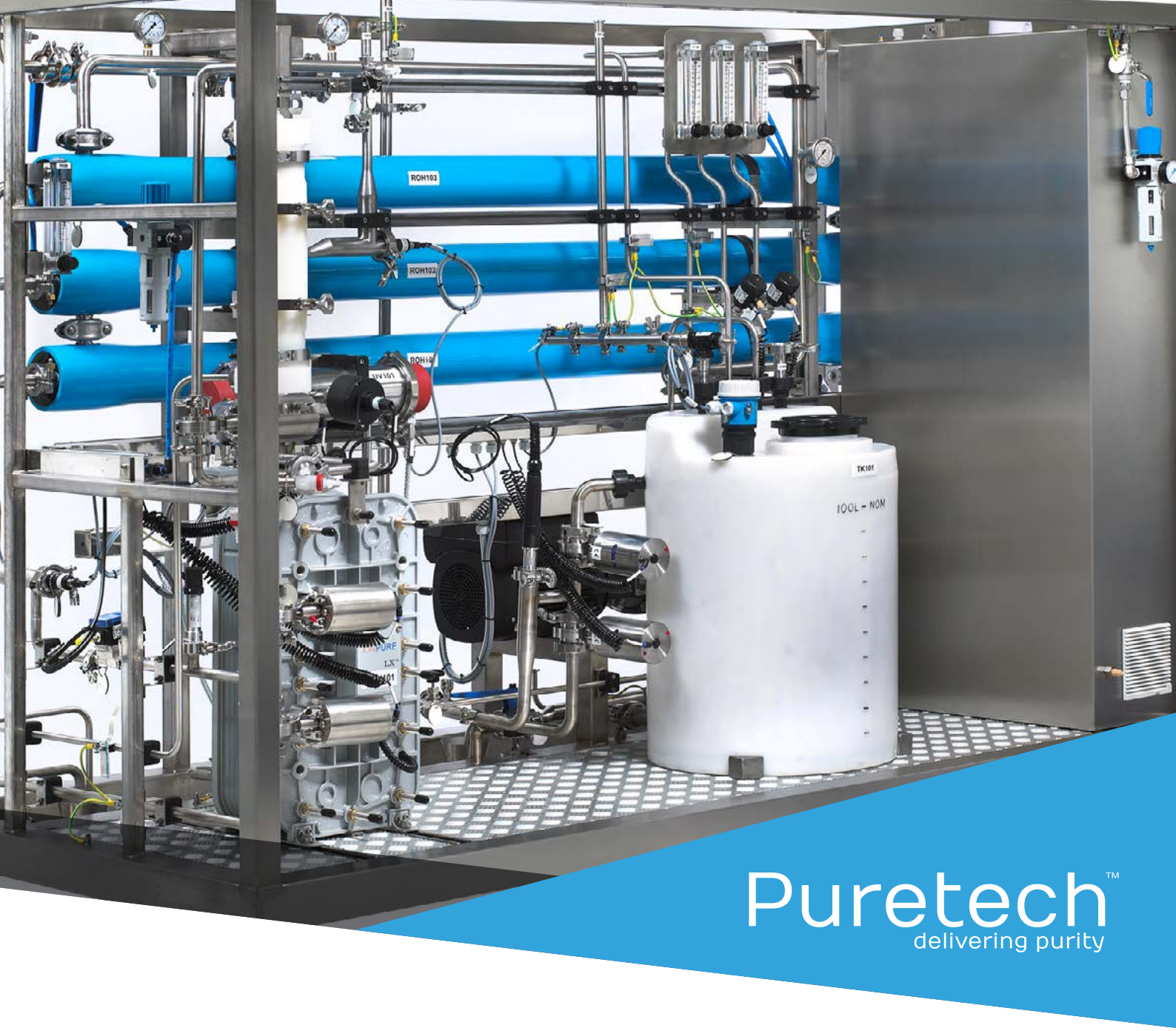

Puretech™
delivering purity

OASYS™

Purified Water Systems

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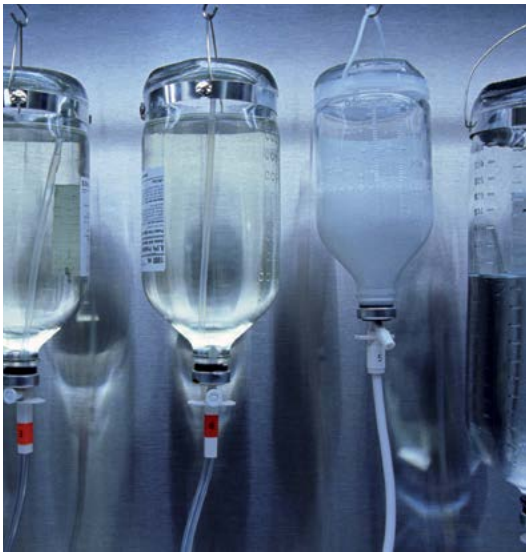
The ultimate in pure water generation

Puretech Oasys offers world-leading chemically sanitised pure water delivery. Puretech Oasys multi-technology purified water systems are designed and constructed to produce purified water in full compliance with cGMP guidelines as per FDA and EMEA, EP, JP and USP requirements for pharmaceutical, laboratory and medical applications.



