



NiSoPURE

Improving your aseptic dairy & food
production

NiSoPURE produces better results with your aseptic homogenizer

Aseptic processing allows for a better preservation of food and thereby prolonging the shelf life. For this reason, the process is increasingly requested in many industries, such as dairy, beverage and food.

The drawback of many aseptic processes is that they consume a lot of energy and also require a large amount of water for operation. Sterile water is also necessary to flush parts of the high pressure homogenizer that are potentially exposed to the atmosphere.

Sterile water with less energy and less steam

Setting a new milestone in the success story of GEA homogenizers, GEA has developed NiSoPURE, a stand-alone skid able to produce the required sterile water* with low environmental impact. Connected to the homogenizer, NiSoPURE drastically reduces the consumption of energy, water and steam.

**Sterile water: Thermal treatment involves heating the water for sufficient time to obtain value of $F_0=6$ (parameter F_0 is obtained from bacterial spore inactivation techniques).*



Save money and energy

NiSoPURE is an efficient skid to sterilize and cool the water used to flush homogenizers' aseptic barriers. This system is engineered and designed to save water and energy consumption, reducing the environmental impact as well as the costs for the final user. Its breakthrough innovation originates with the recovery of the heat used to sterilize the flushing water.

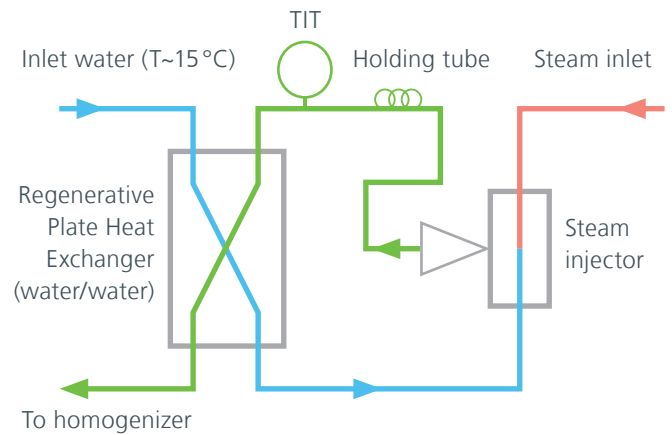
Virtuous temperature loop for a full energy recovery

In NiSoPURE the sterile fluid is obtained not through condensing steam by running water, but from the plant water to which, after a preheating step, a very small amount of steam is added. In the holding tube, the liquid remains for the required time at the sterilization temperature. Coming out of the holding tube, the water temperature is verified to ensure that the sterilization occurred. The sterile water flows inside a heat exchanger where it preheats the water by transferring power in the water supply. The liquid then returns to the regenerative plate exchanger, in the opposite direction and via the exchanger's clean side, where it cools down temperature before reaching the homogenizer's aseptic chambers. Thanks to its special design, the heat exchanger features a double plate separated by air chamber to eliminate the possible risk of cross contamination among the inlet water and the sterile water in

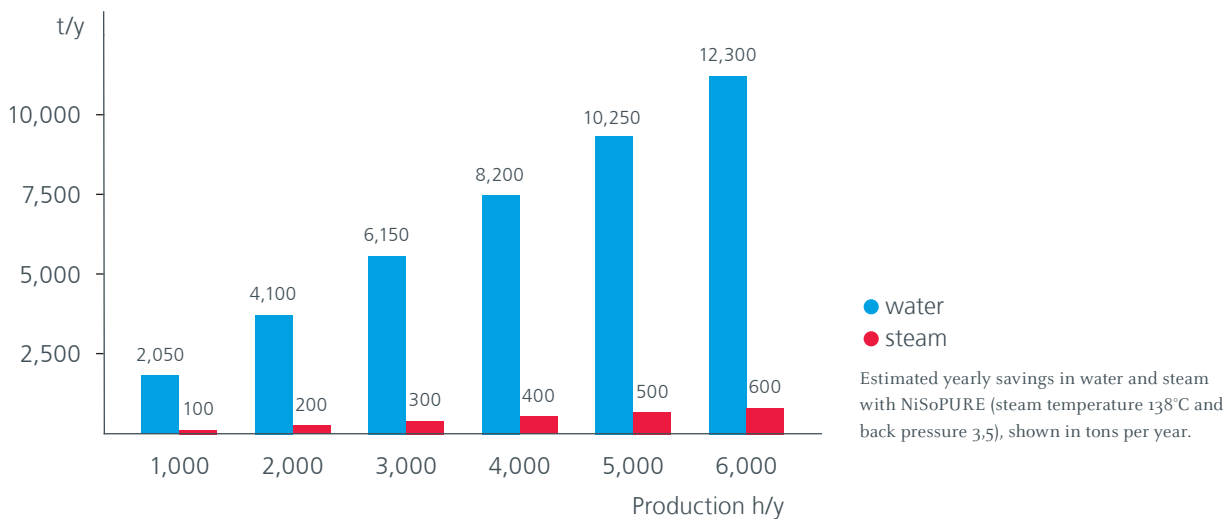
case of pin-holes in the plates.

The NiSoPURE, applied to 5 piston homogenizer, reduces consumption from 110 to only about 10-15 kg/h of steam and from 2,200 to 150 kg/h of water.

Overall scheme of water cycle inside the NiSoPURE system before reaching the homogenizer aseptic chambers.



EXAMPLE CASE: NISOPURE APPLIED TO ARIETE 5 PISTON HOMOGENIZERS ALLOWS TO SAVE UP TO 12,300 TONS OF WATER AND 600+ TONS OF STEAM PER YEAR



Applications and advantages

Many applications, a unique design

NiSoPure is an ideal high-efficiency solution for aseptic and UHT processing. Connected to high pressure homogenizers, it is able to produce sterile water to flush aseptic chambers and it minimizes water and steam consumption, especially in high flow rate processes. The NiSoPURE system is available for all aseptic high pressure homogenizers and pumps and it is suitable for continuous UHT applications. It is also available as a retrofit for your existing homogenizers.



The main advantages

- Reduction of water and steam consumption up to 90% compared to the standard sterile steam systems
- Reduction of energy consumption (due to energy regeneration recovery)
- High reliability
- Excellent quality standard of the sterile water

Aseptic capabilities

Highest safety and quality

GEA homogenizers offer a full range of aseptic options in order to ensure the highest safety and quality production according to customer's needs: compression heads, homogenizing valves and skid versions are available in aseptic execution.

Using NiSoPURE media is made sterile by heating plant water, using direct injection of steam and maintaining the sterilization temperature for sufficient time to inactivate bacterial spores. This innovative solution guarantees water quality according to world-wide safety standards.

NiSoPURE also performs also the sterilization phase (SIP) in the aseptic line (NiSoPURE skid and onboard plant) with live steam. NiSoPURE can be provided with equipment for CIP phase.

Aseptic features

- Water quality according to world-wide safety standards
- No product contamination
- No surfaces in contact with both product and the outside atmosphere during normal operations

Fast return on investment

The cost savings with the NiSoPURE will be noticed quickly. With an average working time of 3,000 h/year, the NiSoPURE, applied to 5 piston homogenizer, will lead to save about 6,000 tons of cooling water/year and about 300 tons of steam/year.





We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

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