LomSyst™ Freeze Drying

Plants for the Food and Beverage Industries
Superior Quality

- Unique Advantages...

The LomSyst freeze drying plants from Lomsystem offer substantial benefits to nearly every area of food processing, such as fish, fruits, coffee and herbs.
The freeze drying technology simply gives you the highest quality in the market.

Frozen products are dried under vacuum, ensuring that the inherent solvents in the product (i.e. water) are removed as vapour.

This preserves the overall product structure and size, as well as all nutrients, flavours, and colours.

Meeting market demands
Today, customers request food that is easy to prepare and keeps well without being spoiled while retaining the characteristics of fresh food. Freeze drying allows manufacturers to meet these demands by preserving the natural look and consistency of the product as well as all its flavours, proteins, and vitamins.

Unique advantages
As one of the most experienced designers and manufacturers of freeze drying plants in the world, LomSyst combines unique technology with reliable plant operation. While providing the superior product quality you need in order to stay ahead of your competitors, our LomSystem™ technology gives you unique economical and technical advantages:

• The freeze drying process results in stable products with a long shelf life.
• Freeze dried products are durable at a wide range of temperatures, eliminating the need for complicated cold chain distribution systems.
• The low weight and easy handling of freeze dried products reduce shipping costs dramatically.

On top of that, LomSystem™ freeze drying plants are designed to:
• Eliminate product loss
• Reduce energy costs
• Maximise plant reliability and ease of use.

In our LomSyst™ freeze dryers, frozen products are dried at temperatures below –18° C.
No thawing of the product takes place and its quality is preserved.

Freeze Drying Facts

3,000 KG OF FROZEN STRAWBERRIES WILL RESULT IN 300 KG FREEZE DRIED BERRIES. THE SAME AMOUNT OF CHICKEN WILL GIVE 1,000 KG OF DRIED PRODUCT.
Batch Dryers

Refined Efficiency
We have refined the freeze drying process to a point where we are able to supply the most efficient and economical freeze drying plant designs in the market. The advantages of selecting our equipment include:

- Negligible power loss (less than 0.1%)
- Low energy consumption
- Compact design
- Simple and reliable operation
- Uniform drying
- High sublimation capacity

Modular Design
The LomSyst™ freeze dryers from LomSystem are designed as modular systems, with cabinet, heating plates, and vapour condensers built as individual units.

The modular design offers a number of advantages during installation and operation:
- Shorter interval between order and commercial production thanks to quick installation.
- Local subcontracting becomes a viable option for dryer assembly.
- Easy access for cleaning and maintenance.

Heating plate module
Twin stacks of heating plates designed for RADIANT drying. The heating plates are made of anodized aluminium.

Vapour condenser module
Built-in condenser with unique automatic de-icing system. The condenser is made of stainless steel.

Cabinet module
Cylindrical vessel with door at one end for loading and unloading. All connections with auxiliary systems are located at the rear end.
Freeze Drying Facts

**DURING RE-HYDRATION IN WARM WATER, UP TO 90% OF THE REMOVED WATER WILL BE ABSORBED AGAIN.**

LomSyst™
A water-flushing de-icing system is used for the smaller LomSyst™ (2, 8, 16, 30, 45) cabinets. At the end of every freeze drying cycle, the condenser is flushed with pre-heated water. Ice in the condenser melts within 10 minutes, whereupon the water is drained. This method is ideal for smaller systems, ensuring:

- Minimum investment cost.
- Simple operation.

LomSyst™ with CDI
The larger LomSystem™ (50, 75, 100, 125, 150) cabinets incorporate the Continuous De-Icing System (CDI). During de-icing, vapour at 25° C from the de-icing vessel condenses on the cold condenser surface, thus melting the ice. In order to restore the condenser to operating condition, the condenser chamber is closed off from the de-icing vessel. The condenser is cooled to operating temperature, resulting in the condensation of any remaining vapour. As the vapour condenses, the pressure in the condenser decreases until operating vacuum is achieved eliminating any loss of operating vacuum at switch-over between vapour condenser chambers.

