

**QDS\_Quick Dry Slice\_Drying maturing system for sliced products**

## **QDS Drying maturing system for sliced products**

### **Identification**

**Key words** dry products, sliced products, meat products, low time consuming  
**Latest version** 2011/04/29  
**Completed by** IRTA

### **How does it work?**

**Primary objective** Reducing the processing time of traditional dry-cured product methods by accelerating the drying period.

## Working principle

QDS process® technology is based on a continuous system that combines air drying and vacuum drying of the meat product's slices. This technology makes it possible to reduce the processing time of traditional methods by accelerating the drying period, which is the slowest part of the process.

The QDS process® provides for an easy adjustment of the product's weight loss by modifying the drying process in only a few minutes. This drying technology is based on a drying-maturing system for sliced products, whereby the dry-cured food product undergo a stage of fermentation until the desired pH is obtained, then is frozen until the optimum slicing temperature is reached, after which it is sliced and then dried by air convection which requires times of under 60 minutes depending on the weight loss desired. (Fig.1, Fig.2). In regard to the nucleus of the process, research with the prototype equipment has provided processes that make it possible to reduce or eliminate the vacuum drying stage for most products, replacing it with a longer convective drying time, resulting in products that are equivalent to those obtained with the original QDS process®. In fact, on an industrial level, the vacuum drying stage has been eliminated, leading to an industrial line of greater simplicity and with reduced energy consumption. In regard to the nucleus of the process, research with the prototype equipment has provided processes that make it possible to reduce or eliminate the vacuum drying stage for most products, replacing it with a longer convective drying time, resulting in products that are equivalent to those obtained with the original QDS process®. In fact, on an industrial level, the vacuum drying stage has been eliminated, leading to an industrial line of greater simplicity and with reduced energy consumption.



Fig.1. "QDS process®" pilot equipment: 1. Tempering/convective drying stage; 2. Vacuum drying stage; 3. Air processing circuit with HEPA filter; © Metalquimia S.A.



Fig.2. Diagram of the processing steps for the production of a stuffed fermented product dried by means of the "QDS process®"; © IRTA

## Images

### Additional effects

Density changing, mass reduction

### Important process parameters

air velocity, air temperature, relative humidity of air, vacuum value

### Important product parameters

weight, water activity, fat content, salt content, slice thickness, temperature

## What can it be used for?

<b>Products</b>	<ul style="list-style-type: none"><li>• Any food product capable of being dried, mainly fermented meat products (f.i. chorizo, salami, sausages...)</li><li>• Application to vegetables and fish products is possible</li><li>• Development of new meat products for sensitive communities (hypertensive, obese people...)</li></ul>
<b>Operations</b>	Freezing, thawing, slicing, drying, packaging
<b>Solutions for short comings</b>	Necessity of rapid food drying with high energy efficiency.

## What can it NOT be used for?

<b>Products</b>	High thickness products
<b>Operations</b>	This technology only works with sliced products, or food products with the same thickness.
<b>Other limitations</b>	None
<b>Risks or hazards</b>	Microbial risk appears when the drying process is not completely achieved, due to an excess in water activity. Then, product could deteriorate or shelf life could be reduced.

## Implementation

<b>Maturity</b>	Nowadays this technology is industrialized for drying fermented meat products. Other applications are under study.
<b>Modularity /Implementation</b>	This system is designed and set up to be part of continuous production lines. On an industrial level, the "QDS process®" cannot be understood as an isolated piece of equipment, but as an element that must be integrated in a complete line that includes slicing of the product and delivery of the slices to the nucleus of the process, which is QDS drying. Also, once dried and cooled, the slices must be overlapped in the desired format and packaged in vacuum or modified atmosphere packets.
<b>Consumer aspects</b>	New product developments need the acceptance of new flavours and textures by the consumer.
<b>Legal aspects</b>	<ul style="list-style-type: none"><li>• Commission Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs</li><li>• European Parliament and Council Directive No 95/2/EC of 20 February 1995 on food additives other than colours and sweeteners</li><li>• Corrigendum to Directive 2006/52/EC of the European Parliament and of the Council of 5 July 2006 amending Directive 95/2/EC on food additives other than colours and sweeteners and Directive 94/35/EC on sweeteners for use in foodstuffs</li></ul>
<b>Environmental aspects</b>	Energy consumption reduction during drying process; traditional chamber drying is energy demanding.

## Facilities that might be interesting for you

<b>Title</b>	<b>Institute/company</b>
B-290- Mini spray dryer-HES-SO Valais-HEI	University of Applied Sciences and Arts Western Switzerland Valais
GPCG1-Fluidized bed dryer-HES-SO Valais-HEI	University of Applied Sciences and Arts Western Switzerland Valais
IRTAsim	IRTA
MP41/60, Zs240- Drum dryer- HES-SO Valais-HEI	HES-SO Valais-HEI
Microwave vacuum drying pilot system KEKI	NAIK EKI
QDS system IRTA	IRTA
Spray Dryer - TTZ	TTZ
Spray dryer - HES-SO Valais-HEI	University of Applied Sciences and Arts Western Switzerland Valais

## Further Information

### **Institutes**

IRTA

### **Companies**

Metalquimia, Casademont

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