Autoclaves

PGA 07_08

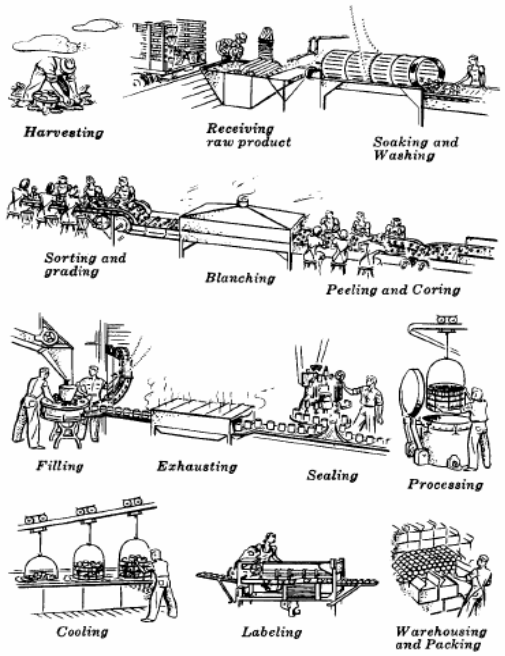
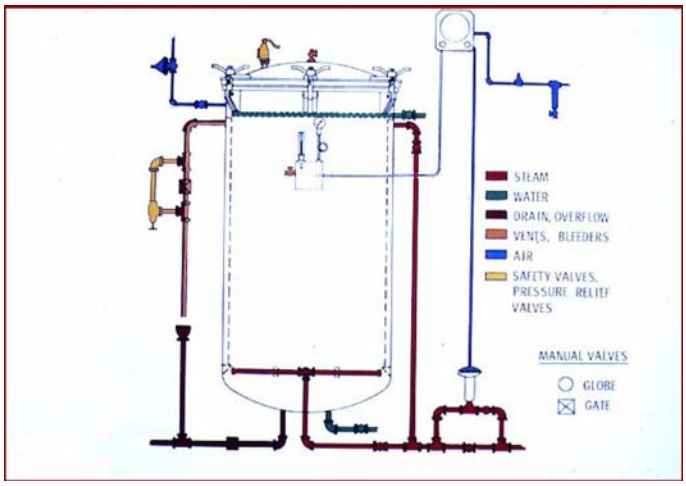
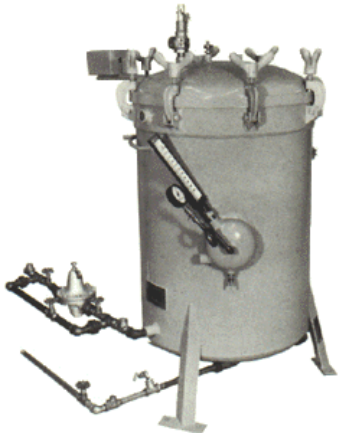


Fig. 2.8 The canning process; from [21] with permission.

Vertical - Vapor



Vertical - Vapor



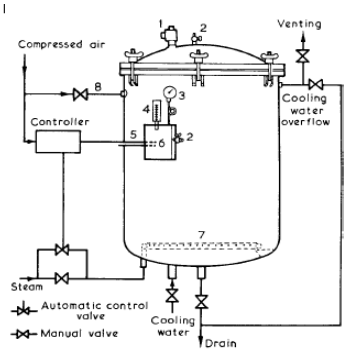
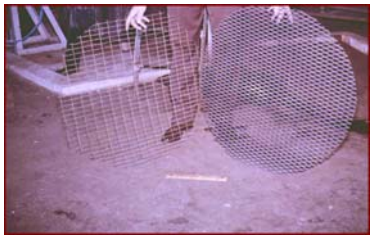
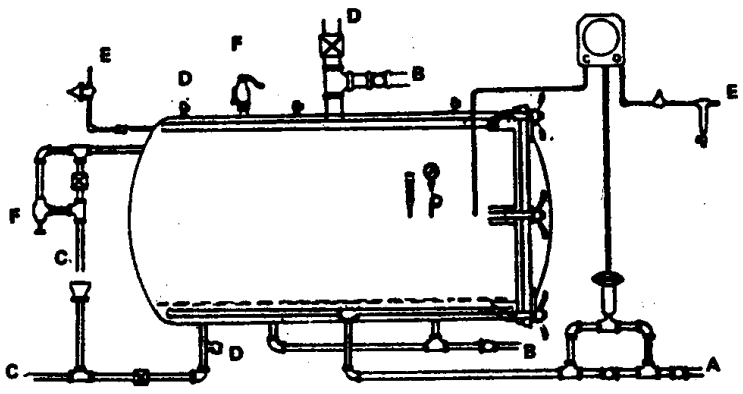


