



MULTIPLE EFFECT DISTILLERS

THE MULTIPLE EFFECT DISTILLERS BY STILMAS, PHARMASTILL, PRODUCE DISTILLED WATER FOR INJECTABLE USE WHICH MEETS THE LATEST REQUIREMENTS OF THE INTERNATIONAL PHARMACOPEIAS INCLUDING USP, EP AND JP.

THE PHARMASTILL MODULAR CONSTRUCTION OFFERS A WIDE CHOICE OF CONFIGURATIONS ALLOWING OPTIMUM PAYBACK TIMES.

Standard models capacity:

🕒 From 120 to 22.000 l/h output

Pharmastill is equipped with effect of unique and original design. Each effect consists of a tube condenser on top and a decontamination chamber below, joined by a flanged connection which also has the function of support.

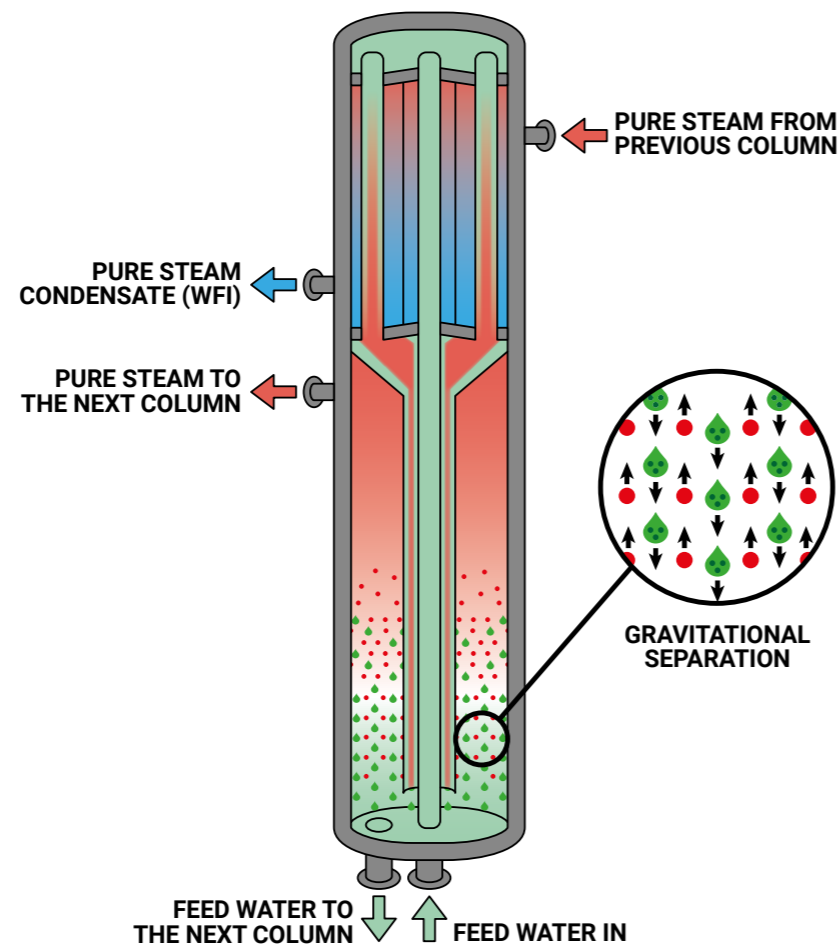
The column is therefore free to expand without any restraint. The decontamination chamber is a completely empty column without any baffle or mechanical separation device. The decontamination of the steam is obtained by exclusively gravitational separation.

The heat recovery system in Stilmas Pharmastill is the result of a careful mechanical and thermodynamic study. The thin falling film process inside the evaporators/condensers grants the highest efficiency in heat and mass transfer.



MAIN FEATURES OF STILMAS PHARMASTILL

- ⊕ Rapid start up. The distillate is produced after only few minutes from switch on
- ⊕ Energy Savings: energy saving and optimization of utility consumption is a distinguishing characteristics of Pharmastill thanks to the unique solution consisting of the presence of preheaters on each columns of the Pharmastill as well as the thin falling film principle
- ⊕ Unique purification system: gravitational purification principle for better guarantee of distillate purity
- ⊕ Simple and clean mechanical construction: baffle free decontamination chamber - no welding. Granting the best inspectability, minimized corrosion risk, for the longest expected life of equipment
- ⊕ Extremely limited maintenance. No moving parts, expansion joints or mechanical seals
- ⊕ Compact construction and low height
- ⊕ Up to ten effects, for maximum energy efficiency
- ⊕ High flexibility: the production capacity can be adjusted in the range of 55-100%
- ⊕ State of the art Construction characteristics are in compliance with pharma latest guidelines (ASME BPE, ISPE GUIDELINES and more)
- ⊕ Software is developed according to the latest GAMP
- ⊕ Supervision system CFR 21 - Part 11 Compliant



ENDOTOXYN REDUCTION: THROUGH THE ABOVE COLUMN DESIGN ALLOWING GRAVITATIONAL SEPARATION, PHARMASTILL IS CAPABLE OF REACHING LOG 6 EXDOTOXYN REDUCTION.

OPERATING PRINCIPLE

The Pharmastill HPS is based on the "Thin Falling Film" and Multi-stage principles ingeniously combined. The first effect is fed by an external energy source (Industrial Steam or Electrical energy). The pure steam generated in each effect and the non-evaporated water feed the following one operating at lower pressure. Pure steam is condensed while preheating a new portion of feed water.

Pharmastills are provided with one pre-heater for each column recovering the sensible heat of the distillate, and two final exchangers. The final condenser ensures the efficient degassing of distilled. WFI conductivity and temperature are continuously measured and, in case of "out of spec", the produced WFI is automatically discharged to the drain. On line TOC monitoring is also possible.



THE PIPES ARE EXPANDED INTO THE PLATES, AVOIDING ANY WELDING FOR A TOTALLY HYGIENIC EXECUTION, AND A BETTER RESISTANCE AGAINST DILATATION STRESS.

AN ADDITION BENEFIT OF THIS SOLUTION IS THE COMPACT AND THE HIGH EFFICIENCY HEAT EXCHANGER.

MORE...

- ⊕ Pure steam production: a withdrawal system of the pure steam produced in the first effect enable the Pharmastill to deliver pure steam for usage in SIP processes
- ⊕ WFI pressurizing: when storage vessel does not allow WFI to be fed by gravity a specifically designed pressurizing set can be installed on the Pharmastill skid to ensure a pressurized WFI
- ⊕ COMBI configuration: the innovative Pharmastill MS - COMBI integrates into one system the possibility of simultaneous and independent production of WFI and Pure Steam in different capacities and ratios. Dedicated design can be performed to fit production needs
- ⊕ Pharmastill MS E: the electric variant delivers the same qualitative performance of the HPS version using electrical energy instead of industrial steam as heating source



DOCUMENTATION AND AUTOMATION

THE DOCUMENTATION PACKAGE SUPPLIED BY STILMAS FOR ITS PLANTS IS CONCEIVED AND ORGANIZED TO:

- ⊕ Provide documented evidence of the Project Life-cycle, from the design phase up to the final Site Acceptance Test runs
- ⊕ Collect all the necessary information as needed to consistently feed and support the Validation Activity

STILMAS' AUTOMATION MAIN FEATURES

- ⊕ All PLC controllers have the possibility to be connected with a factory supervisory system via the most common communication systems
- ⊕ Software is developed according to the latest GAMP
- ⊕ Supervision SCADA system CFR 21 - Part 11 Compliant

