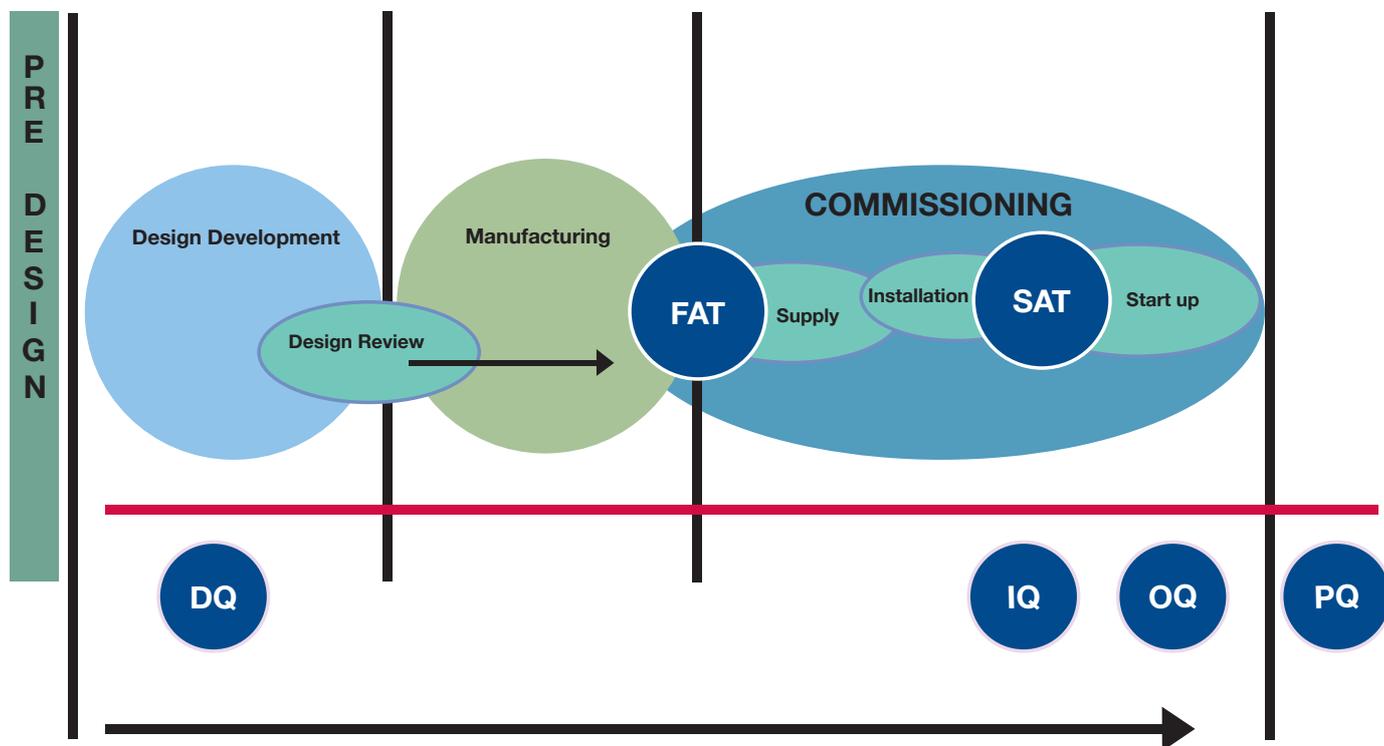




WFI & PS SYSTEMS
Water systems for life science



Aqua-Nova develops and markets premium water systems for life science industry worldwide. We constantly strive to maximise customer satisfaction and return of investment for our customers by offering reliable, safe and customised solutions to the international life science industry.



AQUA-NOVA WATER SYSTEMS FOR LIFE SCIENCE INDUSTRIES

Safety comes first!

The Water Still is the heart, and the WFI and PS distribution the bloodstream, of your sterile liquid production. Distillation has proven to be the most reliable way of producing WFI where high temperature is an essential security factor.

AQUA-NOVA® develops and markets energy-saving WFI stills. The system stability ensures reliable and automatic production of sterile, pyrogen-free WFI and/or PS according to latest USP, EP and JP. The units are built by our qualified specialists, experienced in manufacturing of life science products.

The pressure vessels fully comply with international regulations including ASME (U-designator) and PED (Europe), as well as the Russian, Chinese and Swiss regulations. The production facilities are ISO9001 certified.

