

Freeze drying for responsible food production

Consumer trends, the benefits of freeze drying tech, applications and business potential

MORTEN WOLDSTED PEDERSEN, AREA SALES MANAGER

STEEN LASSEN, PRODUCT MANAGER



Speakers



Morten W. Pedersen,
Area sales manager
morten.pedersen@gea.com



Steen Lassen
Product manager
steen.lassen@gea.com

Webinar agenda

- Consumer trends
- The benefits of freeze drying
- What is freeze drying?
- Freeze drying applications
- Solutions
- Business potential
- Q&A



Consumer trends



Urbanization



Health



Convenience



Outdoor life



Pandemic

The benefits of freeze drying

- Maximum retention of aroma, color, shape and healthy components
- Longer shelf-life
- Instant re-hydration
- Reduction of food waste



How freeze drying can help

Maximum retention of aroma, colour, shape and healthy components

Freeze drying:

- Locks in nutrients much better than other drying methods
- Preserves at the peak of ripeness and nutrient content
- Keeps the vitamins intact
- Keeps antioxidant phytochemicals about the same as in fresh fruit



How freeze drying can help

Longer shelf-life and no need for refrigeration

- Freeze drying removes about 97 percent of the moisture in foods
- This gives a water activity of less than 0,2 where growth of mold and bacteria is avoided
- The moisture content has an effect on shelf life, with freeze-dried foods lasting between 25 and 30 years



How freeze drying can help

Instant re-hydration

Freeze dried food products:

- Are easy and fast to prepare
- Offer a perfect solution to the increased demand for quick meal solutions and convenience food



How freeze drying can help

Reducing food waste

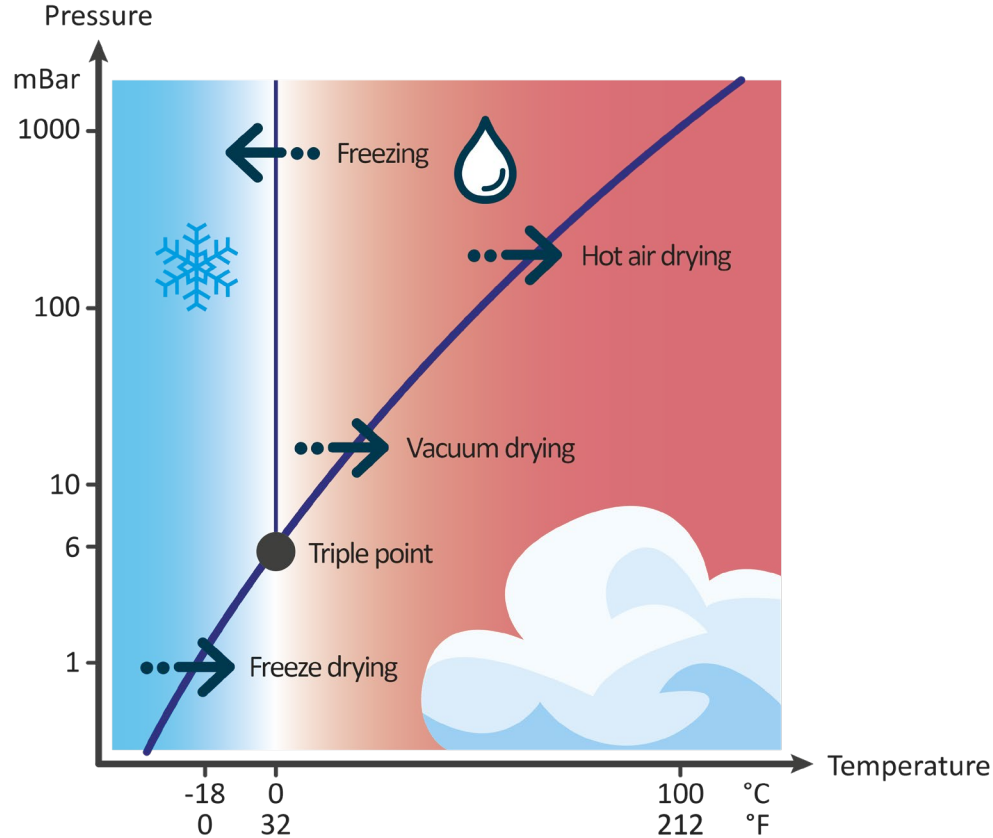
Waste can be caused by:

- Heat-sensitive fruit with short shelf life
- Consumers neglecting ugly fruit and vegetables

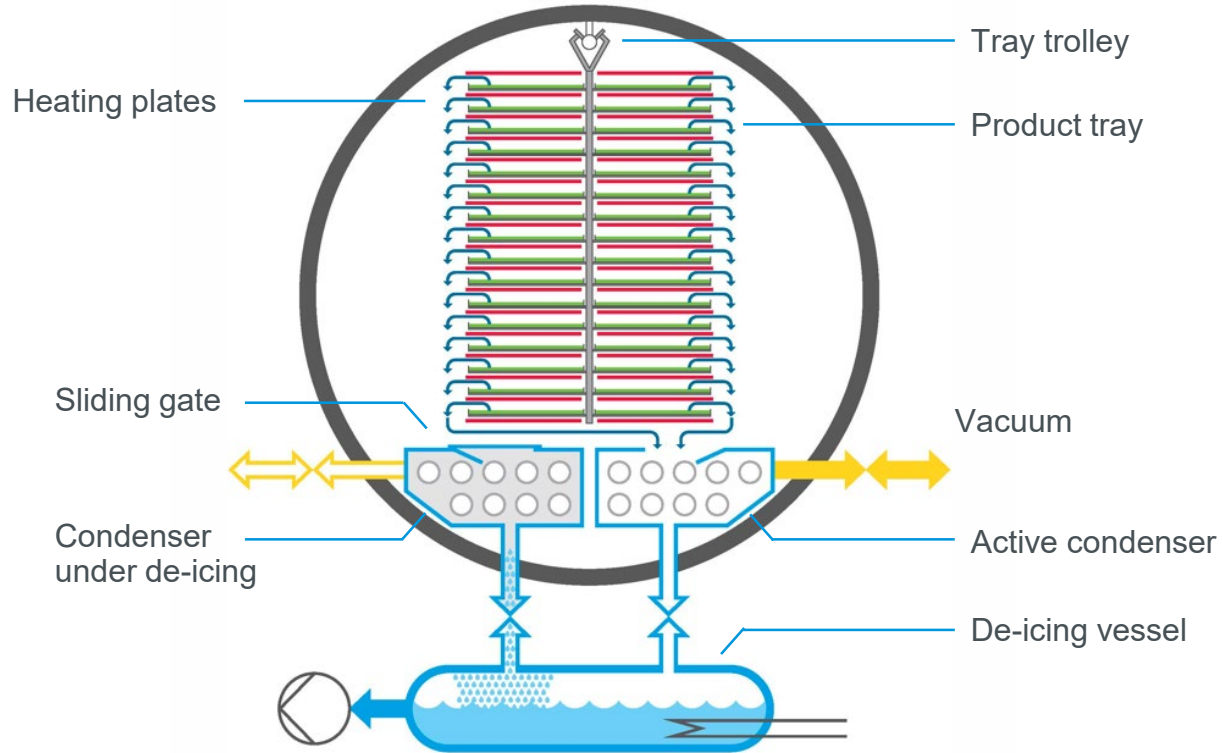
Freeze drying of fruit and vegetables can help companies become more efficient and profitable by reducing waste.



What is freeze drying?

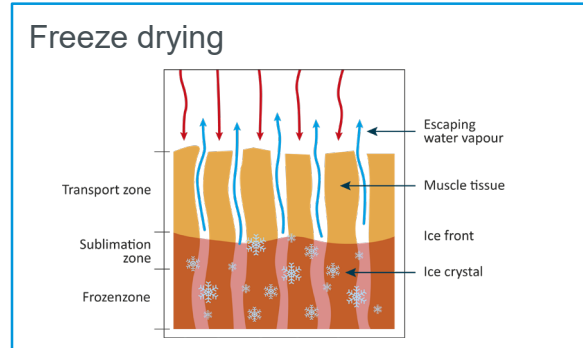
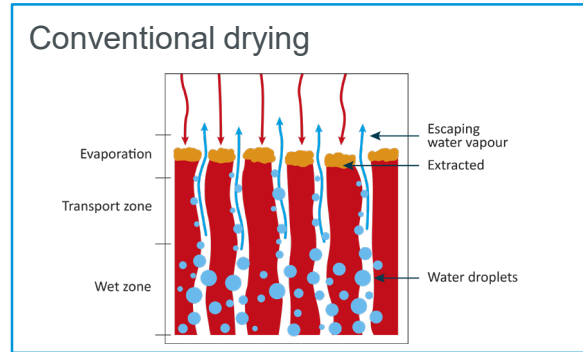


