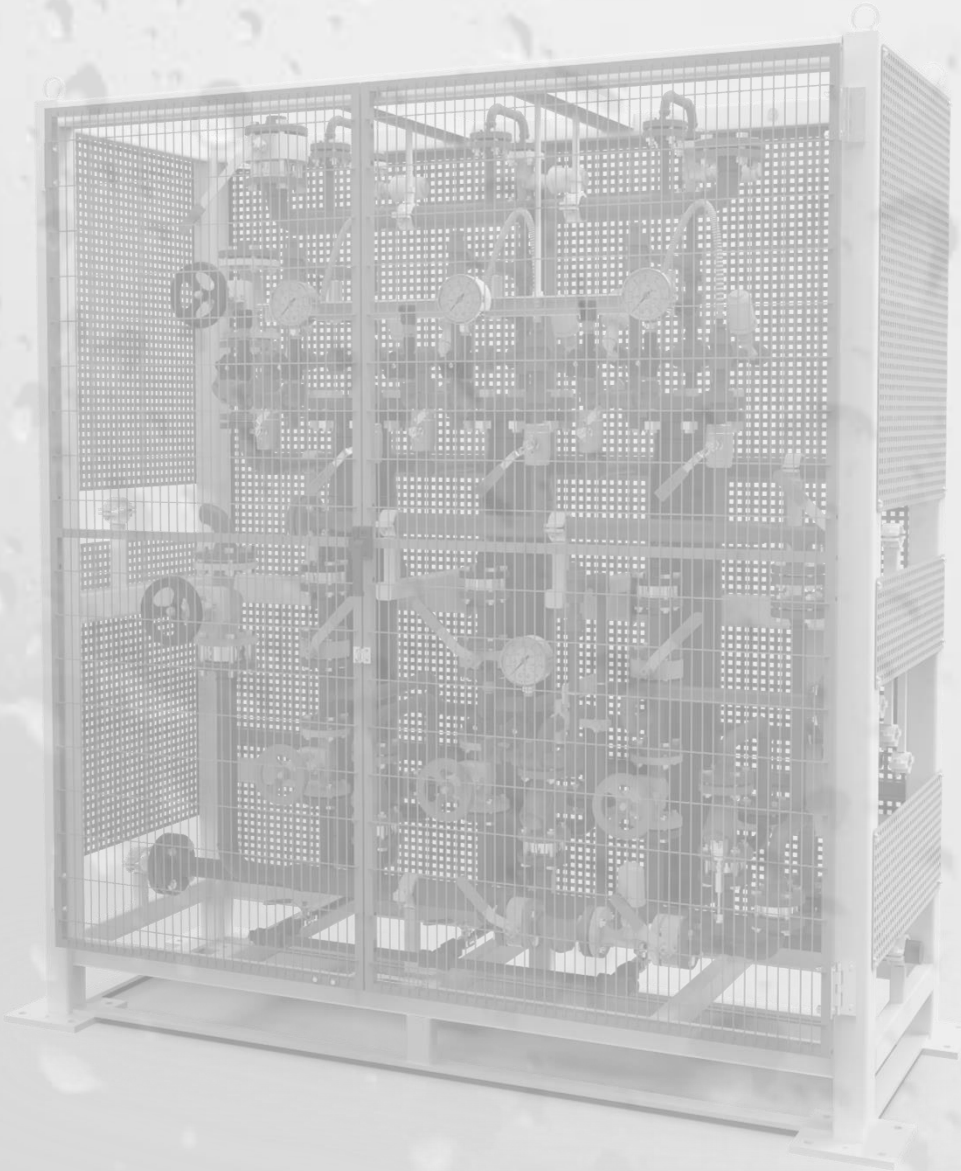
BAVIERA
Steam Systems

DUAL STEAM PUMP



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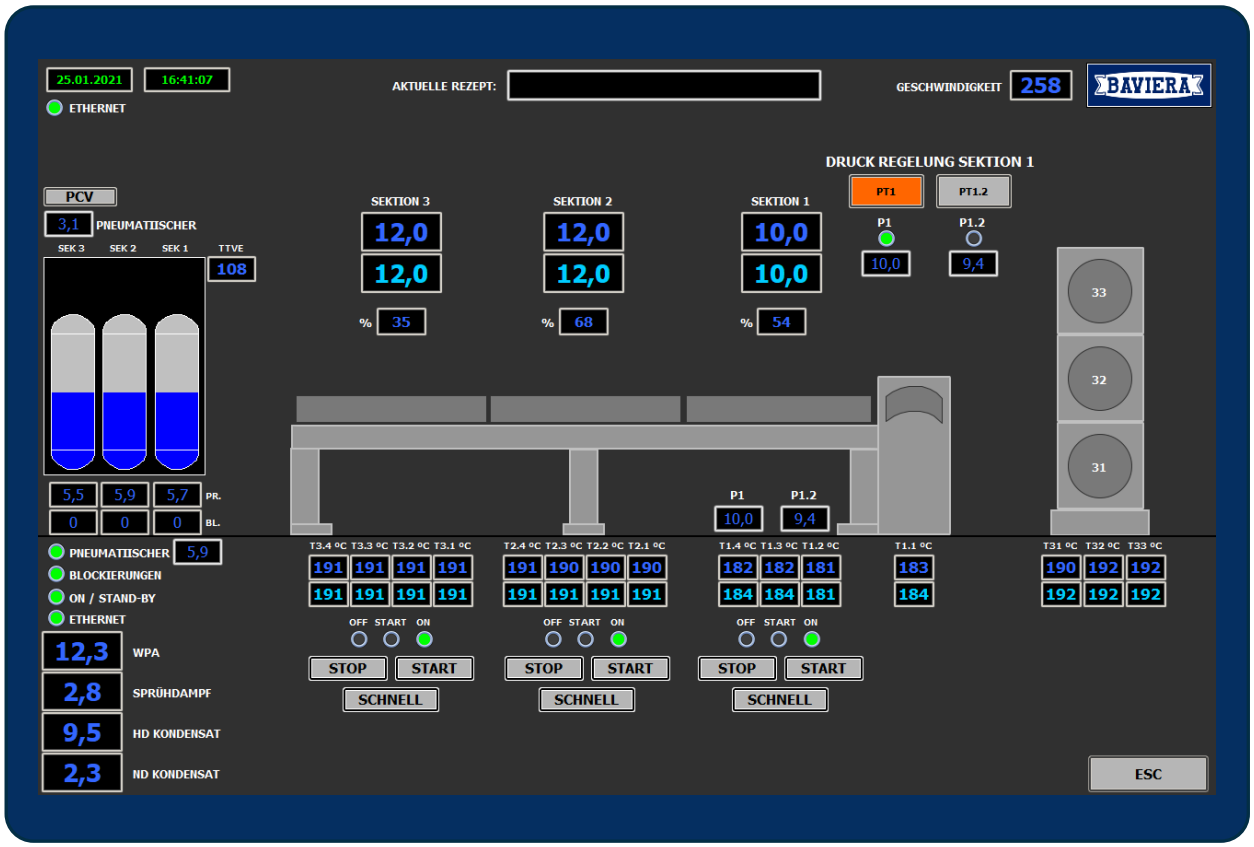
DIGITAL STEAM PUMP

BAVIERA Digital Steam Pump for Double Facer makes possible to regulate at desire Heat Transfer at the hot plate section.

Pressure can be regulated as low as desired, thus effectively providing full heat transfer flexibility, with no risk of flooding. A single solution for a widespread technical challenge.

It's digital!

Meaning operators will be able to easily **visualize** and **understand** the hot plate sections' condensate recovery system, with an extended an unprecedented **traceability and transparency.**



