

# Flyer



**Industry:** Food - Innovative food preservation

**Company:** IFM Instant Food Marketing AG holds the exclusive license for the patented "PEX" technology (batch process) and the now further developed "PEX(C)" technology (conti process) for the production of fruit and vegetable snacks in "cracker quality".

IFM has also acquired for exclusive use the know-how of the globally unique "INVAP" process (INert-VAcuum-Puffing), which has been developed in recent years especially for processing highly sticky fruits with a tendency to oxidation - such as bananas.

This means that a wide range of fruits and vegetables can be made available to the market in attractive, cross and crunchy varieties, as well as aromatic snacks or additives to cereals, dry soups, etc. IFM also owns the "KRÄKK ME" brand for the B2C market.

**PEX Process:** The PEX technology is a quasi-continuous "refinement process" patented in several countries, in which pre-dried fruits and/or vegetables (so-called SD products > semi dried) are preserved by dehydration to below 2% water content. The SD products are always delivered in cleaned and calibrated condition, cut into cubes, strips, slices, etc. There is therefore practically no waste on site.

The SD products are placed in trays (bowls with 800mm Ø) in a geometrically specially designed vessel, which is equipped with microwave transmitters. After a short temperature-controlled heating of the product by microwaves, the vessel is evacuated abruptly. Under vacuum and further exposure to microwaves a "puffing" of the product takes place (PEX > Product EXpanding). During this treatment step, the cell structure of the product is simultaneously changed by disintegration, whereby high-quality product properties (such as significantly higher taste intensity!) are achieved without damaging the product. At the usual working pressure of approx. 20 mbar in the PEX process, the water contained in the product boils and evaporates already at approx. + 17°C.

In a further process step, the trays are transferred to a fully automatic infrared post-drying unit for final drying of the products - while maintaining or lowering the vacuum - and brought to any desired residual moisture content. Before the dried product is removed, the trays are temporarily stored on cooled heat exchanger plates to ensure that the final products retain their shape. After the trays have been removed from the vacuum, the final packaging is done in aluminium



Microwave puffing section



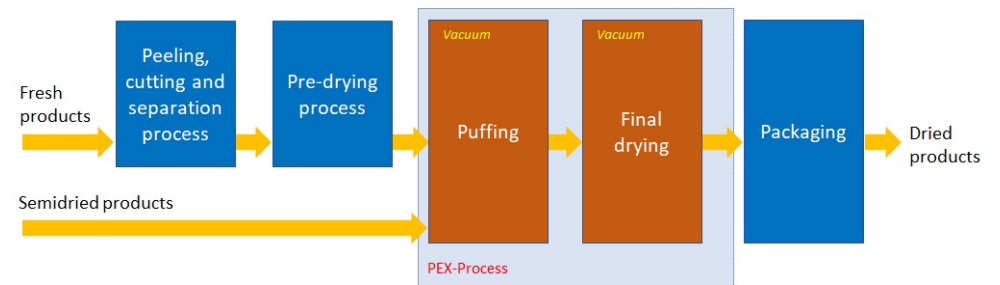
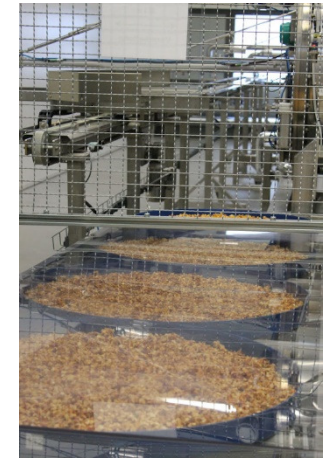
Infrared drying and cooling system

laminated foil bags under nitrogen. Thus, the high quality of the dried products is maintained for a long time. The PEX process has already been in use for approx. 10 years and there are very good operating experiences.

In the meantime, the quasi-continuous PEX technology has been further developed and supplemented, so that today a fully automatic, continuous ("ffifo" = first in - first out) PEX(C) technology can be offered.

If it is desired to start with "freshly harvested" raw material (e.g. when setting up the plant at the place of cultivation), suitable washing, peeling, cutting and drying plants should be installed upstream of the PEX / PEX(C) process.

A renowned international plant manufacturer is available for the realisation and construction of the plants, if required.