Purified water applications

Purified water is used as an excipient in the preparation of non-sterile products and as a starting material in the preparation of water for injection and pure steam. It is also used for rinsing purposes and in the preparation of cleaning solutions.

A choice of quality

Puretech engineering and manufacturing practices follow ISO 9001 procedures, ASME BPE criteria, GAMP guidelines, etc.

Design and construction meets the most stringent regulations and codes from Europe, USA and others concerning safety and pressure vessels. To ensure the equipment meets your requirements, we work in partnership with you, a dedicated team follows your order as a unique project. We develop specific quality plans (DQ, IQ and OQ) and undertake factory acceptance testing (FAT) to give assurance of performance and quality.

Key features

- Purified water to USP, EP and JP
- Semi-automatic chemical sanitisation
- Flexible outputs from 300 to 20,000 l/hr
- Designed for simple upgrading of production rate
- Provides constant monitoring of RO status and gives warning of requirement for cleaning
- Constructed from 316L stainless steel, orbitally welded, internal surface finish 0.5 Ra. Designed to ASME BPE
- Choice of sophisticated control systems with inbuilt data logging and paperless chart recorder
- GAMP and 21 CFR part 11 compliant
- Validation to regulatory and client standards
- Minimises waste water
- Remote access option to provide monitoring and control from another location

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Design & construction features

Trusted technology, implemented safely

The Oasys Purified Water System is designed to generate purified water in accordance with the International pharmacopoeial specifications for purified water. The system has been designed to allow for chemical sanitisation of the complete unit including the pipework feeding the purified water into the storage vessel.

The Oasys units utilises the following major components within a fully protected skid so that the system can be kept clean and prevent any injuries to operators during sanitisation.

Key components

Softened water tank
This 316L stainless vessel is used as a reservoir for sanitisation and can be used for the automatic CIP cycles.

Reverse osmosis
RO technology involves using a variable speed pressure pump to force a portion of the feed water through semi-permeable membranes. The permeate flow is kept constant, independent of variables such as the feed water temperature.

Continuous electro deionisation
The water passing through the CEDI is deionised to purified water using an electric current. The concentrate water exiting the CEDI unit is reused and mixed with the RO feed water.

Ultraviolet irradiation/ultrafiltration
The pure water exiting the CEDI passes to a UV unit or a 6,000 NMWL ultrafilter to give added security in achieving the purified water specifications.

Softened water tank

Reverse osmosis

Continuous electro deionisation

Ultrafiltration

The Oasys control system

- Utilises the latest technology with touch screen HMI to allow ease of operation and monitoring.
- Offers control and monitoring from a single interface with data logging facilities and links to user systems e.g., BMS, DCS or SCADA.
- Provides the flexibility to operate complete turnkey packages allowing customers to reduce costs and simplify operation using a single access interface for pre-treatment, purification, storage and distribution.
- Ensures safe operation, protecting the system and the operator, providing confidence and peace of mind.

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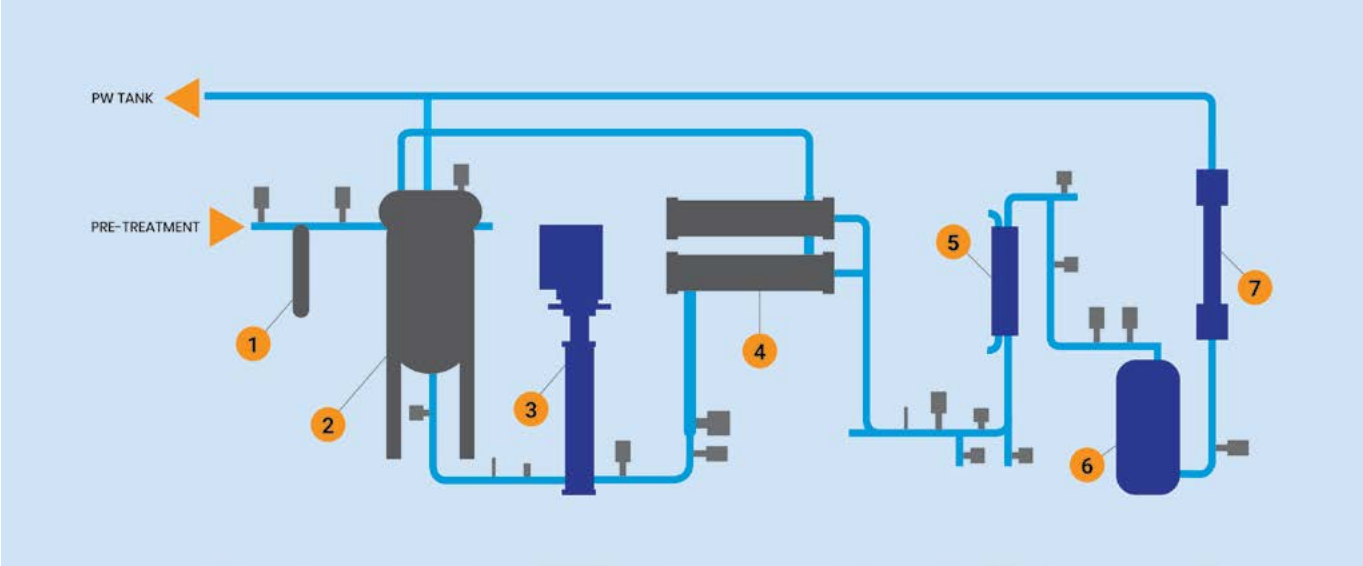
Operating principle

