QDS Quick Dry Slice_Drying maturing system for sliced products

QDS Drying maturing system for sliced products

Identification

<table>
<thead>
<tr>
<th>Key words</th>
<th>dry products, sliced products, meat products, low time consuming</th>
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<tr>
<td>Latest version</td>
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<td>IRTA</td>
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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.](image1)

![Fig.2. Diagram of the processing steps for the production of a stuffed fermented product dried by means of the “QDS process®”; © IRTA](image2)

**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?**

**Products**
- Any food product capable of being dried, mainly fermented meat products (f.i. chorizo, salami, sausages...)
- Application to vegetables and fish products is possible
- Development of new meat products for sensitive communities (hypertensive, obese people...)

**Operations**
Freezing, thawing, slicing, drying, packaging

**Solutions for shortcomings**
Necessity of rapid food drying with high energy efficiency.

**What can it NOT be used for?**

**Products**
High thickness products

**Operations**
This technology only works with sliced products, or food products with the same thickness.

**Other limitations**
None

**Risks or hazards**
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**

**Maturity**
Nowadays this technology is industrialized for drying fermented meat products. Other applications are under study.

**Modularity /Implementation**
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.

**Consumer aspects**
New product developments need the acceptance of new flavours and textures by the consumer.

**Legal aspects**

**Environmental aspects**
Energy consumption reduction during drying process; traditional chamber drying is energy demanding.
Facilities that might be interesting for you

**Title**  
B-290- Mini spray dryer-HES-SO Valais-HEI  
GPCG1-Fluidized bed dryer-HES-SO Valais-HEI  
IRTAsim  
MP41/60, Zs240- Drum dryer- HES-SO Valais-HEI  
Microwave vacuum drying pilot system KEKI  
QDS system IRTA  
Spray Dryer - TTZ  
Spray dryer - HES-SO Valais-HEI  

**Institute/company**  
University of Applied Sciences and Arts Western Switzerland Valais  
University of Applied Sciences and Arts Western Switzerland Valais  
IRTA  
HES-SO Valais-HEI  
NAIK EKI  
IRTA  
TTZ  
University of Applied Sciences and Arts Western Switzerland Valais

Further Information

**Institutes**  
IRTA

**Companies**  
Metalquimia, Casademont

**References**  

Source:  