



PRESENTATION OF THE NATURAL PASTEURIZATION PROCESS

THE CHANGING FOOD SAFETY ENVIRONMENT

- Microorganisms are naturally present in low moisture food products (e.g. salmonella prevalence > 2% in raw agricultural products)
- Pathogenic germs such as Salmonella and E.Coli are a major cause of food poisoning and thus present a potential health hazard, even in very small dosage, especially to consumers with a compromised immune system
- Growing concerns of consumers regarding diseases stemming from food born illnesses
- Stringent controls by authorities and very precise analytical tools in laboratories
- Trend to increased regulations by health authorities world wide (e.g. FSMA - Food Safety Modernization Act in the US)
- To meet microbiological standards in large food processing industries often requires a validated, documented “kill-step”
- Product recalls may have ruinous financial consequences and harm brands

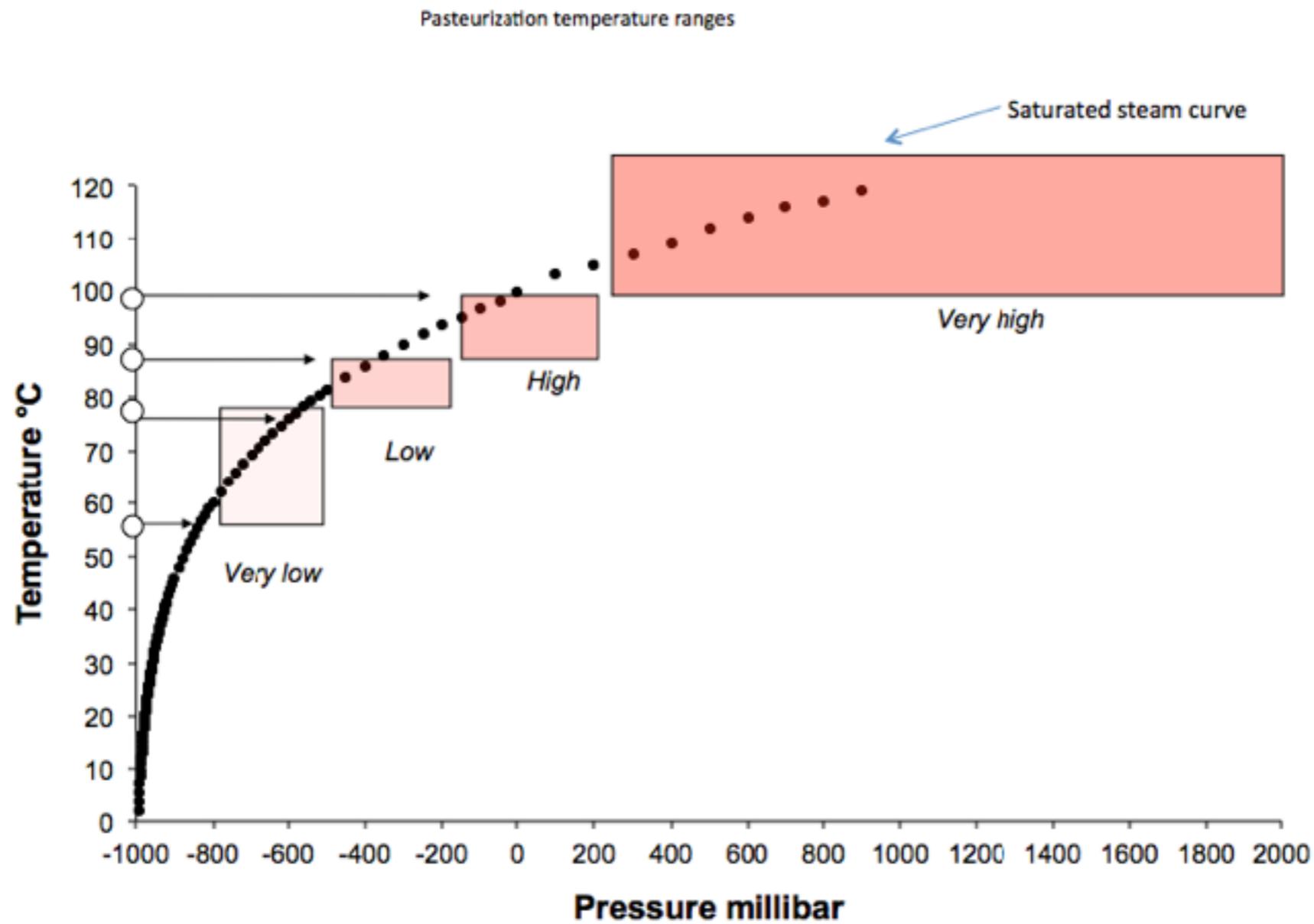


AN EFFECTIVE PROCESS TO PASTEURIZE PRODUCTS WHICH IS CERTIFIED FOR ORGANIC PRODUCTS

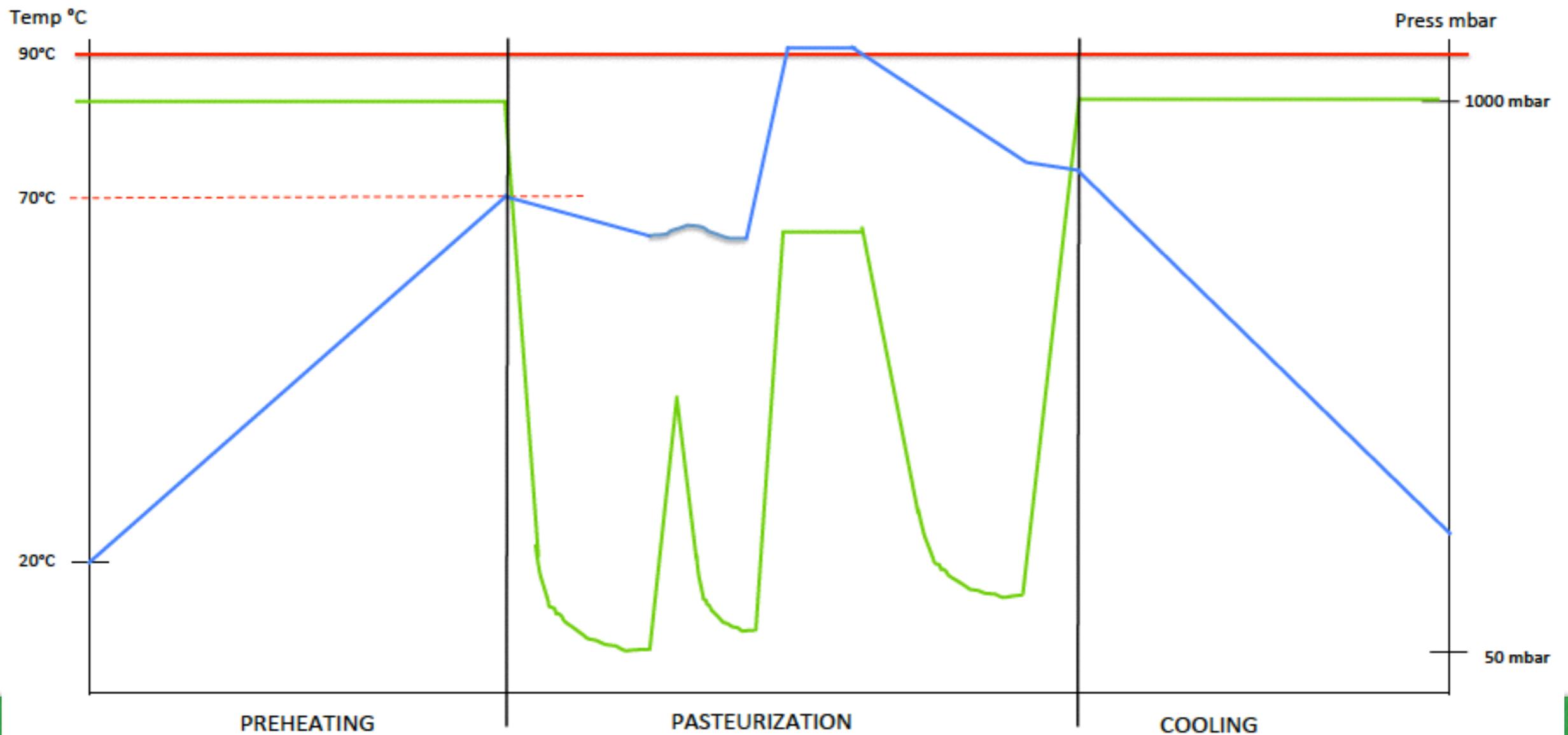
THE NAPASOL TECHNOLOGY

- Based on the science of sterilization
- Treatment under saturated steam conditions for maximum efficiency in a wide range of temperatures (65°C - 121°C)
- A process which is validated according to FDA criteria and fully traceable
- Optimized equipment configuration for a large range of products
- Elimination of pathogenic germs (> 5-log) without altering product quality
- Elimination or reduction of mold and yeast
- Inactivation of insects in all phases of their life cycle (including eggs)