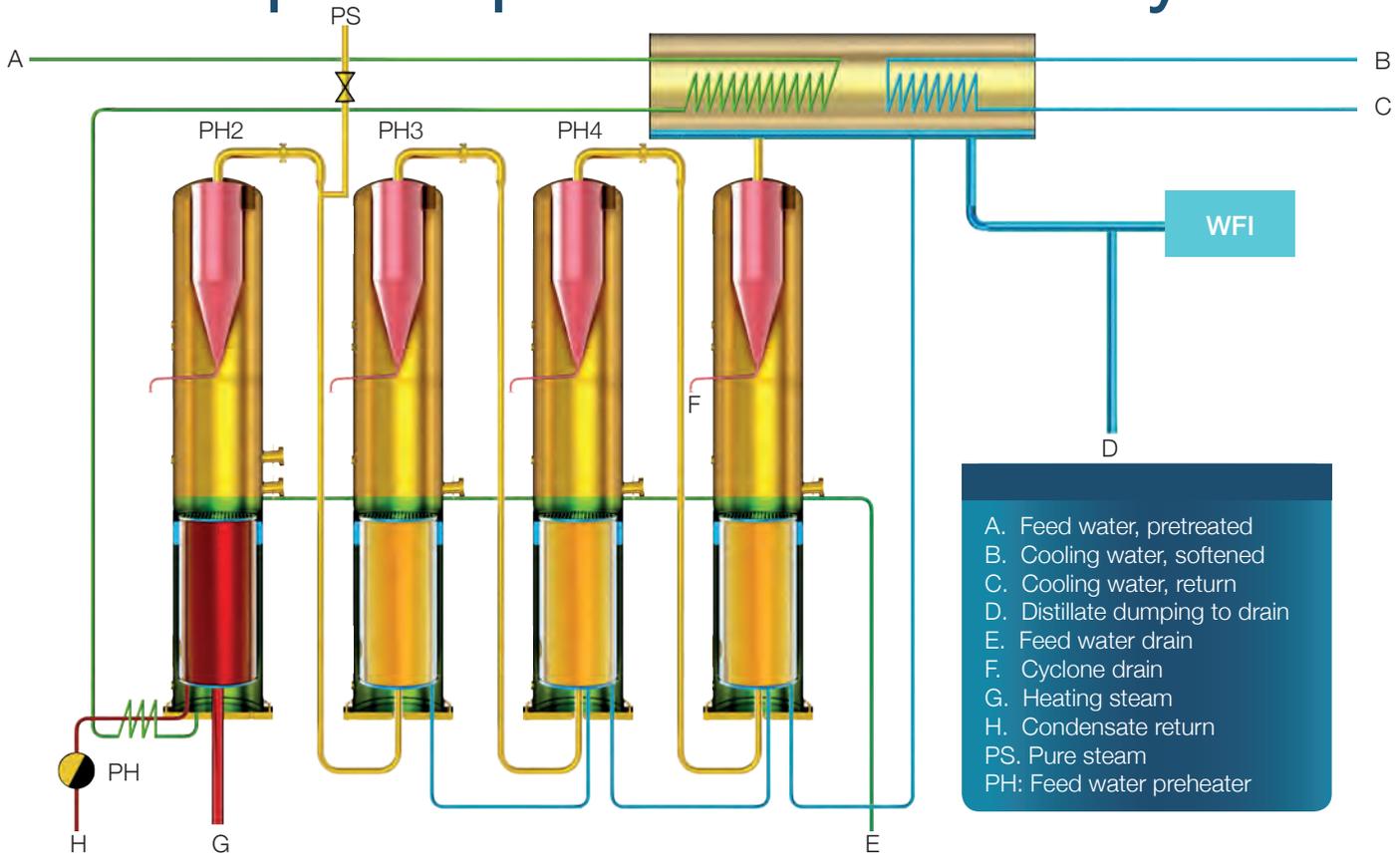
WFI and PS systems!

Today's manufacturing demand safe and energy-efficient solutions. Aqua-Nova offers premium Pure Water (PW) systems, Water for Injection (WFI) systems and Pure Steam (PS) systems.

Our systems are tailor made to the client's needs. All Aqua-Nova products give the customers inherent safety by design.



