



# Polaris™ 2.0 PSG

Pure steam generator

**WATER TECHNOLOGIES**

# Your Pure Steam Needs... The Polaris™ 2.0 Solution

## Applications

- Up to 4 barg pure steam for autoclave steam supply
- SIP (Sterilisation In Place), bio reactors and vessels
- Sterile facility HVAC humidification
- Lyophilizer sterilisation
- Product terminal sterilisation

## Quantity and quality of steam

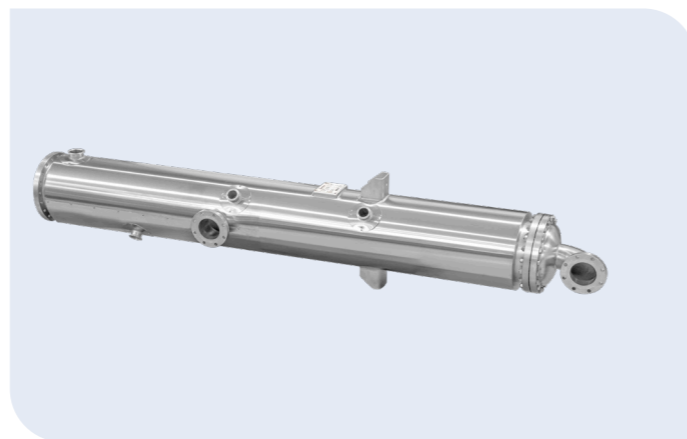
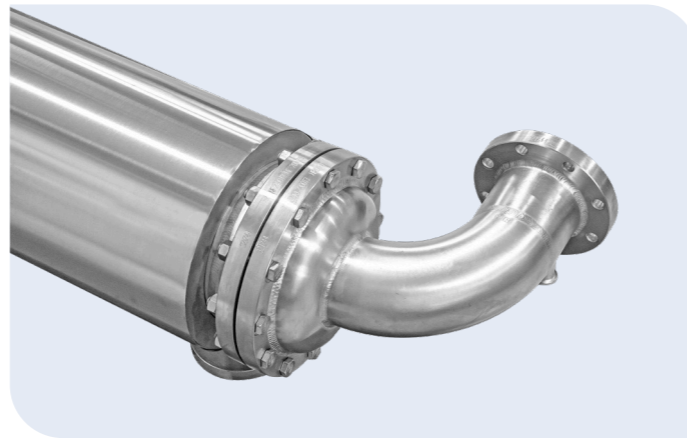
- Standard units available between 300-3000 Kg/h
- Rapid response steam production
- Droplet separation
- Optional thermal degasser for non-condensable gas removal, in compliance with EN285

## Service and support

- Local support and service from our global offices
- Yearly service and preventative maintenance plan

## Flexibility and choice

- A range of standard options is available to respond to the different market demand



Pure steam  
production

Capacities  
300 – 3000  
Kg/h

Compliance  
with  
EN285

## Standard Features

### Mechanical

- > Designed according to PED and EN13445 (ASME design optional)
- > Pipework and fittings comply with ASME BPE
- > Full vacuum design
- > 304 SS frame allows easy maintenance
- > Double tube sheet heat exchangers
- > Insulated heat exchangers and column and industrial steam pipeline
- > 316 SS vertical multistage centrifugal feed water pump
- > Droplet separation system
- > Surface mechanical finish  $\leq 0.51 \mu\text{m}$  for process contact parts
- > Centralised drain tank with raw/softened water supply at 15°C for cooling

### Functional

- > PID pressure and flow control
- > Automatic intermittent blowdown
- > Pure steam available between 2 - 4 barg

### Controls and instrumentation

- > IP54 painted carbon steel control panel
- > S7-1500 HMI Siemens Comfort Panel
- > GAMP V Validated software CFR21 Part 11 compliant
- > Automatic pressure and level control

### Validation and documentation

- > Standard design documents and qualification protocols are provided in English
- > O&M manual provided in local language

## Optional Features

### Mechanical and functional

- > Feed water tank
- > SS 304 control board
- > Pure steam automatic outlet valve
- > Pure steam sample cooler with conductivity metre
- > Electropolishing of PS outlet line
- > Automatic feed water valve
- > Thermal degassing with preheater
- > Extra connection for PS testing
- > Sight glass on column
- > Electropolished feed water pump with  $Ra \leq 0.8 \mu\text{m}$
- > Hubgrade compatible for remote monitoring and assistance



### Polaris™ 2.0 – Service and support

All **Polaris™ 2.0** solutions are designed in accordance with GAMP, cGMP, ISPE and FDA guidelines and will meet the product quality specifications of all of the world's major pharmacopoeia, including Ph. Eur. and USP, giving you peace of mind and compliance assurance wherever your facility is located.

**Polaris™ 2.0** systems are backed by a comprehensive range of service and maintenance products.

A preventative maintenance approach applies. Scheduling service on a pre-planned basis and ensuring the time-based replacement of specific parts and consumables can significantly reduce the risk of downtime. This approach also enables us to guarantee the quality and value of your system for a twenty-year lifetime.



These new PSG units have been designed to reduce the consumption of industrial steam, making them more sustainable.

#### POLARIS™ 2.0 PSG PS Condense Quality

Conductivity	< 1.3 $\mu\text{S}/\text{cm}$ @ 25°C
TOC	< 500 ppb
Bacterial Endotoxins	< 0.25 EU/mL
Bacteria	< 10 CFU/100 ml
Nitrate	< 0.2 ppm
Heavy Metals	< 0.1 ppm

#### POLARIS™ 2.0 PSG PS Quality According to EN285\*

Non Condensable Gas	$\leq 3.5\%$
Dryness Test	$\geq 0.95$
Superheat	$\leq 25.0^\circ\text{C}$

\* As long as feed water is hot WFI or thermal degassing option is included.

#### Feed Water Requirement (Minimum)

##### Purified water according to Ph. Eur.

Total Hardness	< 0.1° F (1 ppm as $\text{CaCO}_3$ )
Conductivity	$\leq 4.3 \mu\text{S}/\text{cm}$ @ 25°C
TOC	< 500 ppb
Bacteria Count	< 100 CFU/mL
Silica	< 1 ppm
Carbon Dioxide	$\leq 2$ ppm
Free Chlorine	$\leq 0.1$ ppm

#### Utilities Required

Feed Water Temperature	15 - 20°C
Feed Water Pressure	1 - 2 barg*
Power Supply	400/230 V, 3PH+N+PE, 50 Hz
Compressed Air	6 - 8 barg
Cooling Water (only for sampling)	15°C IN - 85°C OUT (where applicable)
Industrial steam	5 - 8 barg*

\* If feed water tank option is excluded.

#### Material Specification

Evaporating Column	Inox 316L (1.4404)
Heat Exchangers	Inox 316L (1.4404)
Feed Pump	Inox 316
Support Frame	Inox 304
Process contact pipework and fittings	Inox 316L (1.4404) ASME BPE
Control Panel	Painted Carbon steel (SS 304 optional)
Sealing and Gaskets	PTFE (FDA/USP VI/TSE conformity certificate)

# Resourcing the world

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