SATURATED STEAM - MOST EFFICIENT FOR GERM REDUCTION



SCHEMATIC PRESENTATION OF THE PROCESS



STATISOL - STATIC MACHINE DESIGN

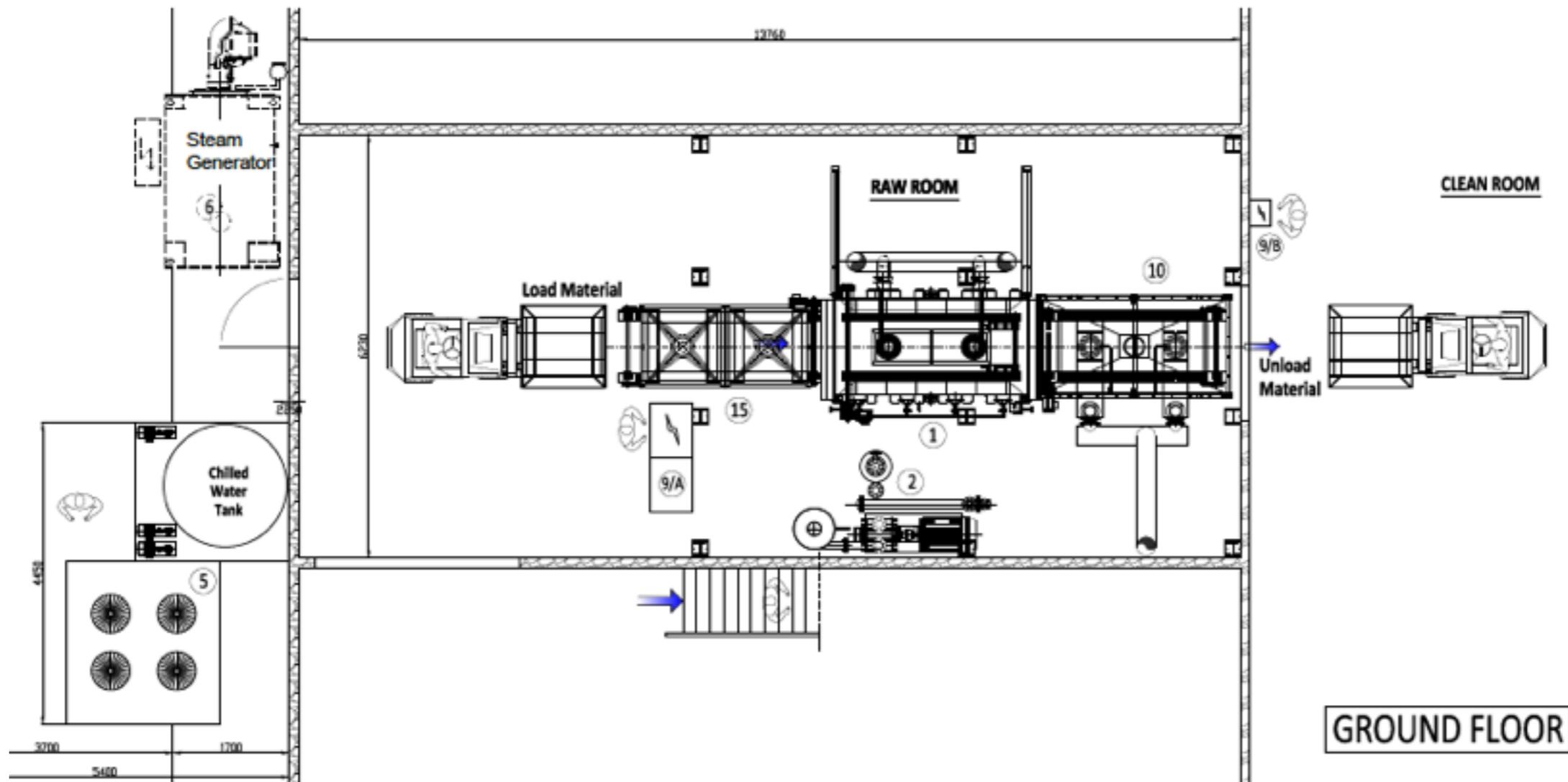
- Products are treated in stainless steel containers with a capacity of approximately 700 kg each
- Modular concept for 1 - 6 process containers (line capacity of 1 - 6 tons/hour)
- Clear separation of raw material area from clean room
- Completely automated process from preheating to cooling
- Short cycle time for optimized integration into a continuous production environment
- Flexible logistic solutions for different products (trays, containers, and others)
- Concept and lay-out can be adjusted to specific availability of space
- Static design: ideal for tree nuts, dried fruit, herbs, seeds and in general all fragile products (whole leaves, stems, etc.)

