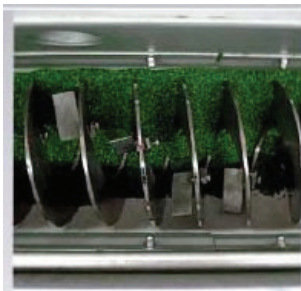


TRY SAFESTERIL !

Safesteril's objectives are to improve and develop new solutions that eliminates the food industry's contamination challenges.

A Research & Development team is dedicated to research in the food industry and the operation of pilot plants near Paris (France) and Chicago (USA).

In Europe and in the USA, trials are possible on an industrial scale pilot model of Safesteril, so we can refine the treatment parameters that fit your product and business.



THE PROCESS



Safesteril is a patented process, developed by the French engineering firm ETIA.

ETIA has been active in the field of food processing equipment innovation for more than 20 years, with a particular focus on heating and cooling technologies for low moisture products.

This is how ETIA has become the leading supplier of industrial processes for the germ reduction of low moisture products.

More information on:
www.safesteril.com • www.etia.fr

CONTACTS



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Safe & Natural !



5 to 8 logs reduction guaranteed for pathogens

STEAM PASTEURIZATION AND STERILIZATION SYSTEMS

PRODUCTS & APPLICATIONS

Hundreds of different products are currently treated worldwide by Safesteril, including :

- Spices
- Herbs & Botanicals
- Dehydrated vegetables
- Seeds, Nuts and dried fruits
- Cereals, Rice, Flours
- Cosmetics (clay, talc) and more...

ABOUT US

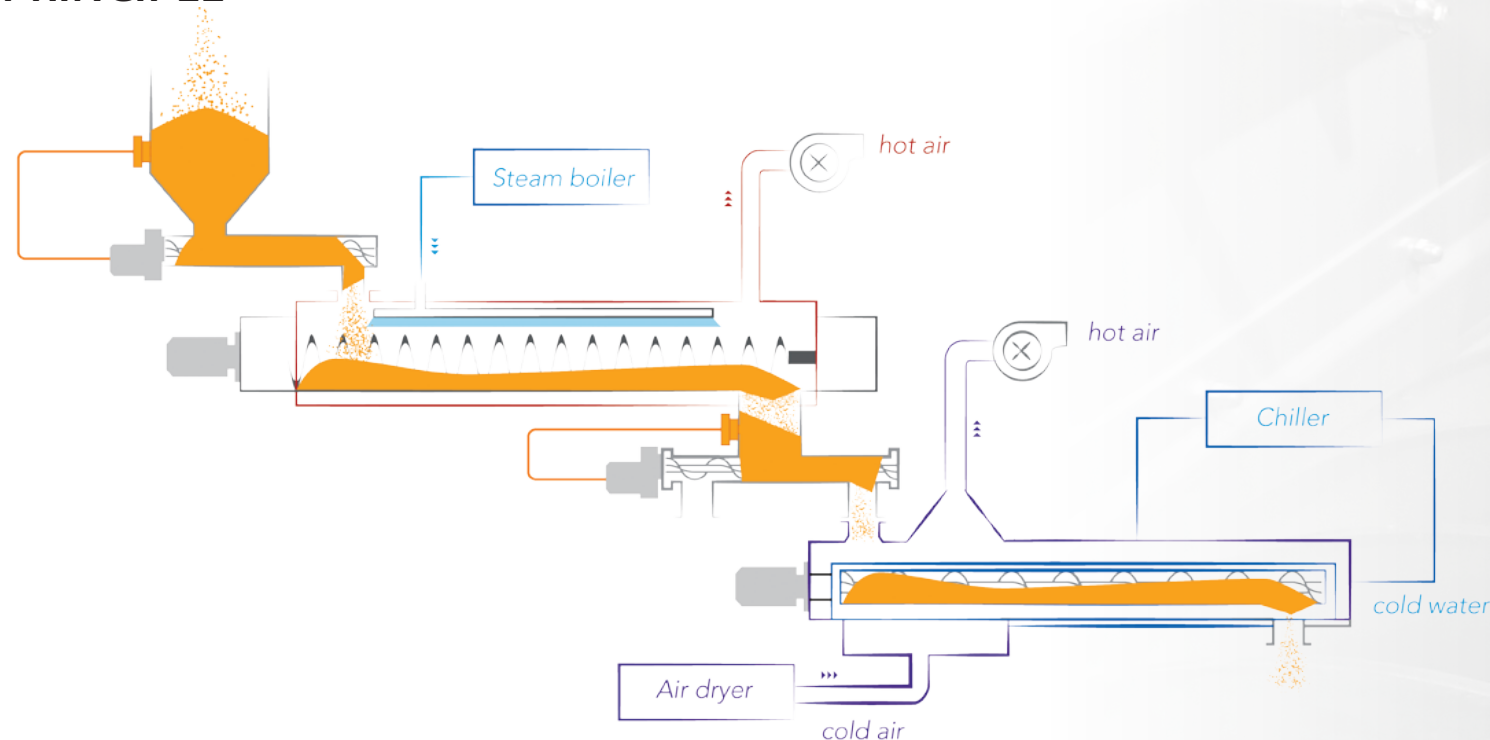
Safesteril was developed and patented by ETIA, a French engineering company founded in 1989.

