

PETFOOD FORUM EUROPE

Strategies to Improve European Pet Food Production



#petfoodforum

Optimizing pet food freeze drying processes

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Co-located with  **Interzoo 2026**

Freeze-dried pet food: Innovation driving trust and growth



Freeze-dried pet food:
a fast-growing category

Driving a 4.5% CAGR¹ as pet owners seek high-quality, minimally processed nutrition.



Preserving nutrition and integrity with freeze drying technology

Low-temperature freeze drying (<40°C) maintains vitamins, proteins, flavors, and raw meat appearance.



Innovation that builds consumer trust

Supporting manufacturers in delivering safe, nutrient-rich products

Freeze Drying: Preserving Quality Across pet food types



Raw Meat

- Beef, chicken, offal, and turkey retain natural integrity.
- High-protein, nutrient-rich, safe, and convenient.



Nibbles

- Balanced mix of meat, grains, and vegetables
- Easy to store, transport, and portion.

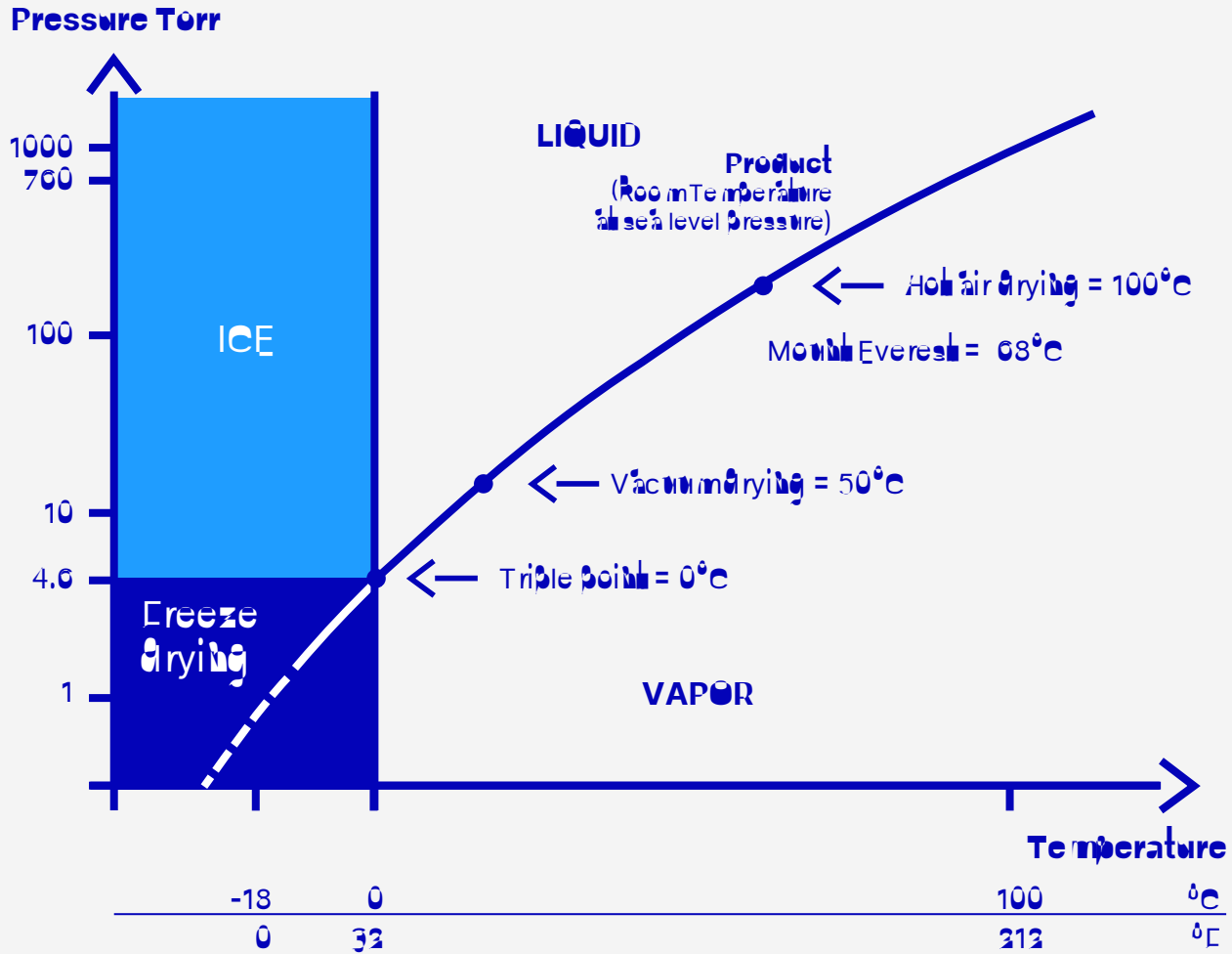


Treats

- Biscuits and protein bites keep taste and texture
- Long shelf life and portable.