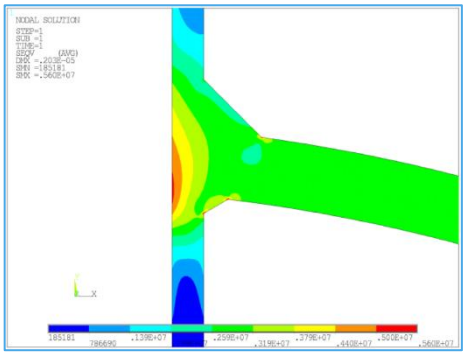
A reliable and versatile **PLC-PLC INTERFACE** with BHS system is possible, making possible integration of condensate recovery system into RAS (industry 4.0) and enhanced reaction of the steam pump to:

- ✓ *Machine warm-ups*
- ✓ *Pressure regulation changes*

High reliability

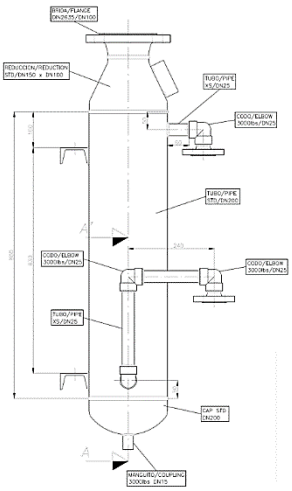
Internal mechanisms such as levers can wear down and eventually break down - BAVIERA Digital Steam Pump has no internal moving parts, thus has negligible maintenance needs because of its intrinsically reliable design.