Fig. 2.9 A vertical batch retort equipped for cooling under air pressure: 1, safety valve; 2, valve to maintain a steam bleed from retort during processing; 3, pressure gauge; 4, thermometer; 5, sensing element for contoller; 6, thermometer box; 7, steam spreader; 8, air inlet for pressure cooling; from [23] with permission of the authors.

Cestos



Horizontal vapor



Horizontal

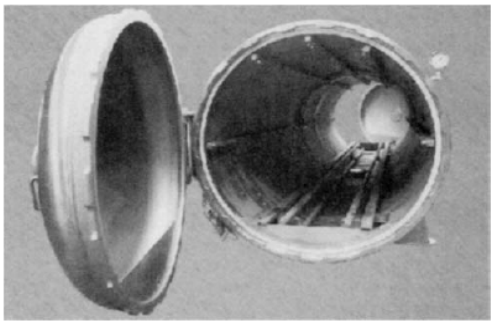


Figure 1. Empty batch retort with doors ajar showing interior rails for entry and exit of wheeled crates used in loading and unloading operations. *Source:* Courtesy FMC Food Process Systems Division, Madera, Calif.

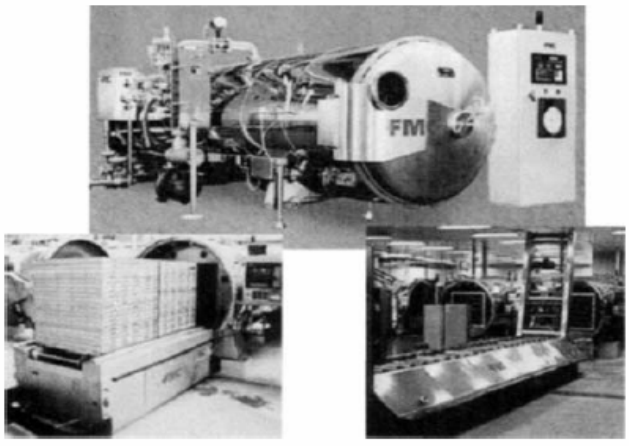


Figure 2. Exterior view of operating batch retort (above), and commercial system of batch retorts showing automated loading/unloading operations in a typical food processing plant cook room (below). *Source:* Courtesy FMC Food Process Systems Division, Madera, Calif.