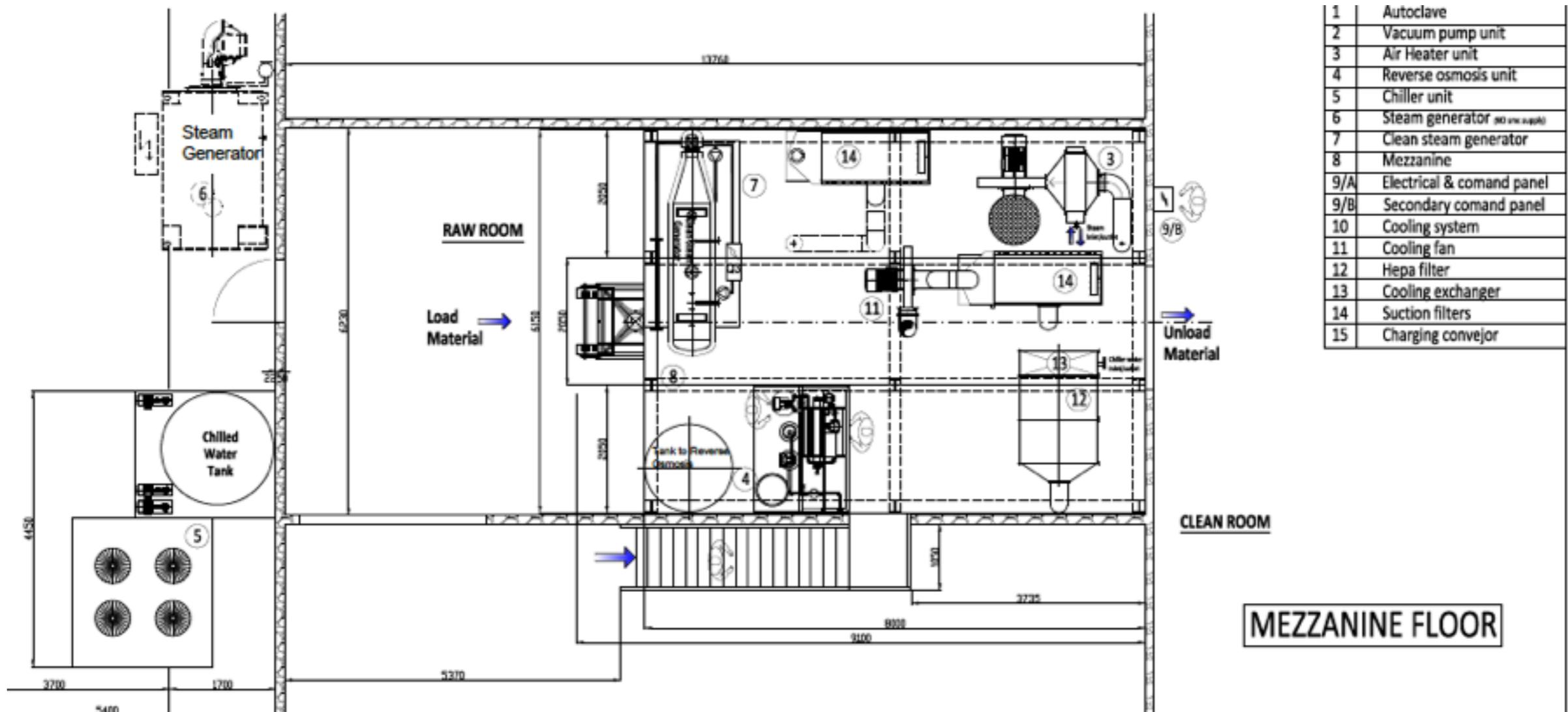
RTOSOL - DYNAMIC MACHINE DESIGN

- Rotating autoclave especially designed for powders and grains
- Pasteurization and blending in one step
- Automated loading/unloading simplifies the logistic for products in powder form
- Short cycle time
- No separate drying step required
- Concept and lay-out can be adjusted to specific availability of space
- Integrated CIP-system for efficient cleaning when needed
- Separate cooling solutions for special products are available