BAVIERA digital steam pump is provided with automatic Active Differential Pressure Control that provides continuous traps surveillance.



$$\Delta\sigma_{ij,k} = {}^{m}\sigma_{ij,k} - {}^{n}\sigma_{ij,k}$$

$$\Delta S_{p,k} = \frac{1}{\sqrt{2}}\left[\left(\Delta\sigma_{11,k}-\Delta\sigma_{22,k}\right)^2+\left(\Delta\sigma_{11,k}-\Delta\sigma_{33,k}\right)^2+\left(\Delta\sigma_{22,k}-\Delta\sigma_{33,k}\right)^2+6\left(\Delta\sigma_{12,k}^2+\Delta\sigma_{13,k}^2+\Delta\sigma_{23,k}^2\right)\right]^{0.5}$$



Optimal Energy Efficiency

BAVIERA Digital Steam Pump returns condensate coming from BHS Double Backer back to the high-pressure condensate receiver (typically in the boiler room), thus providing optimal energy efficiency while making possible full flexibility in heat transfer.

Long Life Expectancy

Designed with ASME's Boiler and Pressure Vessel Code to exceed expectations, our Steam Pumps are designed and manufactured to withstand decades of operation in an ambient of high temperature and pressure subject to cyclical stress.

- Main Design:

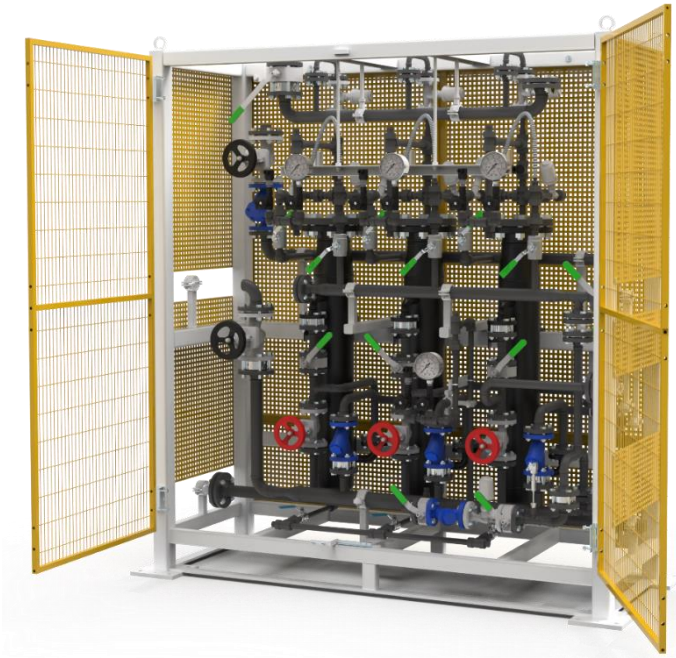
  ASME Boiler and Pressure Vessel Code Section VIII Div. 1

- Stress & Fatigue Analysis:

  ASME Boiler and Pressure Vessel Code Section VIII Div. 2

DUAL STEAM PUMP

Dual Steam Pumps make possible free pressure regulation in steam systems with energy efficient condensate recovery (high pressure condensate recovery).



DSP make possible to recover low pressure condensates coming from the heating sections of hot plates and pump them back into the high-pressure condensate return (closed loop efficient recovery).

DSP therefore makes possible to have at the same time full heat transfer flexibility in the hot plate sections and efficient closed loop condensate recovery.

The operation of a DSP steam pump is very easy: each steam pump has a condensate tank provided with two level controls, a set of automatic ON/OFF valves and a set of check valves.