How freeze drying works



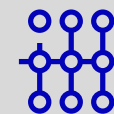
Petfood = 1 mbar = -20°C



Coffee = 0,4 mbar = -30°C



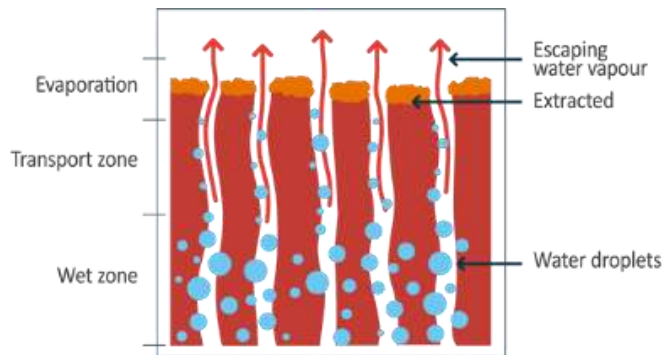
Bacteria = 0,3 mbar = -35°C



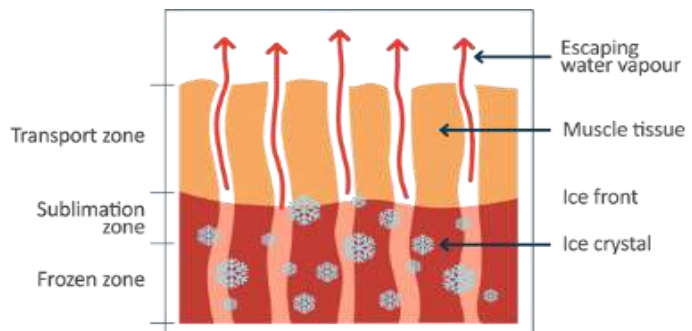
Pharma = 0,1 mbar = -40°C

Retaining Nutritional Quality

Conventional drying



Freeze drying



Challenges in high-capacity freeze drying

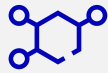
Raw Materials (Heat sensitive) vs Kibble treatments (NOT Heat sensitive)



Sublimation
capacity and
vacuum
pressure



Capacity vs
quality



Trusting your
recipe



Knowing your
product
temperature



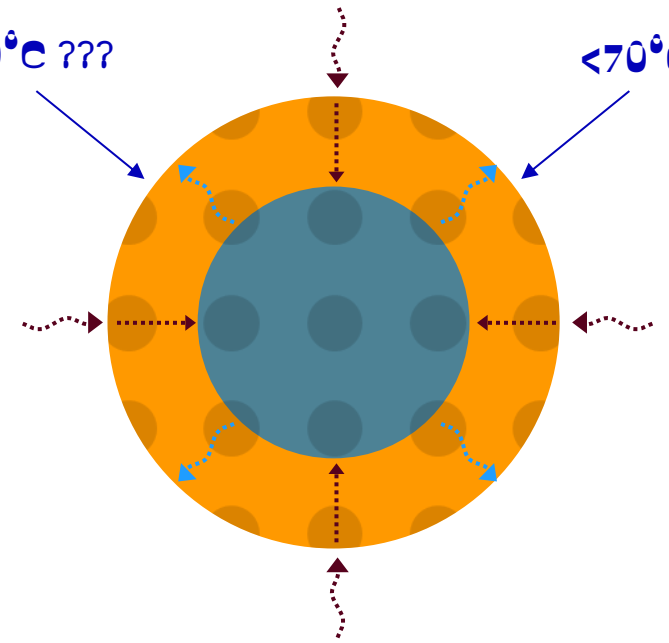
Building
freeze drying
knowhow



Quality assurance

<40°C ???

<70°C ???