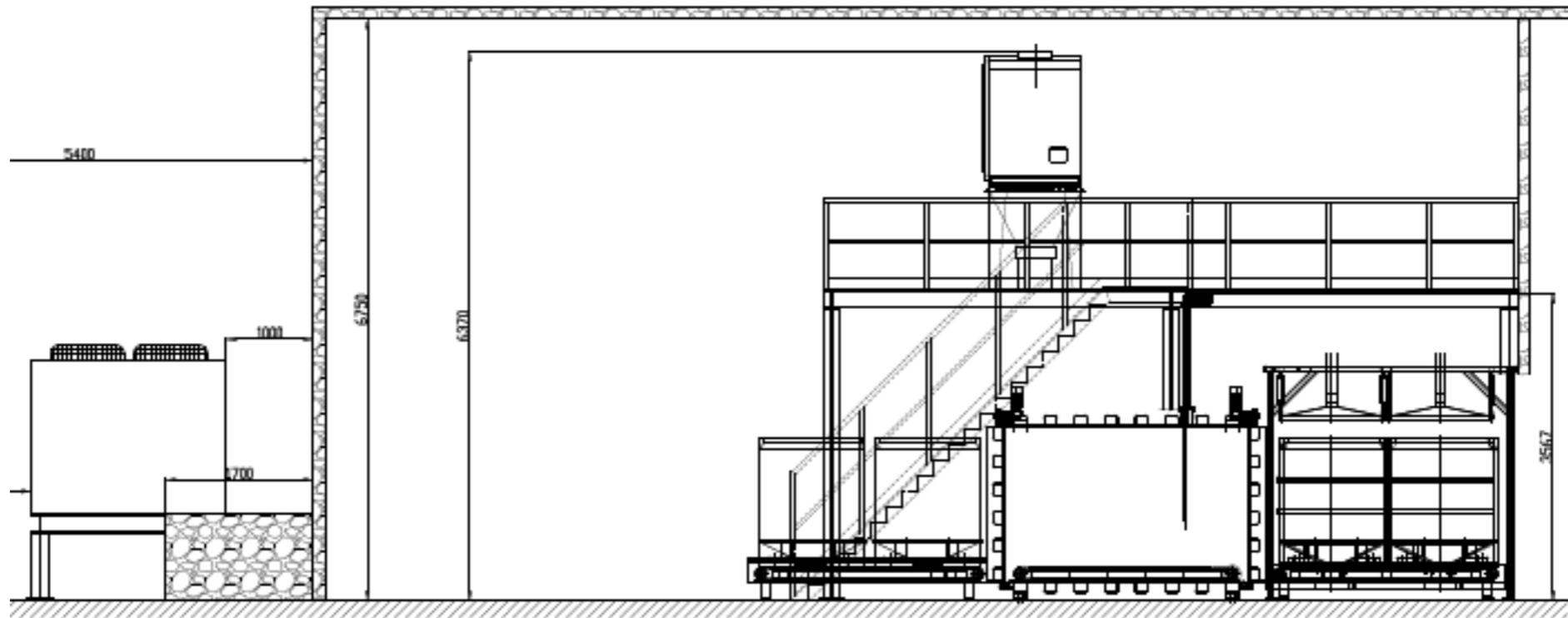


EXAMPLE: PLANT FOR MACADAMIA (Capacity 1,5 tons/hour)