Misturas Vapor -ar

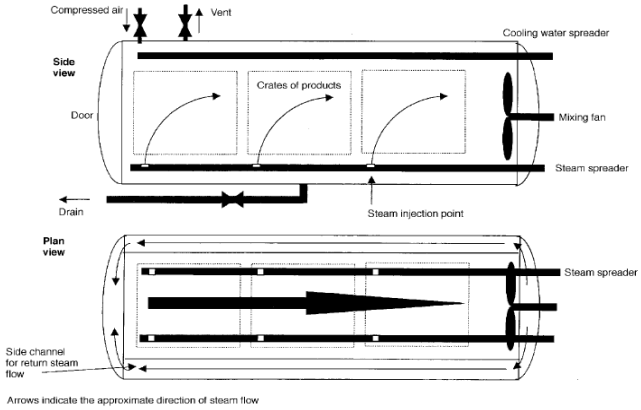
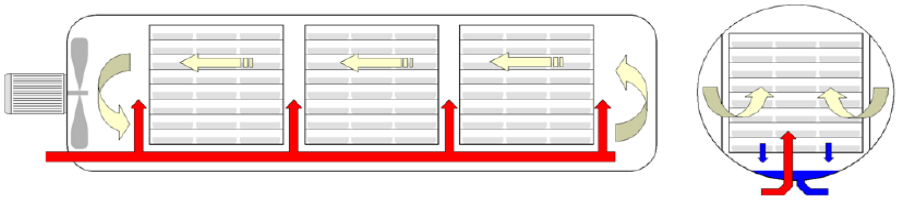
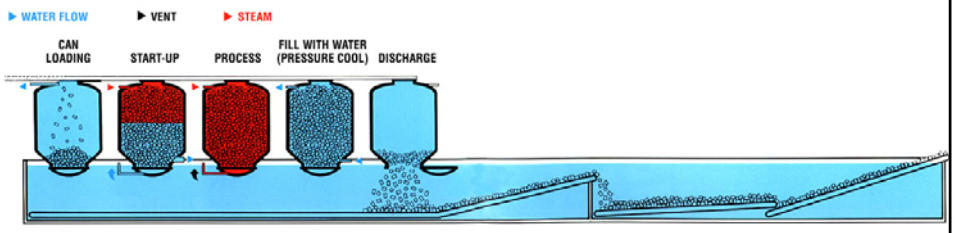


Fig. 2.2 Schematic of a steam/air retort.

Vapor+Ar



TYPICAL PROCESSING SEQUENCE



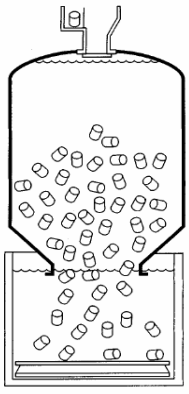


Figure 3. Operating schematic of a crateless retort showing "free fall" discharge of sterilized food containers onto submerged cooling canal exit conveyor.

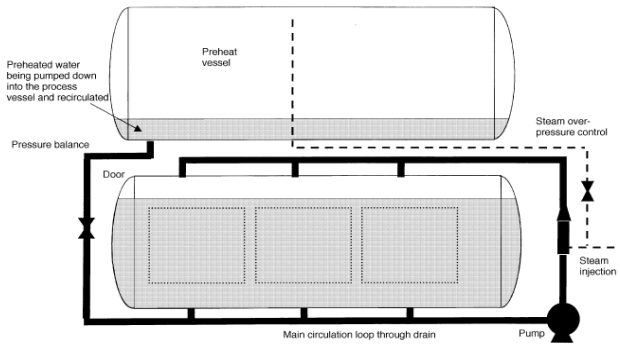
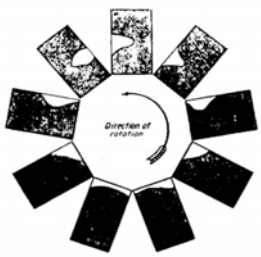


Fig. 2.3 Schematic of a full water immersion retort.

Satoris imersão+rotacão



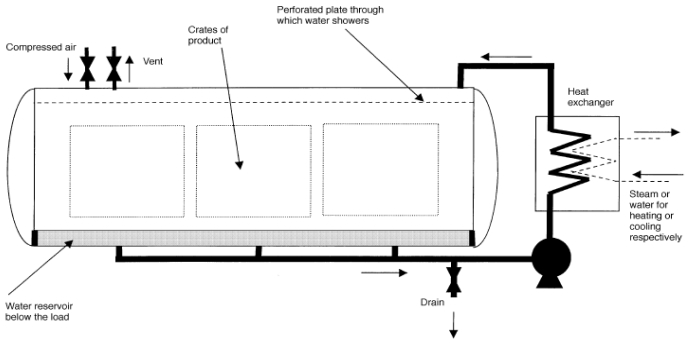
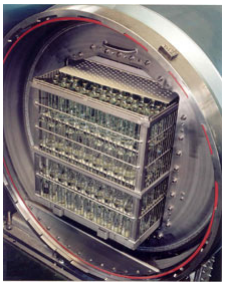
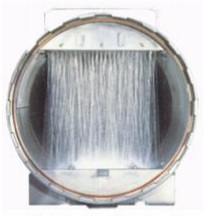


Fig. 2.4 Schematic of a raining water retort.