Safesteril technology is based on the unique and patented combination of an electrically heated conveyor with steam, that reduces germ content with a minimal alteration of its properties.

Safesteril is a versatile process that not only can perform pasteurization and sterilization, but also disinfection, drying and roasting.

With systems installed in more than 35 countries, Safesteril is the leading solution for the continuous steam pasteurization and sterilization of your dehydrated products of all shapes: powder, granulated, crushed, shopped, flakes, whole and more...

PRINCIPLE



Safesteril achieves high performance of microbial load reduction, while maintaining the organoleptical properties of the products. Taste, color and moisture are preserved. Volatile oil loss is less than 5-10%, which is less than with any other steam treatment systems. A 5 log reduction of Salmonelle and a significant reduction of spores content are also guaranteed.

Sterilization: Up to 5 logs reduction for TPC, while other germs including pathogens are entirely inactivated: Yeast, Mold, Enterobacteriaceae (E.Coli), Coliforms, Salmonella.

Pasteurization: 5 to 8 logs reduction on all pathogenic bacterias : E.Coli, Salmonella and elimination of all yeast, mold and coliform load.

1

FEED HOPPER (500L and 1000L capacity)

Slow motion dosing screw smoothly and continuously feeds the product into the sterilization chamber without breaking particles.

2

STERILIZATION / PASTEURIZATION

Product is gently conveyed through the chamber by a screw heated by Joule effect.

Germ reduction is achieved due to the combination of the screw heat and the steam injected. Steam can be saturated, dry or superheated according to the treatment to be achieved and allows a perfect control of the moisture. A transformer delivers the electrical power that heats the screw.

3

TRANSFER / BY-PASS SCREW

The transfer screw is controlled by an exclusive "auto-reverse" feature, that guarantees only the product that reaches the target temperature and time conditions goes into the cooler.

By the following, the product can be transferred into the cooling screw or bypassed in a bag for reuse.