What is freeze drying?



What is freeze drying?

Product structure



What can be freeze dried?

Freeze-dried foods are not a new invention



Incas







Apollo missions



Freeze dried flowers

What can be freeze dried?

Products

Fruit	Vegetables/herbs	Meat/fish	Liquids
			
<ul style="list-style-type: none">▪ Strawberries▪ Raspberries▪ Cranberries▪ Cherries▪ Blueberries▪ Pineapple▪ Etc.	<ul style="list-style-type: none">▪ Chives▪ Garlic▪ Spring onion▪ Mushrooms▪ Sweet corn▪ Etc.	<ul style="list-style-type: none">▪ Shrimps▪ Squids▪ Chicken▪ Beef▪ Cod▪ Pet food▪ Etc.	<ul style="list-style-type: none">▪ Instant coffee▪ Instant tea▪ Bacteria▪ Juice▪ Etc.
95,000 t/y	75,000 t/y	35,000 t/y	300,000 t/y

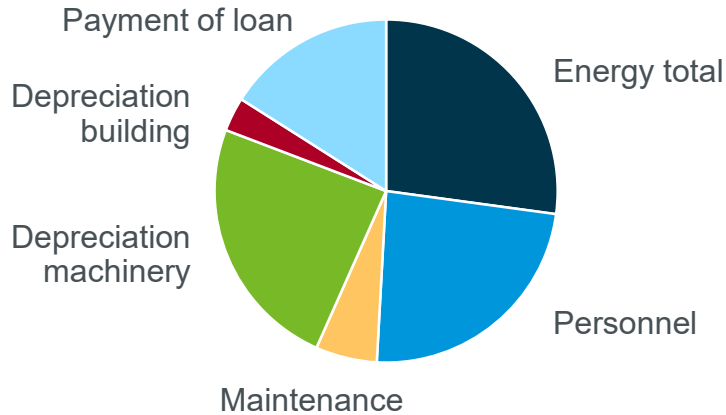
Example of GEA freeze drying solutions

	Pilot plant	Small scale	Large scale
Plant	RAY1	RAY16	2 x RAY125
Typical input capacity (kg/24h)	20	400	6225
Output capacity (kg/24h)	3	61	991

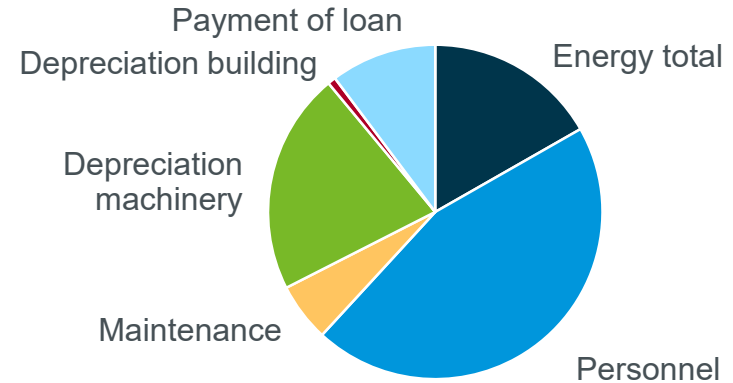


The business potential

2000 kg/day freeze dried fruits
FD cost = 3€/kg



100 kg/day freeze dried fruits
FD cost = 15€/kg



[GEA RAY freeze dryers](#)

[GEA RAY Pilot Plant freeze dryers](#)

[GEA CONRAD® continous processing freeze dryers](#)

[Case study – Thrive Life](#)

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