

# PASTEURIZE NUTS, SEEDS, DRIED FRUIT, HERBS, SPICES & BOTANICALS

*“Manage the microbiological safety of  
your products in-house”*

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## FEATURES



### VALIDATED KILL STEP FOR LOW MOISTURE FOOD

- Ideally suited for nuts, seeds, dried fruit, herbs, spices & botanicals
- Treatment for all shapes and sizes: whole kernels or pieces, leaves, branches, cut or chopped products, and powders
- Validated 5-log pathogen reduction for a wide range of products
- No moisture pickup and minimal impact on organoleptic qualities
- Precisely adjustable pasteurization temperatures from 60°C to 121°C (140°F - 250°F)
- Organic process, no use of chemicals

### EQUIPMENT CUSTOM BUILT FOR YOUR PRODUCT FLOW

- Napasol's modular systems cover a range of capacities: 150kg/h to 12'000kg/h (330lbs/h to 26'000lbs/h)
- Flexible logistic solutions
- Compact footprint that fits into your production environment

### LOW OPERATING COSTS GIVES YOU THE COMPETITIVE EDGE

- Low energy consumption due to closed loop thermal system
- No moving parts means low maintenance cost
- High level of automation results in reduced labor cost
- Automated record keeping for full traceability and documentation of each batch



# PASTEURIZE NUTS, SEEDS, DRIED FRUIT, HERBS, SPICES & BOTANICALS

*“Dry saturated steam is the most effective heat treatment to kill pathogens, spoilage microorganisms and infestations.”*

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## RISK ASSESSMENT

### REGULATORY LANDSCAPE

- Microorganisms are naturally present in low moisture foods
- Even though no growth is possible, the presence of pathogenic organisms in low numbers can be harmful
- Based on the almond industry's risk assessment, a 4-log reduction is required to sell almonds in North America; however the FDA performance criteria for labeling almonds as pasteurized is 5-log
- Implementation of the Food Safety Modernization Act (FSMA) will have far reaching implications for the food industry

### PASTEURIZATION IN SATURATED STEAM CONDITIONS

- Steam pasteurization effectively kills:
  - Pathogens (Salmonella, E. coli, Enterobacteria)
  - Spoilage microorganisms (mold, yeast)
  - Infestations (insects in all stages of their lifecycle: adult, larvae, and eggs)
- Dry saturated steam is much more effective than wet steam or superheated dry steam
- Dry saturated steam can be applied at a variety of temperatures including at low temperatures in a vacuum, protecting delicate products from exposure to excessive heat

### NAPASOL PERFORMANCE

- The Napasol system is precisely controlled and the process can be adapted to your desired log reduction (2-log - 7-log) based on the risk assessment for your products
- Extends your products shelf life
- Reliably conform with the micro-biological specification of your most demanding customers
- A validated pasteurization process that ensures all of the product is pathogen free protects your brand from costly recalls and opens new markets for your high quality products



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*“Small footprint and modular assembly allow integration into your production flow”*

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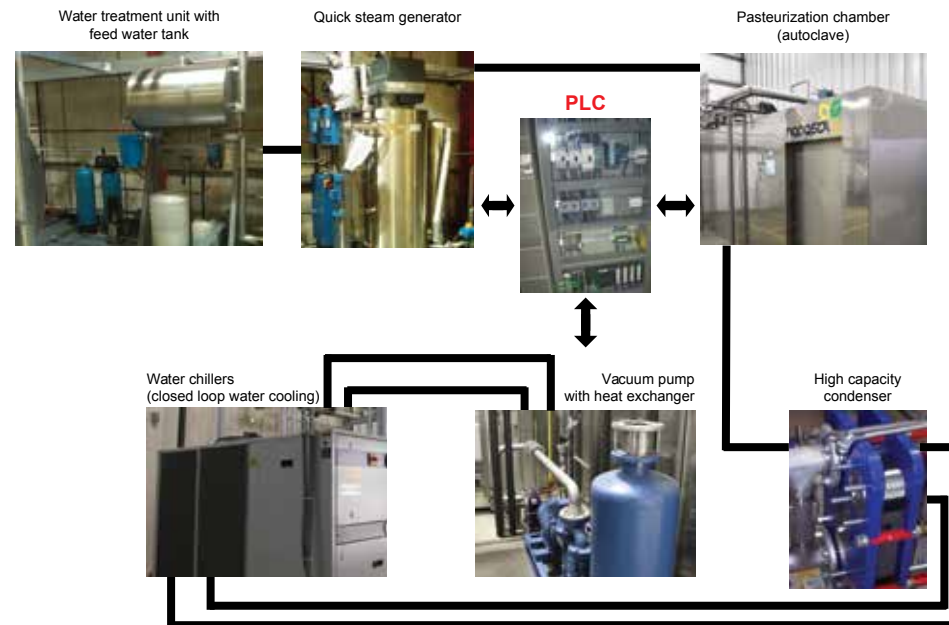
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## TECHNICAL

### MAIN COMPONENTS OF A NAPASOL PASTEURIZATION/STERILIZATION PLANT



### EQUIPMENT

- Customizable, modular system
- Custom built core equipment combined with locally sourced auxiliary systems (steam generator, water chiller)
- Industrial PLC (SIMATIC) for optimal reliability
- Compact footprint for easy integration into your existing production environment

### SERVICES

- Napasol provides complete engineering and consulting regarding the integration of the pasteurization step as a CCP (Critical Control Point)
- Start-up, staff training and validation of the system
- Remote access assistance for optimized technical availability of the plant

# PASTEURIZE NUTS, SEEDS, DRIED FRUIT, HERBS, SPICES & BOTANICALS

*“A highly automated  
process covering a wide range of  
throughputs”*

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## LOGISTICS



### PRODUCT FLOW

- Specially designed stainless steel process bins hold up to 700kg (1500lbs)
- Modular construction built for treatment chamber sizes ranging from 1 to 6 bins covering a wide range of throughputs
- Integrated in your process, the pasteurizer separates raw room from clean room preventing recontamination
- From conditioning to pasteurization to cooling, the process can be fully automated
- Short process cycles ensures optimal throughput



### LOADING CONFIGURATION

- Dried fruit can be treated in industry standard trays
- Minimal down time for product changeover and cleaning, no cross contamination or allergen issues
- Powders can be treated in our newly designed blender pasteurizer with automated handling features

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## R&D



### TESTING AND TRAINING FACILITY

- The R&D facility is fully equipped with both a static and a blender pasteurizer
- Hands-on running of the equipment for customer training
- Testing and cycle development for customer products
- Laboratory equipped for product analysis



### A FULLY DOCUMENTED FDA COMPLIANT PROCESS

- Napasol has developed individual treatment programs for a large range of products with optimized pasteurization parameters
- The Napasol system provides automatic record keeping of critical parameters for each batch
- The full traceability regarding your kill step is key to protect your company's assets in case of product recalls

