

- Pre-Treatment UV
- Membrane Degasser
- Post-Treatment UV
- Ultra Filtration
(For Ph Eur Highly Purified Water)
- Storage Tank and Ring Main Control

Monitoring Options

- TOC
- Chlorine
- Hardness
- Chart Recorder

Communications Link Options

- Modbus
- SCADA Compatibility

Testing Options

- Fully Functional FAT*
- Witnessed Fully Functional FAT
- Witnessed Control Panel and Fully Functional FAT

NDT Requirement Options

- Boroscope with photographs
 - 10% of all Stainless Steel Pipework*
 - 100% of all Stainless Steel Pipework*

*Included in standard specification

ORION® TTS Performance

MODEL		500	1000	1500	2000	3000	4000	5000	6000 ³
Product ² (nominal ¹)	l/h	500	1000	1500	2000	3000	4000	5000	6000
Feed (nominal ¹)	l/h	670	1330	2000	2650	4000	5300	6650	8000
Concentrate (nominal ¹)	l/h	170	330	500	650	1000	1300	1650	2000
Recovery (maximum)	%	75							

¹ Nominal flows are based on operation at 15°C, 500mg/l TDS, 20 mg/l CO₂ and SDI<3 ² Product flows at a maximum outlet pressure of 1 bar

³ Tailored ORION® TTS units are available with capacities up to 10m³ per hour. Please contact your local office.

ORION® TTS Dimensions

MODEL		500	1000	1500	2000	3000	4000	5000	6000	
Height	mm	2100					2300			
Width	mm	3000				3500				
Depth	mm	1500				1750				
PIPE CONNECTIONS										
Inlet (Triclamp)	in.	¾	1	1½			2			
Outlet (Triclamp)	in.	½	¾	1			1½			
Drain (Triclamp)	in.	2					3			
Pump(s) motor size	kW	4		5.5		15				
Sanitisation Power	kW	18		24		36		48		

ORION® TTS Material Specifications

PRE-TREATMENT SYSTEM	
Pipework	316L Stainless Steel, Internal surface finish <0.8 µm R _a
Softeners	316Ti Stainless Steel
Filter vessels	316L Stainless Steel
PURIFIED WATER SYSTEM	
Tank	316L Stainless Steel
Reverse Osmosis	316L Stainless Steel
CDI LX	FDA approved materials
Pipework	316L Stainless Steel, orbitally welded Internal surface finish <0.8 µm R _a
GENERAL	
Frame	304 Stainless Steel
Control cabinet	304 Stainless Steel

Feed Water Requirements

General	Potable water free from organics, colloids and suspended matter, SDI<3
Free Chlorine	<0.25ppm
Temperature	10 – 30°C
Pressure	4–6 bar

Services

Electrical	380/415V; 3 Phase; 50Hz
Compressed Air	Oil free, instrument grade 6–9 bar

Typical Treated Water Quality⁴

	STANDARD ORION®	ORION® TTS WITH UF OPTION
	meets current USP & Ph Eur requirements for Purified Water	meets current Ph Eur requirements for Highly Purified Water
Conductivity	<0.2 µS/cm	<0.2 µS/cm
TOC	<250 ppb	<250 ppb
Bacteria	<10 cfu/ml	<10 cfu/100ml
Endotoxins	N/A	<0.125 EU/ml

⁴ Treated Water Quality is dependent on feed water quality and flow rate.

ELGA Process Water

The production of Purified Water, Highly Purified Water, Pyrogen Free Water and WFI to international Pharmaceutical standards is widely recognised as a critical process operation. ELGA Process Water's unparalleled technological experience delivers industry specified systems that meet and exceed the stringent regulations attached to these water qualities. Our comprehensive support capability includes system design, project management, validation, installation, commissioning and on-site maintenance. For further information contact your nearest sales office, details below.



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