Steriflow





3. ábra: Permetezős autoklév (Barriquand)

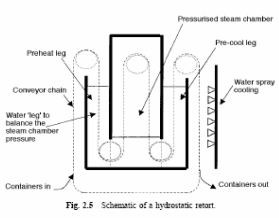


Fig. 2.5 Schematic of a hydrostatic retort.

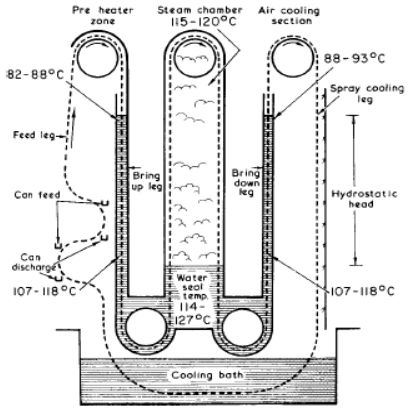
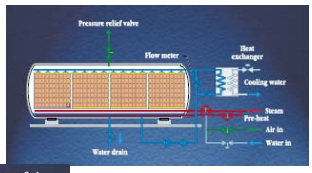
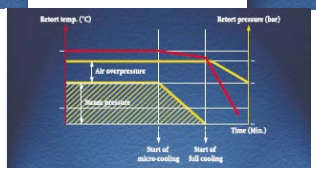


Fig. 2.10 Diagram showing the principle of the hydrostatic steriliser; from [23] with permission of the authors.

FMC – Steam Water Spray





FMC – Hydrostatic Sterilizer

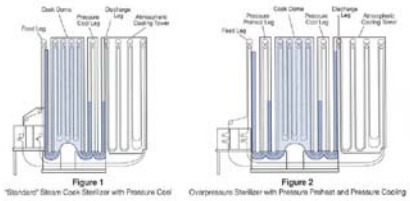
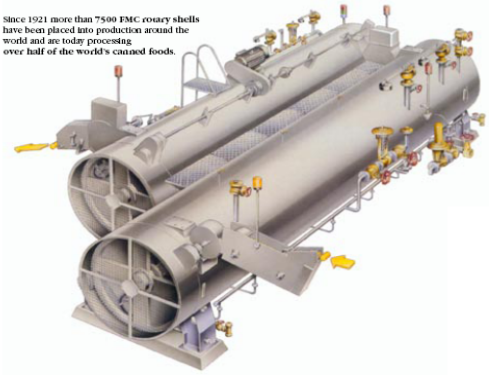
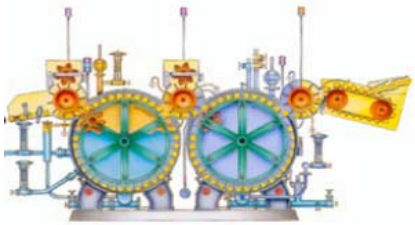