The CDI system is fully automatic. It ensures:

- An ice layer on the condenser coils of max. 5 mm (1/5”), resulting in a negligible temperature drop over the ice and low energy consumption in the refrigeration plant.
- Constant condenser capacity.
- High freeze drying capacity per square metre of tray surface.
- Short time from one charge to another.
- Higher overall profitability in your large-scale freeze drying process.
Advanced Simplicity: Complete Plants with the Europe Concept

Advanced simplicity is the best way to describe the LomSystem™ concept from Europe. As part of the Process Engineering Division of the Sainty Group, LomSyst offers a full range of plant services worldwide – from turnkey solutions to that vital piece of equipment that will make your freeze drying process profitable.

Service Beyond Delivery
In addition to actual plant delivery, LomSyst has the experience and market know-how to support you in your product research and feasibility studies.

The LomSyst™ concept is the result of many years of plant and process development based on research and collaboration with our customers in all parts of the world. The result is a freeze drying process – as shown in the diagram – that is second to none.

The Full Range
The LomSyst™ plant is capable of handling most freeze drying operations.

LomSyst™ 125 plant for vegetable,

1 LomSyst™ 8 plant for various products/test

2 LomSyst™ 125-S plants for sanitary applications.

Monitor the entire process on-site or from a central control room.
4  Heat supply system
Drying is carefully controlled throughout the temperature range – from below freezing temperature (brine) or room temperature (cooling water) up to 130°C – to ensure perfect product quality.

5  Vacuum system
Process vacuum is typically achieved in less than 10-12 minutes depending on RAY™ type.
If you have products with special requirements, this time can be reduced.

6  De-icing
Type CDI

7  Refrigeration system
Incorporates highly efficient refrigeration compressors with automatic capacity control.

8  PC/PLC control system
The control system ensures optimal operating conditions throughout the plant – freezing, drying and associated heating, vacuum and refrigeration systems. Remote control via modem supplied as option.
### TYPICAL CAPACITIES

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<th>LomSyst&lt;sup&gt;™&lt;/sup&gt;</th>
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<tbody>
<tr>
<td><strong>Model</strong></td>
<td>50</td>
</tr>
<tr>
<td>Effective tray area</td>
<td>68</td>
</tr>
<tr>
<td>(m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>170</td>
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<tr>
<td>Max. sublimation capacity:</td>
<td>kg H&lt;sub&gt;2&lt;/sub&gt;O/hour)</td>
</tr>
<tr>
<td>Typical input capacity solids</td>
<td>(kg/24 hours)</td>
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<tr>
<td>15%</td>
<td>275</td>
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<tr>
<td>Output capacity</td>
<td>(kg/24 hours)</td>
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| **Model**               | 5  | 10 | 15 | 20 | 25 | 30 |
| Effective tray area     | 1.5| 7.6| 15 | 26 | 39 | 45 |
| (m<sup>2</sup>)         | 3  | 17 | 34 | 60 | 85 | 105 |
| Max. sublimation capacity: | kg H<sub>2</sub>O/hour)  | 39 | 190| 380| 650| 975|1125|
| Typical input capacity solids | (kg/24 hours)  | 65| 28 | 56 | 100| 150| 175|
| 15%                     | 6  | 28 | 56 | 100| 150| 175|
| Output capacity         | (kg/24 hours)             | 6  | 28 | 56 | 100| 150| 175|

| Building requirement per cabinet (based on two or more units) | **Freeze drying** (WxL1) (m<sup>2</sup>) | 36 | 48 | 60 | 60 | 72 |
| Freezing+cold storage (WxL2) (m<sup>2</sup>) | N/A | 12 | 24 | 24 | 36 |

**Freeze Drying Facts**

**EFFICIENT AND GENTLE:** FREEZE DRYING REMOVES ONLY WATER AND PRESERVES ALL NUTRIENTS, FLAVOURS AND OTHER PRODUCT PROPERTIES.