Equipment reliability and sustainability



Reliability and uptime

- Trusting your equipment
- Capacity for profitability
- Rely on data for efficiency and optimization



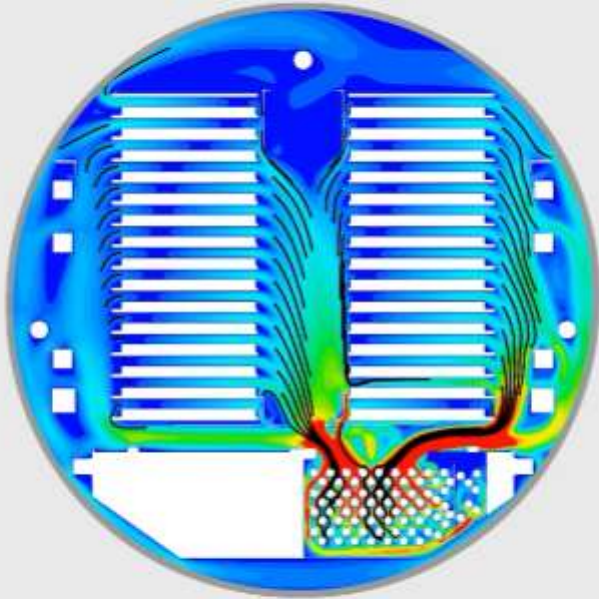
Energy efficiency

- Sustainability
- Cost efficiency



From challenges to performance

Conventional RAY®



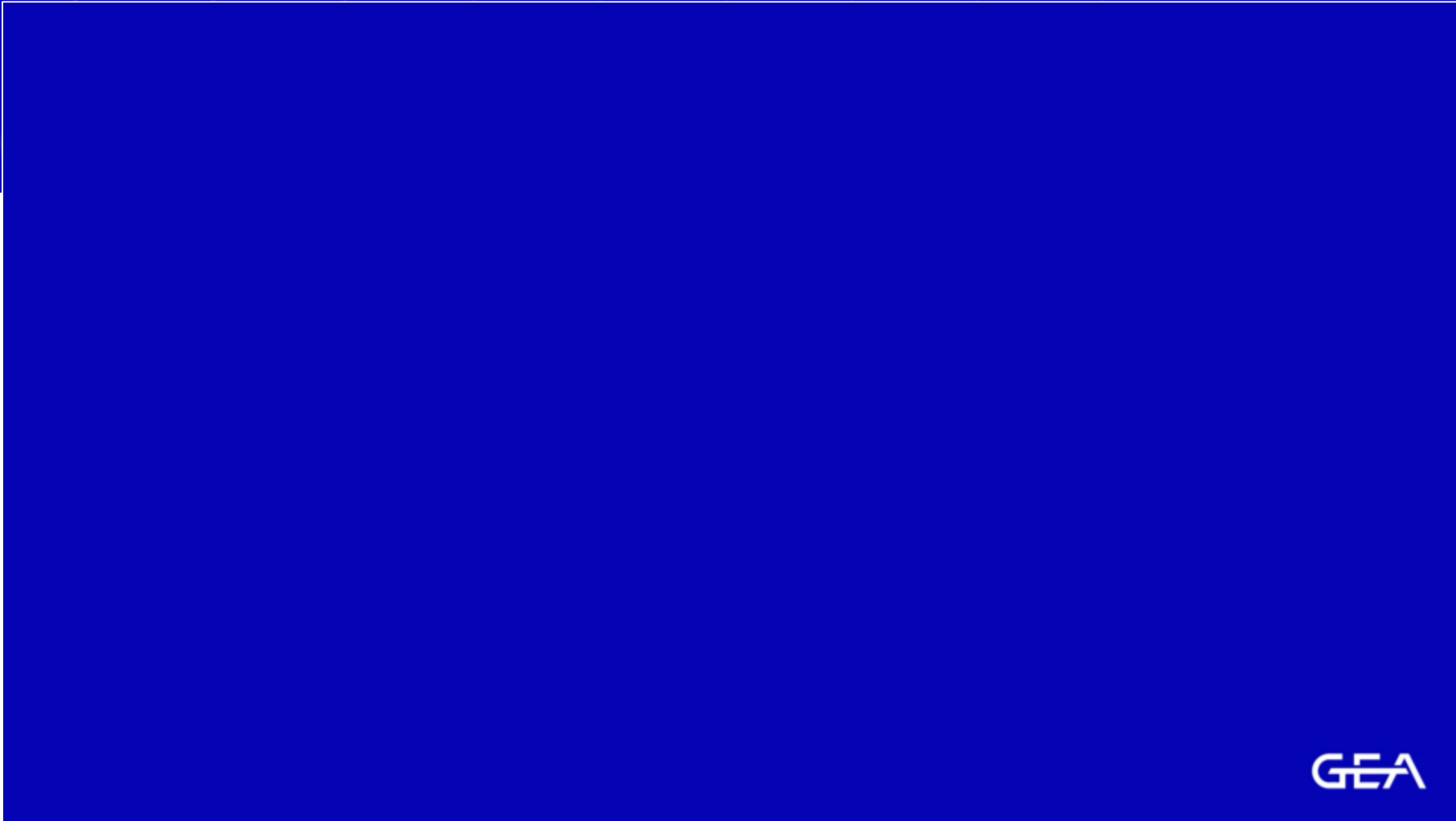
What it delivers for our customers



Increased
capacity



Lower energy
consumption



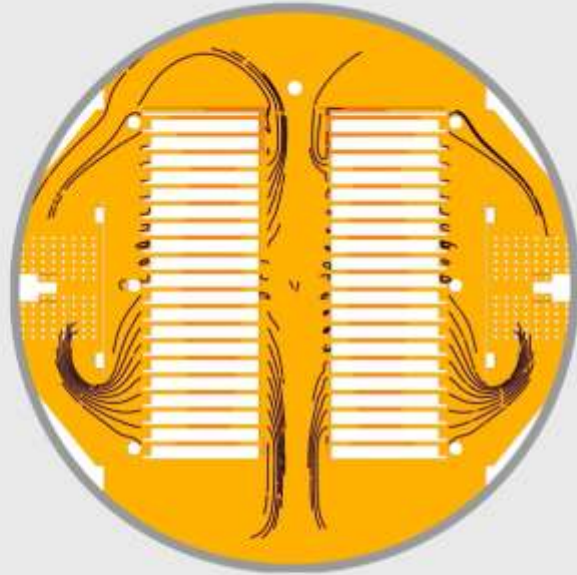
GEA

What it delivers for our customers

→ Increased capacity

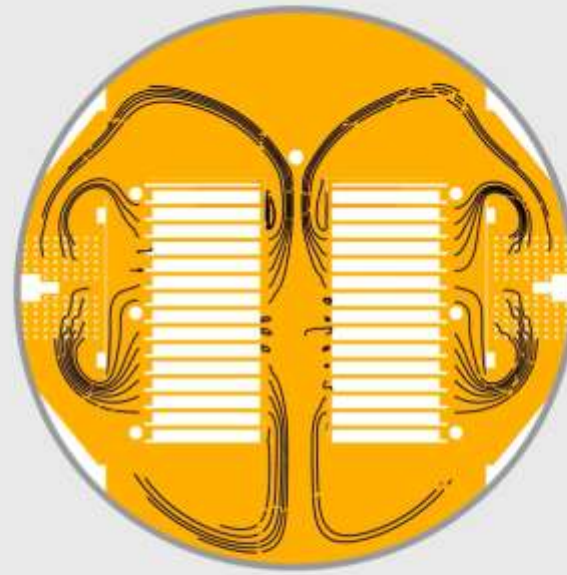
→ Lower energy consumption

RAY® Plus / Turbo mode



In operation with 20 trays the capacity can be increased by 30%.

RAY® Plus / Eco mode



In operation with 15 trays the energy consumption can be reduced by 18%*.

*Compared with existing RAY® 125 design.



ASSURING product quality



Camera & wireless product sensors

Critical food safety measures for freeze-dried pet nutrition



Raw material separation

- Prevents cross-contamination between ingredients and finished products.



Two doors for raw material separation

Critical food safety measures for freeze-dried pet nutrition



Sanitary trolley system

Sanitary trolley system

- Hygienic handling of components during processing.

Critical food safety measures for freeze-dried pet nutrition



Washing-in-place



Ease of cleaning

- simplified design for quick, thorough sanitation.

Critical food safety measures for freeze-dried pet nutrition



 Intuitive operator interface

 User-friendly operation

- Intuitive systems ensure safe and efficient workflows.

Driving innovation in premium freeze-dried pet nutrition



What can be freeze-dried?

- From raw meat blends to functional ingredients - expand possibilities for pet health and taste.



Testing options

- Pilot-scale trials and formulation testing to validate concepts before full production.



Process technologists

- Expert support to optimize freeze-drying parameters for nutrient retention and texture.



Meeting customer requirements

- Tailored solutions for emerging trends





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GEA Engineering
for a better
world.