Unique separation efficiency



The WFI and PS systems are uniquely designed to give customers the highest safety and flexibility. Aqua-Nova designs and supplies WFI and PS generators based on feed water quality, space and heat source. The key elements for safe and energy efficient operations:

1. Evaporation
2. Low steam velocity <math>< 1 \text{ m/s}</math>
3. Steam polishing by true cycloning
4. Direct discharge to drain from each cyclone

Columns for low steam velocity

The columns are dimensioned for lowest steam velocity in the market based on the maximal production of WFI and Pure Steam. The columns have sanitary and aseptic connections and the internal surfaces have maximum $Ra < 0.8 \mu\text{m}$ and are electro polished.

Column spy glasses and the possibility to dismantle for internal inspection makes service easy. The columns and all internal connections are premounted in one or several stainless steel skids, making transport and installation extremely easy.

Computer aided cyclone

The cyclones are electropolished and individually dimensioned for each column.

- Correct steam velocity
- Downward movement
- Separation forced to side by centrifugation
- Two times 180° turn of the steam flow
- Higher pressure on the clean side
- Discharge to the drain

Condenser & degassing

The final stage of the distillation takes place in the condenser, where the produced steam and condensate are cooled down. Efficient double chamber degassing gives a conductivity typically $< 0.5 \mu\text{S/cm}$. All parts in contact with the distillate, including the condenser and outlet, are electro polished.

Tensionless heat exchangers

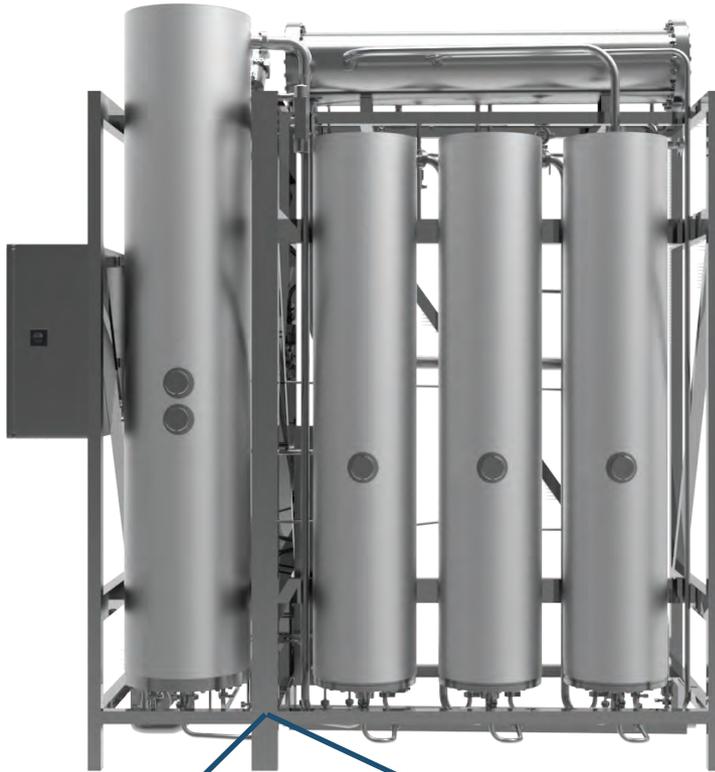
- Tubular float-design, submerged in water, ensures operation with low tensions, avoiding the formation of micro cracks. Double tube sheet designs with leak detection to the outside and seamless tubes.
- The achieved thermosyphon effect to increased efficiency and self-cleaning of tubes.

Modern – GAMP compliant control system

- The self-regulating system of heating steam and feed water ensure a safe and robust operation.
- The control panel with operator display and necessary instruments ensures full surveillance of the process. The PLC is configured to communicate to any SCADA systems to allow process monitoring and control.



Combined generation of WFI and PS



ADVANTAGES

One control cabinet

One PoU of media

One kit of spare parts

One installation

SAVE ON

Investment

Space

Validation

Heat emission



PS



WFI



(H)PW System

Ready for production

Acceptance FAT testing

All units are thoroughly tested for production, consumption and function during the factory pre-delivery testing.

