ADVANTAGES OF THE SURDRY WATERSPRAY SYSTEM

Continuous process water recirculation
- Improved heat transfer during sterilization and cooling.
- Homogeneous heating and cooling of product.
- Easily accessible external cartridge filter.

Waterspray from top and sides
- Convective mix of steam, air and water.
- Excellent temperature distribution.
- Uniform product quality.

Direct steam injection
- Reduced steam consumption.
- Uniform come-up.
- Perfect temperature balance.

Continuous water level control
- Accurate control of water level.
- Minimum amount of process water.
- Reduced steam and cooling water consumption

Programmable air-overpressure control
- Ideal for pouches, pressurized or lightweight cans, plastics containers and glass jars.
- Allows high temperature short time (HTST) processing.

Process water preheat
- No cooling of hot filled product during come-up.
- Fast but quiet heating system.
- Consistent thermal process.

Plate heat exchanger
- No chlorination of cooling water necessary.
- Optional water and heat recovery.
- Reduced water treatment and waste water disposal cost.

Continuous flow monitoring
- Ensures repeatable and consistent process.
- Unmatched product safety.
WORKING PRINCIPLE

Water filling

In the first daily operation the retort is filled with a small volume of water which will not reach the basket bottom level (approx. 100 lts per basket). This water can remain in the vessel for successive cycles. Optionally, the water can be preheated through a steam connection to the heat exchanger. The pump recirculates the water through the heat exchanger until it reaches the pre-set temperature.

Heating

If the water is up to the required level (and optionally at the required temperature), the steam valve opens and the circulation pump is switched on automatically. The mixture of steam and water sprayed from the top and sides of the retort vessel create highly turbulent convection currents which very rapidly homogenize the temperature at every point in the retort and between the containers.

Sterilization

Once the programmed sterilization temperature has been reached, it will be held for the programmed time with minimum oscillation of ± 0.1 °C. Similarly, the pressure is kept within ±0.02 bar of the pre-set pressure. Differently than in the traditional steam retorts, the pressure can be higher by means of compressed air injection for higher temperature processing with flexible packages without deformation or stress on the seams.
WORKING PRINCIPLE

Cooling

At the end of the sterilization time, the retort switches into cooling with a fine injection of cold water which mixes with the hot water to avoid a thermal shock or a sudden pressure drop (micro-cooling). During this short phase, the pressure is held at the same value as during the sterilization in order to compensate the internal package pressure where the product is still at high temperature. When the initial critical cooling phase is over, the water valve is fully opened to produce a quick temperature drop in the retort and in the containers. The retort pressure can be programmed to linearly follow the pressure inside the container.

Cooling through heat exchanger

Under request, the retort is equipped with a plate heat exchanger for indirect cooling. The hot water that the pump takes from the retort is ducted through the plates of the heat exchanger where it cools down by thermal exchange with the external cooling water which circulates in countercurrent through the secondary circuit of the heat exchanger.

Cooling and end of cycle

Once the cold temperature is reached, the pressure is automatically relieved. The water level is automatically taken from the maximum down to the medium level. The door is equipped with a safety locking device which impedes the opening of the door in case of residual pressure or high water level.