The pre-treated (softened) water is passed through a filter housing (typically 5 µm) and analysed for free chlorine prior to entering the RO feed tank. The filtered water then enters the stainless storage tank, if the tank is full the softened water is returned to the raw water tank to ensure constant movement to minimise the risk of bacterial proliferation. The softened water is then pumped at high pressure using a stainless steel multi-stage centrifugal pump, through the RO membranes. The RO permeate is then fed through a membrane degasser to remove dissolved carbon dioxide, followed by a CEDI unit in order to remove ionic contaminants. The purified water is then passed through an optional UV irradiator unit before being fed to the storage vessel.



1. Prefilter
2. Storage tank
3. High pressure pump
4. RO membranes
5. Membrane degasser
6. CEDI module
7. UV/UF unit

Technical data

Model	Outlet Flowrate (1)	System	Width (mm)	Depth (mm)	Height (mm)
Oasys 300A	300 l/hr	75%	1,600 (2)	1,225	1,800
Oasys 500A	500 l/hr	75%	1,600 (2)	1,225	1,800
Oasys 1000A	1,000 l/hr	75%	2,550	1,225	1,800
Oasys 1500A	1,000 l/hr	75%	2,550	1,225	1,800
Oasys 2000B	2,000 l/hr	75%	2,550	1,225	1,800
Oasys 3000B	3,000 l/hr	75%	2,900	1,650	2,200
Oasys 4000B	4,000 l/hr	75%	2,900	1,650	2,200
Oasys 5000B	5,000 l/hr	75%	2,900	1,650	2,200
Oasys 6000B	6,000 l/hr	75%	2,900	1,650	2,200
Oasys 8000B	8,000 l/hr	75%	2,900	1,650	2,200
Oasys 12000C	10,000 l/hr	75%	4,500	1,650	2,200

(1) Based on feed of 500 ppm TDS, 15o Celsius. Each system is designed on client exact requirements
(2) Units can be delivered in larger frame to allow future flowrate increase.

Larger units are available upon request.

Material specifications

- **Softened water tank** Polyethylene
- **Reverse osmosis** FRP
- **CEDI LX** FDA approved materials
- **Pipework** 316 stainless steel dairy tube pre CEDI, outlet pipework 316L stainless steel, orbital welded, internal surface finish <0.5 µm Ra
- **Frame** 304 stainless steel
- **Control cabinet** 304 stainless steel

Services: Electrical 380/415V; three-phase; 50Hz

Feed water requirements

- **General** potable water free from organics, colloids and suspended matter: SDI<3
- **Total hardness** <5 ppm as $CaCO_3$
- **Free chlorine** <0.05 ppm
- **Iron** <0.1 ppm as Fe
- **Temperature** 10 – 30°C
- **Pressure** 2-6 bar

Compressed air Oil free, instrument grade >6 bar

Typical product water quality			
Attribute	**Oasys**	**US Pharmacopoeia**	**European Pharmaopoeia**
Conductivity (µS/cm)	<0.1	<1.3 @ 25 C (Stage 1)	PW=<4.3
TOC (ppb)	<100	<500	<500
Bacteria (TVC CFU/100ml)	<10	<100 (3)	<100
Endotoxins (EU/ml)	<0.05 (UF option)	N/A	PW=<0.25 EU/ml

PW = Purified water; (3) FDA recommended action limit

Puretech Oasys is manufactured to suit client's individual site requirements. Puretech works with clients to ensure every system matches their needs.

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