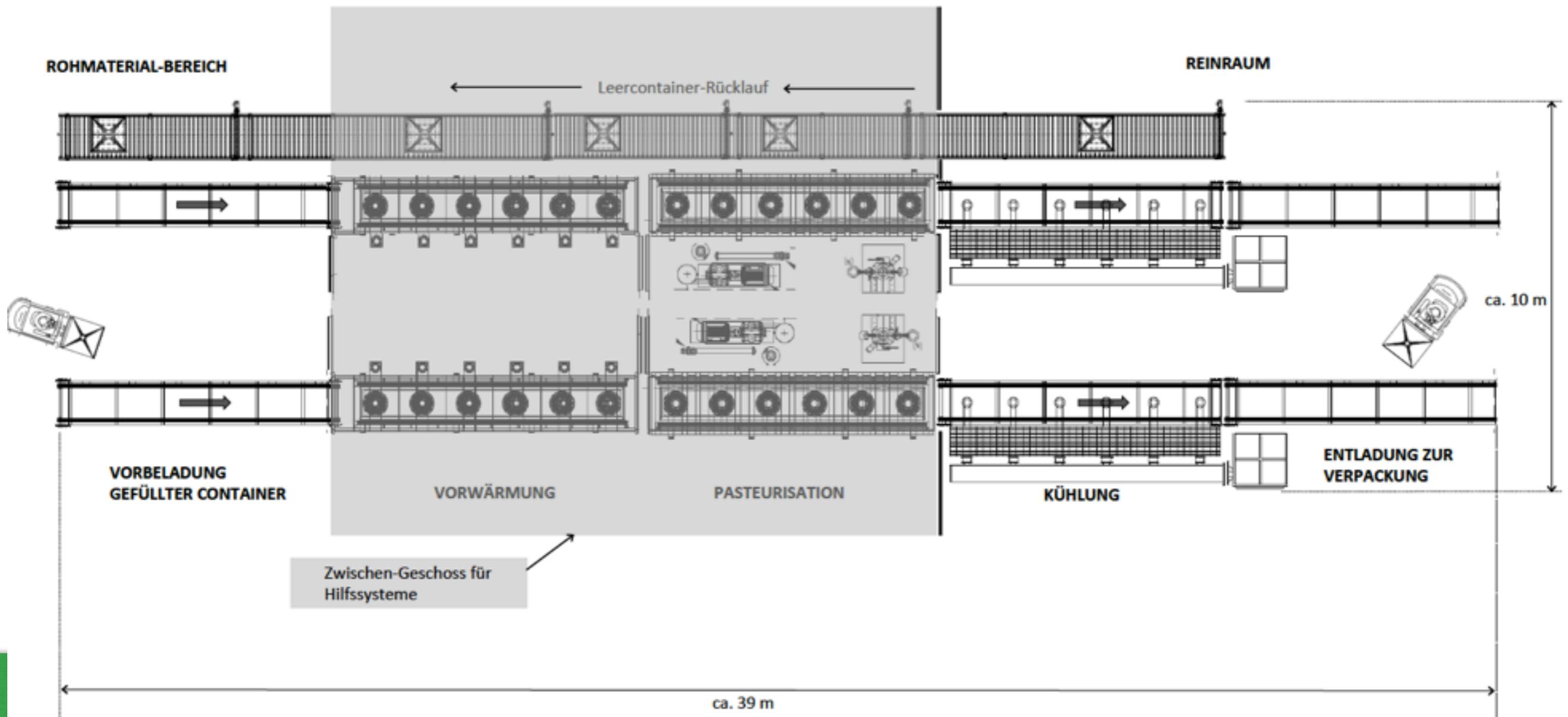




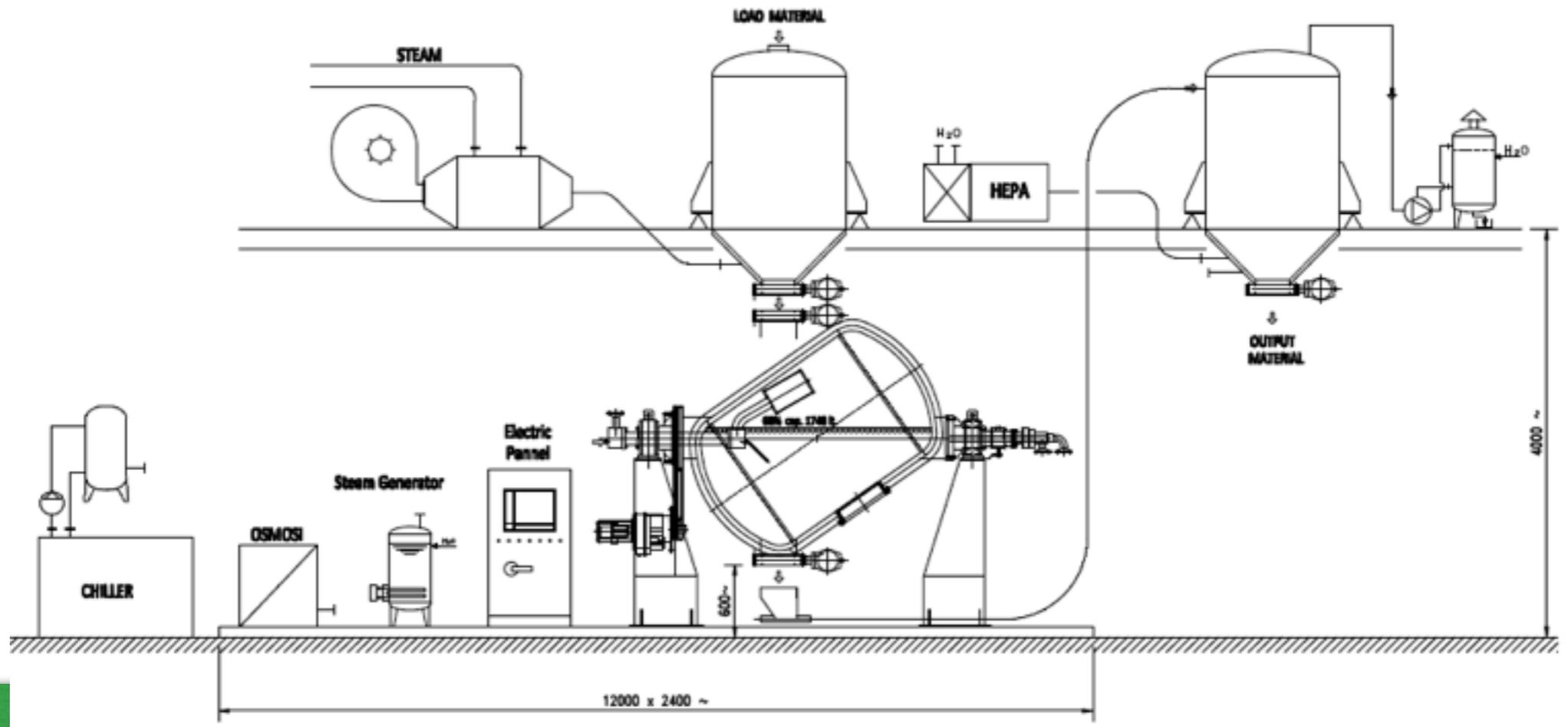
1	Autoclave
2	Vacuum pump unit
3	Air Heater unit
4	Reverse osmosis unit
5	Chiller unit
6	Steam generator (30 270 4400)
7	Clean steam generator
8	Mezzanine
9/A	Electrical & comand panel
9/B	Secondary comand panel
10	Cooling system
11	Cooling fan
12	Hepa filter
13	Cooling exchanger
14	Suction filters
15	Charging conveyor