The distillate quality is tested by an independent laboratory. Typical quality values are:

Conductivity, <math><0.5 \mu\text{S}/\text{cm}</math>

Cfu/ml, <math><0.1</math>

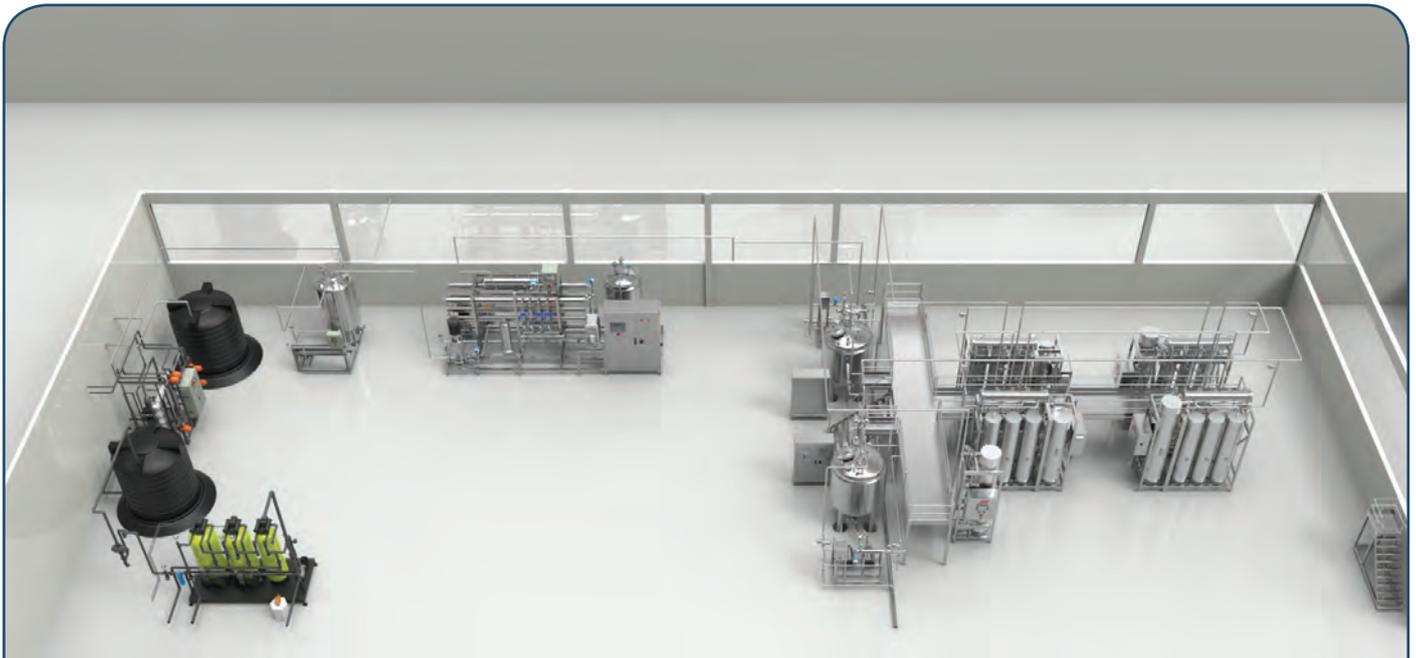
EU/ml, <math><0.125</math>

Delivery documentation

All units supplied with extensive delivery documentation, consisting of material certificates, drawings, component specifications, flow sheets, manuals, electrical wiring and instrumentation.

On request, complete pre-validation DQ, IQ & OQ protocols are supplied with the units.

Aqua-Nova offers customized systems to meet your needs. Depending on available footprint, space and energy source our project engineers will find a solution.



SYSTEM ENGINEERING

Let us help you design a system to match your needs

Service and maintenance

It can be very expensive when you are forced to throw away batches due to quality defects, stop production for sterilisation or authority re-inspections, or even worse, shut down departments that do not fulfill GMP standards.

AQUA-NOVA® offers extensive technical support to keep all PW and WFI systems working optimally, and in compliance with GMP and authority regulations.

Our services

- Regular and on-demand machine & system service.
- Technical support by phone, e-mail or web/web cam.
- Service contract for annual service & check of your system.
- Re-qualification of machine and loop systems.
- Extension and upgrading of existing installations.
- On-line technical system surveillance.
- Supply of spare parts.
- Our archives holds technical documents and programs, for backup.



Aqua-Nova in brief

Aqua-Nova is an innovative Swedish engineering company supplying safe, cost-efficient and sustainable water systems for life science around the world.

Our solutions produce and distribute Water for Injection (WFI) and Purified Steam (PS) to the life science industry through our network of international agents. With extensive knowledge and experience in the field we maximise our customers' profitability with a constant return on investment.



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