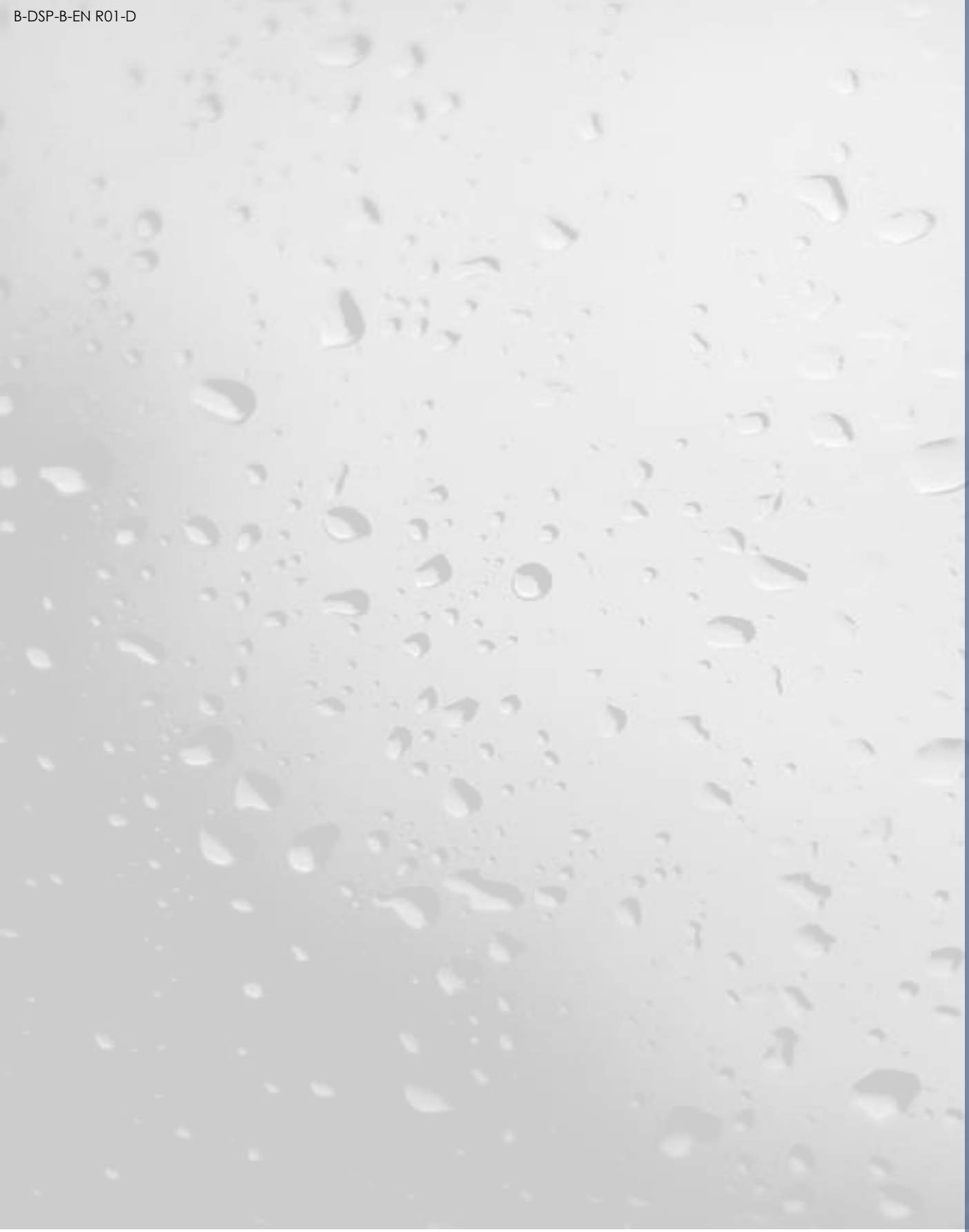
When the level controller detects that the condensate tank has reached its maximum level, the injection valve (VI) opens automatically pumping/pushing condensate, through the check valve in the outlet, back to the condensate recovery unit (CRU). This injection cycle lasts around 5 seconds.

Following injection cycle, the DSP makes a first decompression against the low pressure condensate recovery, lasting around 5 seconds. Once this first decompression cycle is finished, if pressure regulated in the corresponding Hot Plate section is very low, a brief atmospheric relief (rounding 3 seconds) prepares the DSP for the next filling cycle.

The condensates recovery system by DSP steam pump works as per the following cycles:

- Filling cycle from 2 to 5 minutes
- Injection taking 5 seconds
- First decompression of 5 seconds
- Atmospheric relief rounding 3 seconds (only in case of a very low pressure regulated)

The whole process is controlled and monitored by a PLC provided with touch screen. All materials in the DSP (check valves, VI, VD, spirals…) are highly reliable and long lasting, thus, a DSP, though apparently complex equipment, really results in a very simple to check, highly reliable and very low maintenance condensate pumping equipment.



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Calle Tonellet 50 – 46900 Torrente – Spain
Ph. +34 961 553 748 – Fax +34 961 575 685
www.rbaviera.com – baviera@rbaviera.com