

REFERENCES ALL AROUND THE WORLD

... FROM FAMILY BUSINESSES ...  
TO INTERNATIONAL GROUPS SUCH AS  
MC CORMICK, P&G, SMUCKER'S...



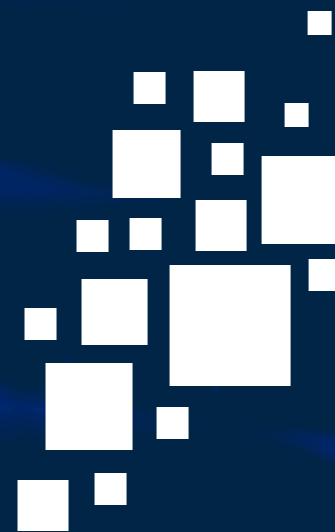
UK - seed pasteurizer  
2 250 kg/h



Russia - soya enzymatic inhibition  
500 kg/h



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# YOUR ANSWER FOR THE HEAT TREATMENT OF YOUR GRAIN PRODUCTS

Revtech system combines heating by direct contact with an impedance tube and vibration transport to process all kinds of cereals, seeds, flour, starch...

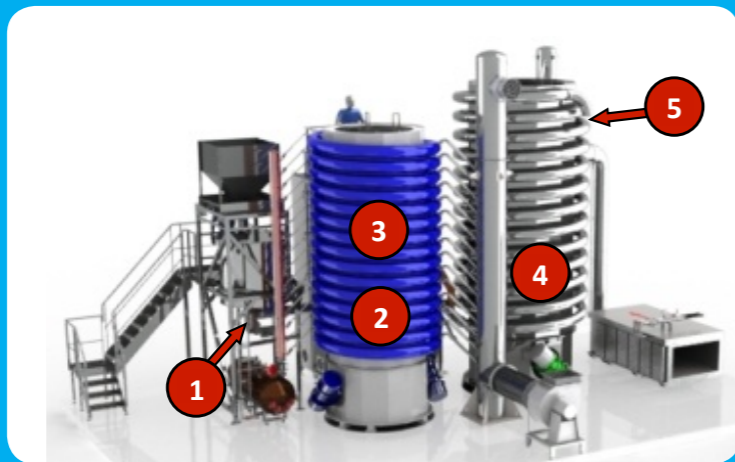




# THE TECHNOLOGY

## COMMON PRINCIPLES:

- **Gentle handling** through use of the vibration transport and the absence of mixers, belts or augers,
- **Dry heating** generated by electrical impedance through the walls of the tube,
- Operation in a **controlled atmosphere** in the closed tubular stainless steel pipes.



- 1 The product enters the spiral tube at a constant flowrate (from 200 kg/h up to 8t/h).
- 2 The product is heated up by direct contact with the hot tube and moves inside the tube thanks to its vibrations.
- 3 The temperature is maintained and the product is progressively roasted (between 5 and 40 min depending on the product). Steam can also be injected to pasteurize.
- 4 The product is stabilized and cooled down in the second spiral tower by contact with the tube and cold dried filtered air.
- 5 The product exits at ambient temperature and is ready for packing.

## HEAT TREATMENT OF POWDERS

### STARCH

Continuous process for physical modification of starch granules and molecules:

- Heat/moisture treatment
- Alkaline roasting
- Dextrinisation
- Thin-boiling

### FLOUR

Uniform treatment, exact temperature control:

- Protein (gluten) denaturation
- Enzyme inactivation
- Starch functionalization – different viscosity and thickening
- Flour roasting – with tailor made color and flavor



## TOASTING - ROASTING

### Improved roasted flavor:

- Due to treatment in a confined atmosphere,
- Due to roasting with direct contact with a hot surface, similar to traditional technologies, you cannot feel the acidity associated with hot air roasting.

### Good homogeneity and precise control of the roasting intensity:



## PASTEURIZATION

### Continuous and fully automated process avoiding recontamination

### Validated and guaranteed microbiology quality:

- Complete eradication of pathogens (Salmonella, E Coli, Coliforms, yeast and moulds...) and high reduction of the total plate count,
- Technology recognized by the Almond Board of California.

### Preservation of the product quality:



Raw

Treated

## ENZYMATIC INHIBITION STABILIZATION

Combination of heat, steam and perfect mixing guarantees the deactivation of the germination process with:

- Very uniform treatment,
- Very good preservation of the organoleptic properties,
- Visual aspect remains intact

This application is possible for all kinds of grains, wheat, corn, soya beans and even flour.

## GREAT VERSATILITY OF THE MACHINE

In one machine, all kinds of ingredients can be treated:

from fine powders like flours to big size ingredients like almonds,

from dry cereals like barley to oily seeds like sesame or sunflower seeds.

## OUTSTANDING BENEFITS FOR YOUR FACTORY

**Cleaning is vastly simplified** – there are no dead zones in the machine, just a smooth stainless steel pipe easy to clean using CIP techniques.

**Easy gas exhaust handling** – Products are heated by direct contact with the hot spiral tube, not by hot air, leading to much less gas to treat at the exhaust.

**No fire risk** – there is much less air in movement than in a traditional roaster. The operation without O<sub>2</sub> is even possible.

**Energy efficiency** – Around 90% of the energy is transferred to the product compared to 30-40% with gas roasters.