

COOKING VEGETABLES AND READY MEALS BY MICROWAVES AND STEAM WITH THE VALVO-PACK™ VALVE

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Consumers are presently buying more and more ready meals or pasteurized and cooked vegetables in trays or bags, while sales of sterilized or frozen meals or vegetables are gradually decreasing (for the same type of packing). Advantages: better quality and quick preparation. Presently the food processors manufacturing such products are using autoclaves or steam ovens for cooking and pasteurizing in the same time. This is a very long process and the product loses some of its taste. For vegetables we can also notice a loss of colour and a change of texture. Thanks to the Valvo-pack™ valve the combination of microwaves and steam effect offers many advantages: food processors can now develop new products exactly meeting the expectations of consumers, i.e. natural products, with no chemical preservation additives, whose taste is much better than the other products that can be found presently on the market.

Other interests for food processors regarding production:

- Very high energy saving,
- Possibility to automate a production line (continuous system),
- Very high reactivity,
- Bacteriological safety.

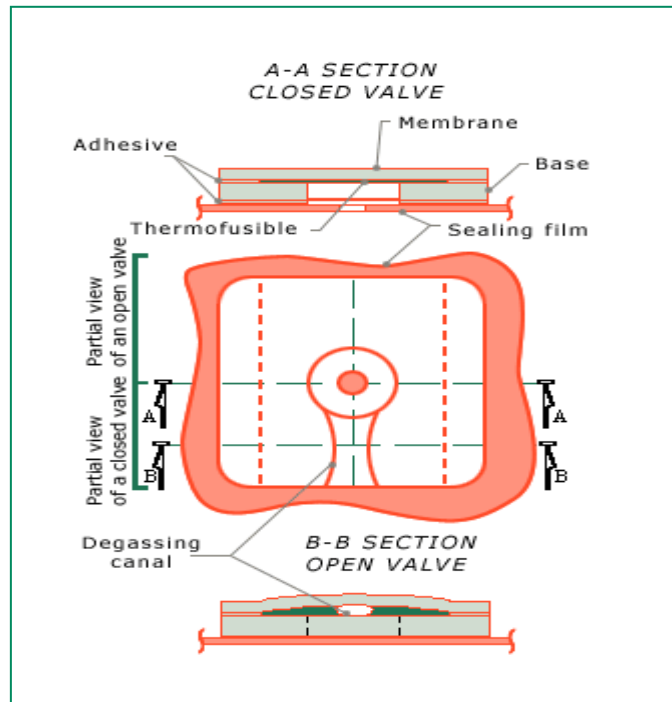


Figure 1 : Valvo Pack™ concept for cooking and pasteurisation in the tray with Nutripack's valve.

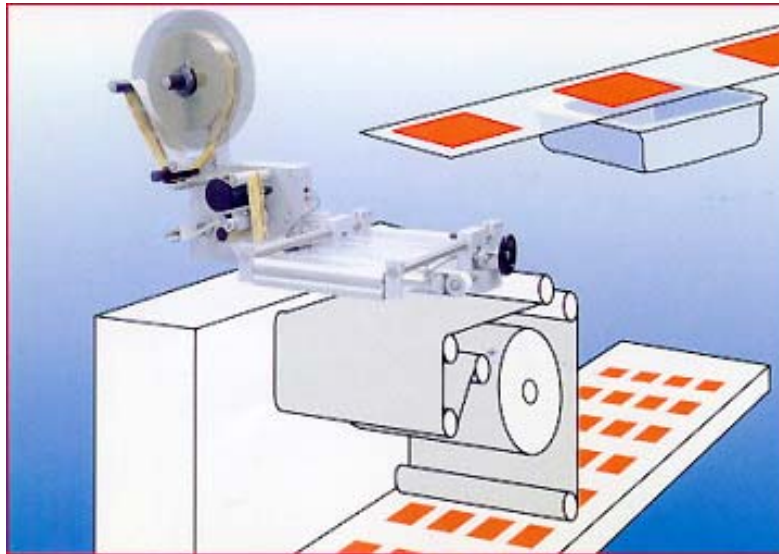


Figure 2. An automatic valve applicator can be fitted to a sealing machine.

This system is also available in semi-automatic version.

The valve is applied automatically in two steps

- A hole is punched in the sealing film
- Application of the valve on the hole

Conditions of use and operation

A minimum temperature of 70 °C is required for the valve to operate. The valve resists temperatures up to 120°C

Realisable processes compatible with the valve

- cooking pasteurisation

- pasteurisation

- flash pasteurisation

Usable heat treatments

- steam,

- humid and dry air can be appropriate for flash-pasteurisation

- microwaves

Temperature regeneration can be by thermocontact, microwave, forced air, etc...

Possible ways of chilling the products

- mechanical chillers

- cryogenic chillers

The valve can be frozen

Concept Organisation

Food product → Packaging → Heat sealing and valve's application → Cooking in a steam oven or in a microwave oven → Chilling → Conservation at 3°C → Temperature regeneration and consumption.

CONCLUSION. INTEREST OF COMBINING MICROWAVE COOKING AND VALVO-PACK™ VALVE

1) Productivity improvement

Microwave cooking is 3 times quicker than traditional cooking.

2) Continuous line process

It is possible to operate in a continuous tunnel and to fully automate the cooking line : thermoforming or heat sealing, microwaves, cooling.

3) Better quality of the products

The organoleptic qualities of the products are highly improved (colour and texture).

4) Food safety

Total destruction of pathogenic flora.

5) Natural products

The use of preservatives is no longer required.

6) Energy saving

Thanks to microwaves the electric consumption is divided by 3 or 4.

7) Environment

Water is no longer required for steam or hot water production.



Figure 3. Potatoes processed in the VALVO-PACK system.



Figure 4. Potatoes processed in the VALVO-PACK system.