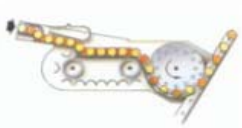
Figure 1

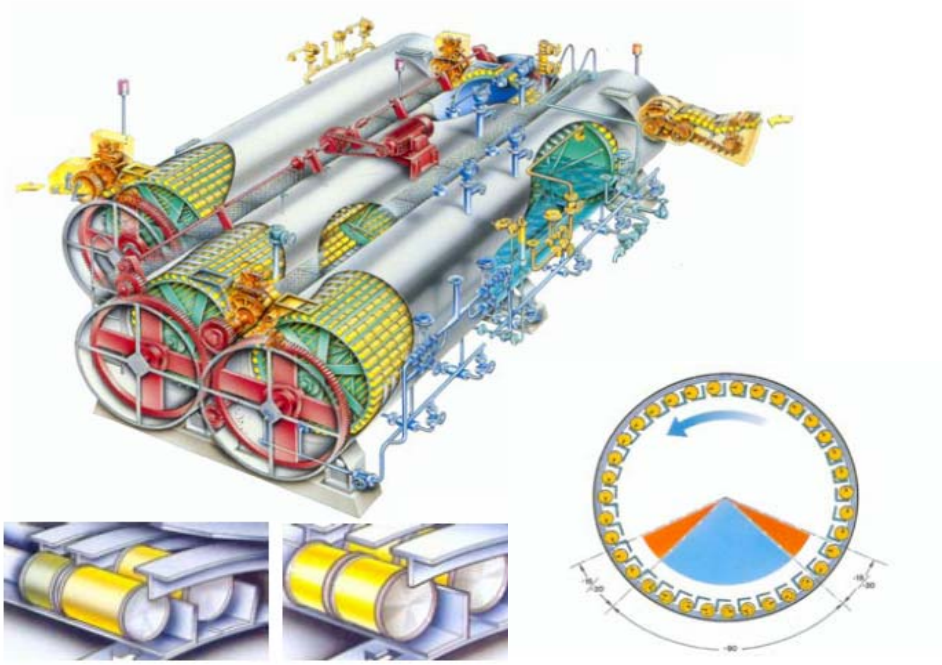
Figure 2

FMC – Continuous Rotary Pressure Cooker and Cooler









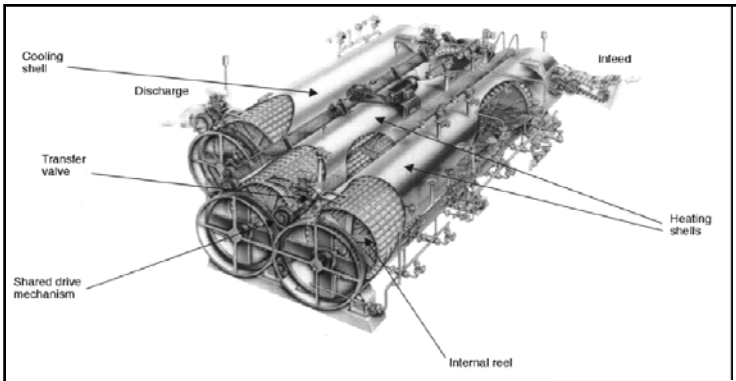


Fig. 2.6 Cut-away diagram of an FMC Reel and Spiral retort.

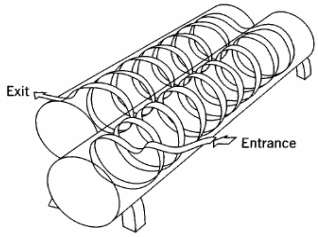


Figure 4. Schematic of helical path traveled by food containers moving through a series of rotary cooker/cooler shells in a continuous rotary sterilizer system.

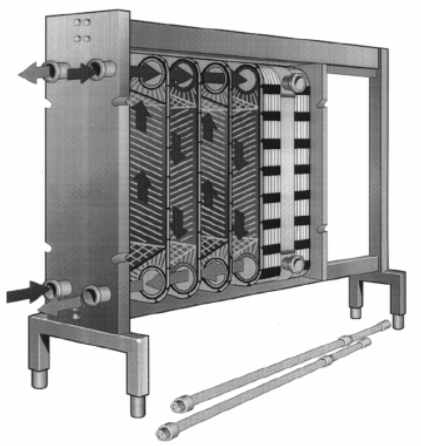


Fig. 3.2 Flow through a plate heat exchanger (courtesy of Tetra Pak).

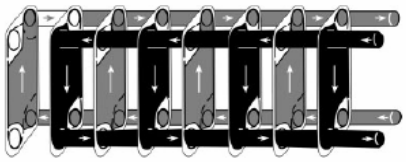


Fig. 2.3 Flow through a plate heat exchanger, by courtesy of APV.