EXAMPLE: LINES FOR TREE NUTS (Capacity > 2 x 5,5 tons/hour)



ROTOSOL PLANT FOR POWDERS, GRAINS, CEREAL BLENDS etc.



SERVICE - FROM ENGINEERING TO COMMISSIONING/VALIDATION

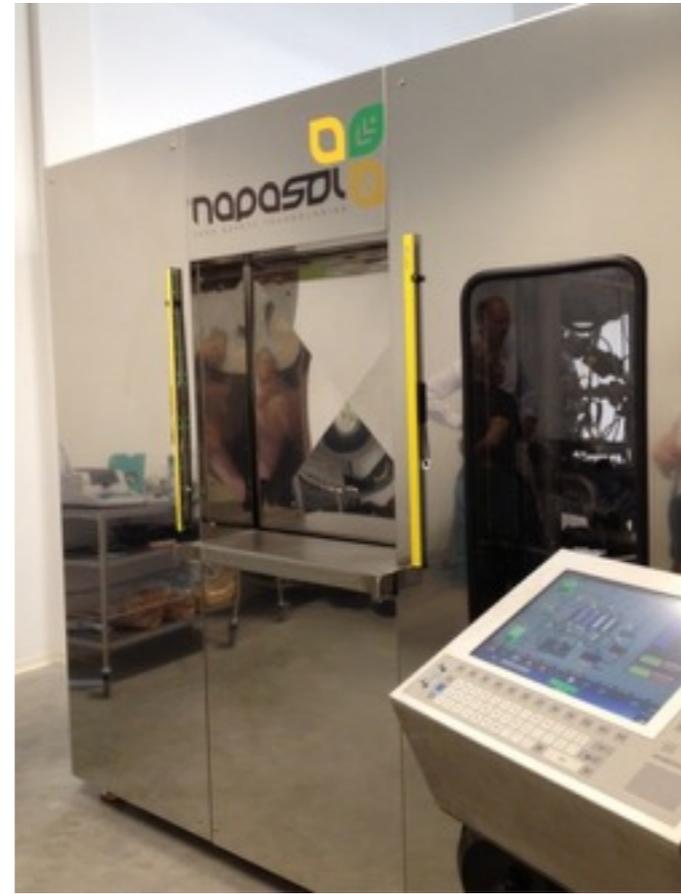
- Complete engineering and consulting regarding the optimized integration of the pasteurization as a CCP (Critical Control Point)
- Installation, commissioning, staff training and thermal validation of the installation according to a strict protocol
- On-line support over the internet for process optimization and trouble-shooting
- Option: Yearly contract for preventive maintenance, re-calibration of all temperature and pressure probes





Examples of customer installations





Small static unit (for R&D, demonstrations and staff training)



Small static unit for vanilla (Mauritius Island)

RESEARCH & DEVELOPMENT

- Complete R&D centers in France and United States
- Product tests, process optimization and demonstrations to customers
- Training of customer staff



Napasol AG

Binningerstrasse 95
CH-4123 Allschwil / Switzerland

P: +41 61 712 33 22

safefood-ch@napasol.com

Napasol Asia Limited

16th Floor, Jonsim Place
228 Queen's Road East
Wanchai, Hong Kong

P: +852 5686 2001

safefood-ch@napasol.com

Napasol North America, LLC

503 7th St N Suite 101
Fargo, ND 58102

P: +1 701 478 30 20

safefood-us@napasol.com

www.napasol.com