**INVAP Process:** By combining already proven basic components, a completely new production concept was developed, which has not yet been available on the market in this form. The technology is called INVAP refining process and stands for INert-VAcuum-Puffing. In this process, the dehydration (drying) of the products, from the beginning (= fresh product) to the end (= dried product) is carried out consistently under an "inert atmosphere" and in a "vacuum". This eliminates oxidation reactions that inevitably occur in conventional drying systems (tray dryers, belt dryers, etc.). Since the drying circuit is closed, the process drying conditions always remain constant. The respective current climatic and environmental site conditions, f.e. temperature, humidity or fresh air contamination by e.g.

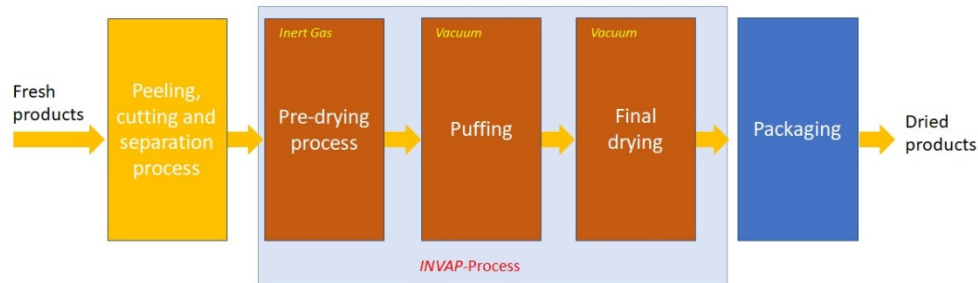


cutting and separation technology for banana

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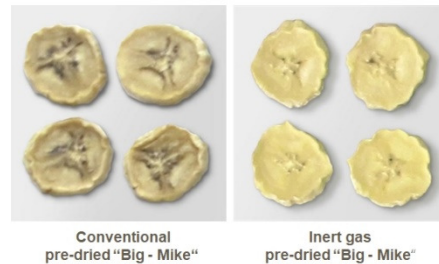
salt, flavourings etc., are no longer relevant and can be disregarded as they have no influence on the product quality.

Using the **PEX(C)** process, the **INVAP** technology is a continuously operating process (fifo principle > first in - first out), i.e. the same product treatment times. A suitable cutting and separation technology is available for the product banana.



**Finalized project:** Construction and operation of a production plant for tropical fruits in Costa Rica, which are produced according to the **INVAP** technology. The main focus of production will be the product "banana", as the banana contains all the nutritionally important components that are relevant to human nutrition. (see baby food, school children, sports nutrition, etc.). IFM AG already has a subsidiary in Costa Rica, **SECA RICA S.A.** (CR), in the state of Talamanca to apply for the necessary permits for a production facility. The land for construction of the plant in a "Zona Franca" (free trade zone) has already been reserved. The capital requirement for a production capacity of 100 t/a dried product is approx. € 4.2 million, for a larger variant of 400 t/a it is approx. € 8.0 million.

Further growth through additional production sites is being considered. A detailed business plan is available on request! Return on Investment: outstandingly stable and in the double-digit range.



## Special features:

- Market and end users are ready; products according to the **PEX** procedure can be successfully purchased in the retail trade as B2B and B2C.
- First-class product cross and crunchy, with strong natural aroma, can be produced with **INVAP** also in natural color for strongly sticky and oxidizing fruits such as banana.
- Despite a small residual moisture content of less than 2%, no product burns in the process thanks to the intelligent combination of microwave and infrared drying in a vacuum.
- Extremely low energy costs compared to pure microwave processes.
- With **PEX(C)** technology fully automatic, continuous ("fifo" = first in - first out) operation mode leads to very low personnel deployment (costs).

## Offer: We offer you various investment options:

- Simple license for **PEX / PEX(C)** property rights (patent in 7 countries) including technology for ap. 100 t/a dried product per unit.
- Simple license on **INVAP** process and the associated know-how including technology for ap. 100 t/a dried product per unit.
- Consulting an engineering support for integration of the **PEX** or **INVAP** technology into the local facilities and start-up and optimizing of the plant.
- Purchase of the property rights **PEX/PEX(C)** patent and the associated know-how **INVAP** including all drawings, parts lists and component specifications.
- Participation (shares) in **IFM AG** for financing the "Finalized Project".
- At present a used **PEX** plant with a capacity of 200-300 t/a dried product is available on the market; please contact us if you are interested!

**All options will be tailored to your needs and your business objectives.**

## Please contact us for more detailed information!

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