

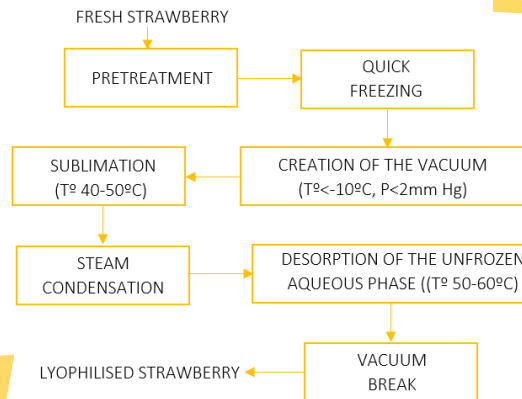
STUDY OF THE VIABILITY FOR THE CREATION OF A LYOPHILISED COMPANY PROMOTING SUSTAINABLE CRITERIA AND BASED ON THE STRAWBERRY INDUSTRY

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OBJECTIVES

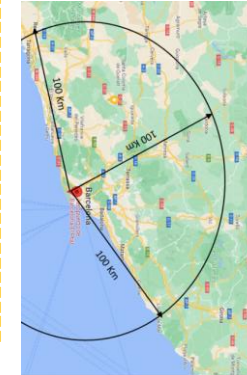
- To study the world of the lyophilized products
- To explore the freeze drying equipment and its sustainability
- To have a deep look to the freeze drying process and its energy consumption
- To make two business proposals based on lyophilisation; on a large and a small scale.

PROCESS



LYOPHILISATION PLANT PROPOSALS

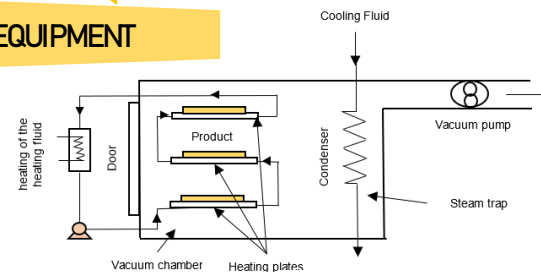
(Sale radius of km0 for the small dimensions freeze drying plant)



PRODUCT ANALYSIS

LYOPHILISATION

EQUIPMENT



Conventional drying

- H = 10%
- Non rehydration capacity
- Structural damage
- Not suitable for thermosensitive products
- Nutrition and flavour losses

Lyophilised

- H = 2,66%
- High quality dehydrated product
- Rehydration capacity
- Suitable for thermosensitive products
- Preservation of vitamins and flavour

CONCLUSIONS

- Freeze drying is the best process to preserve the nutritional and organoleptic properties while providing an added value to the final product.
- It is an expensive process (economically and energetically) and requires a large initial investment.
- The mechanisms to carry out the process in a sustainable way exist.
- The small-scale proposal turns out to be very profitable, as it requires less equipment and we have little volumes to process.
- The viability of the large-scale proposal seems to be reduced as the volumes to process are very big and it requires a huge volume of equipment, that are very expensive. But it is not impossible if investors are available for the initial investment

	SMALL DIMENSIONS FREEZE DRYING PLANT	LARGE DIMENSIONS FREEZE DRYING PLANT
STUDY BASED ON:	Mercabarna	Geographical Area of Huelva
FRESH PRODUCT VOLUMES	138, 5 Kg/Day	130.120,5 Kg/Day
LYOPHILISED VOLUMES	13,5 Kg/Day	12.681,5 Kg/Day
FRESH PRODUCT PRICE	2,75 €/Kg	1,81 €/Kg
LYOPHILISED PRODUCT PRICE	152,2 €/Kg	97,25 €/Kg
REQUIRED SOLAR PANELS	262	246.750
EQUIPMENT REQUIRED	Cube forming machine "model GA" from URSHELL: x1 Freeze dryer FD-200 from KEMOLO: x1	Cleaning machine "KRONEN GEWA 4000": x3
		Cube forming machine "DiversaCut 2110A™" from URSHELL: x 3/4
		Crusher "Comitrol® model 9300" from URSHELL: x1 Spiral freezer DSF, SSF from SHAOXING: x1 Freeze dryer FD-5000 from KEMOLO: x26
SELLING ZONE	100 Km radius from Mercabarna, Catalunya	Spain and Europe