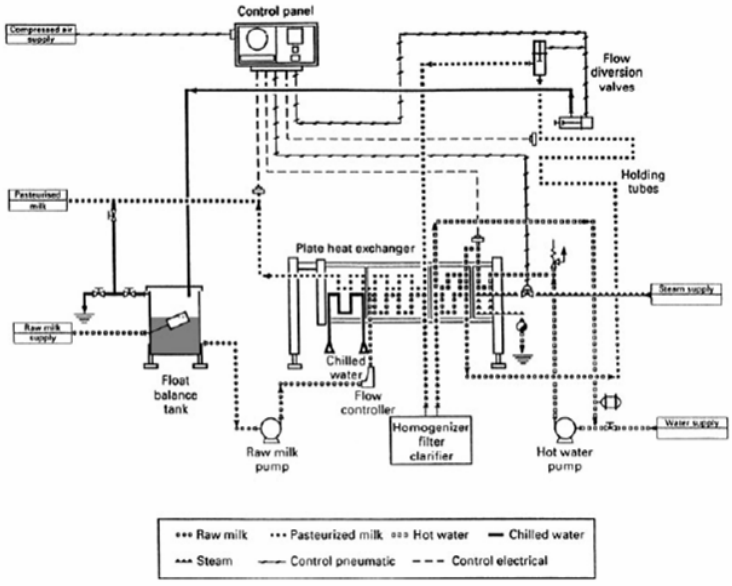


Fig. 2.6 Typical milk pasteurisation system; from [17] with permission.

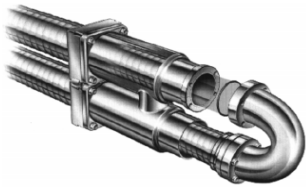


Fig. 3.3 Typical monotube design (courtesy of Tetra Pak).

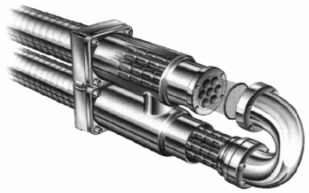


Fig. 3.4 Typical multitube design (courtesy of Tetra Pak).

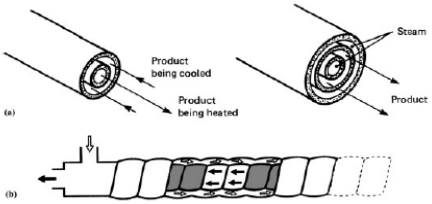


Fig. 2.4 Types of concentric tube heat exchangers: (a) plain wall, (b) corrugated spiral wound; from [7] with permission.

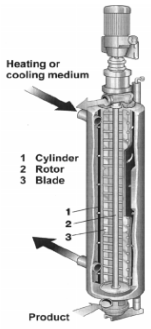
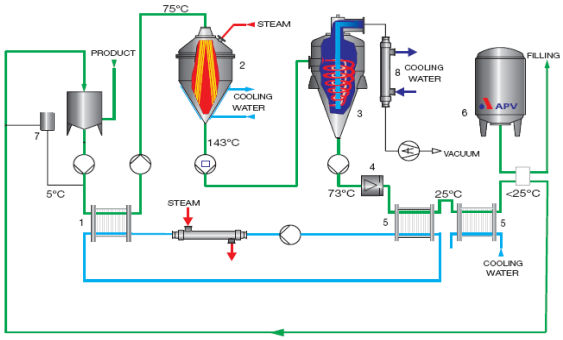


Fig. 3.5 Structure of a scraped surface heat exchanger (Contherm) (courtesy of Tetra Pak).



1. Plate preheaters
2. Steam infusion chamber
5. Plate coolers
3. Flash vessel
4. Aseptic homogeniser
8. Condenser
6. Aseptic tank
7. Sterilising loop

Fig. 12.1 Instant infusion plant.

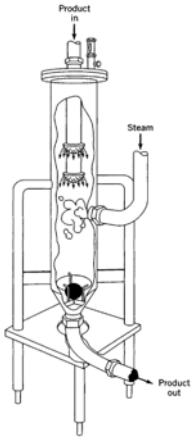


Figure 8. Steam-infusion heat exchangers. *Source:* Ref. 5, courtesy of Crepaco, Inc.