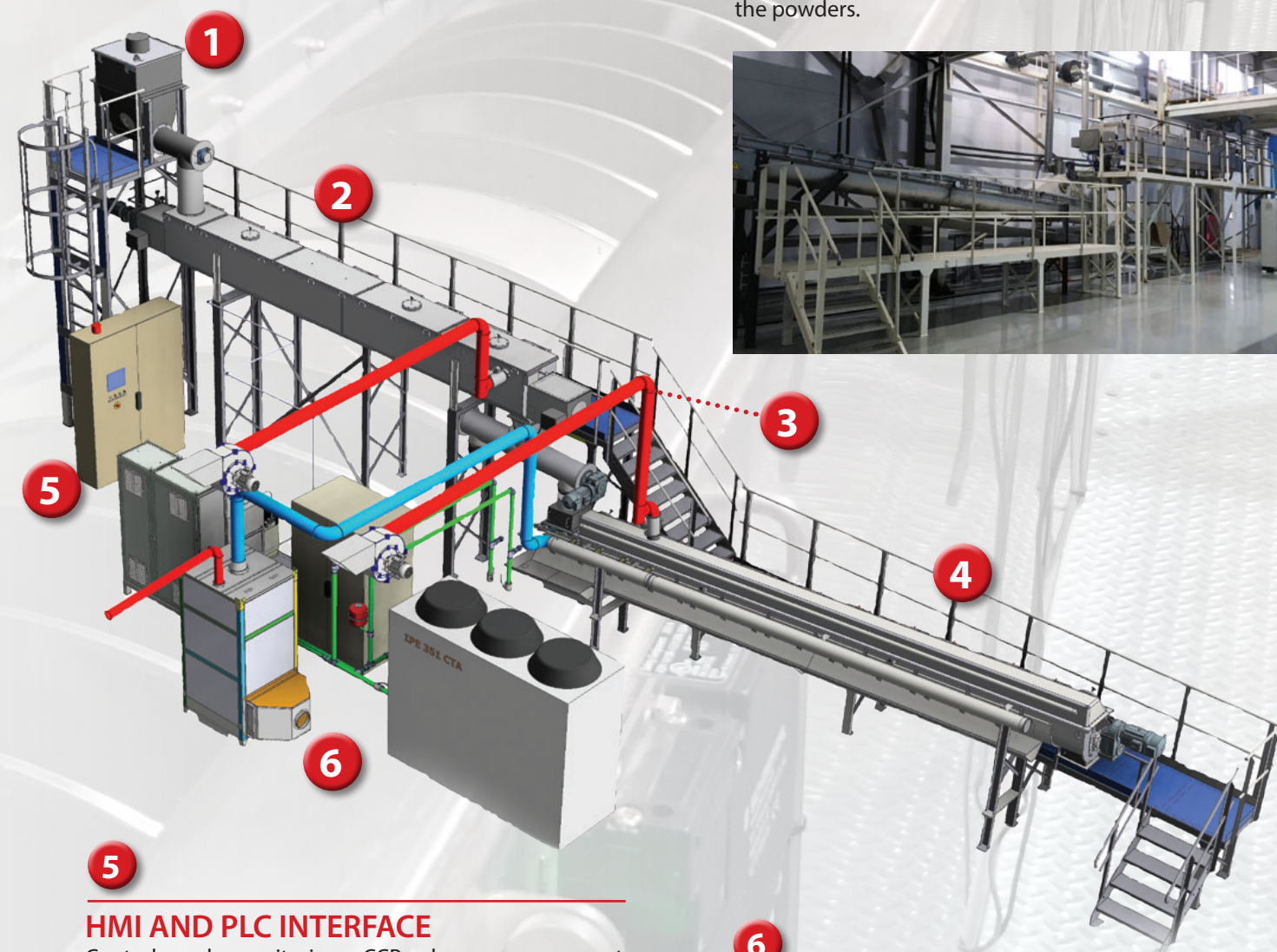
4

DRY FLASH COOLING

The product is cooled down in a cold and dry atmosphere. Cooling is done by the action of a chilled water circulating inside the screw and the auger jacket.

A dehumidified air is injected inside to get rid of the excess moisture.

The material can be packed online, no need to re-grind the powders.



5

HMI AND PLC INTERFACE

Control and monitoring, CCP alarm management (HACCP procedures).

User management (administrator / operator levels), recipes database, traceability. Available in your language.

6

ANNEXES (option)

Electrical steam generator, Water chiller, Air dehumidifier.

**STEAM PASTEURIZATION AND STERILIZATION SYSTEMS
UP TO 2 TONS/HOUR**