



Advances in Novelty Production

Lars Them - Tetra Pak



Lars Them

Product Manager – Freezing & Inclusion

Quick facts:

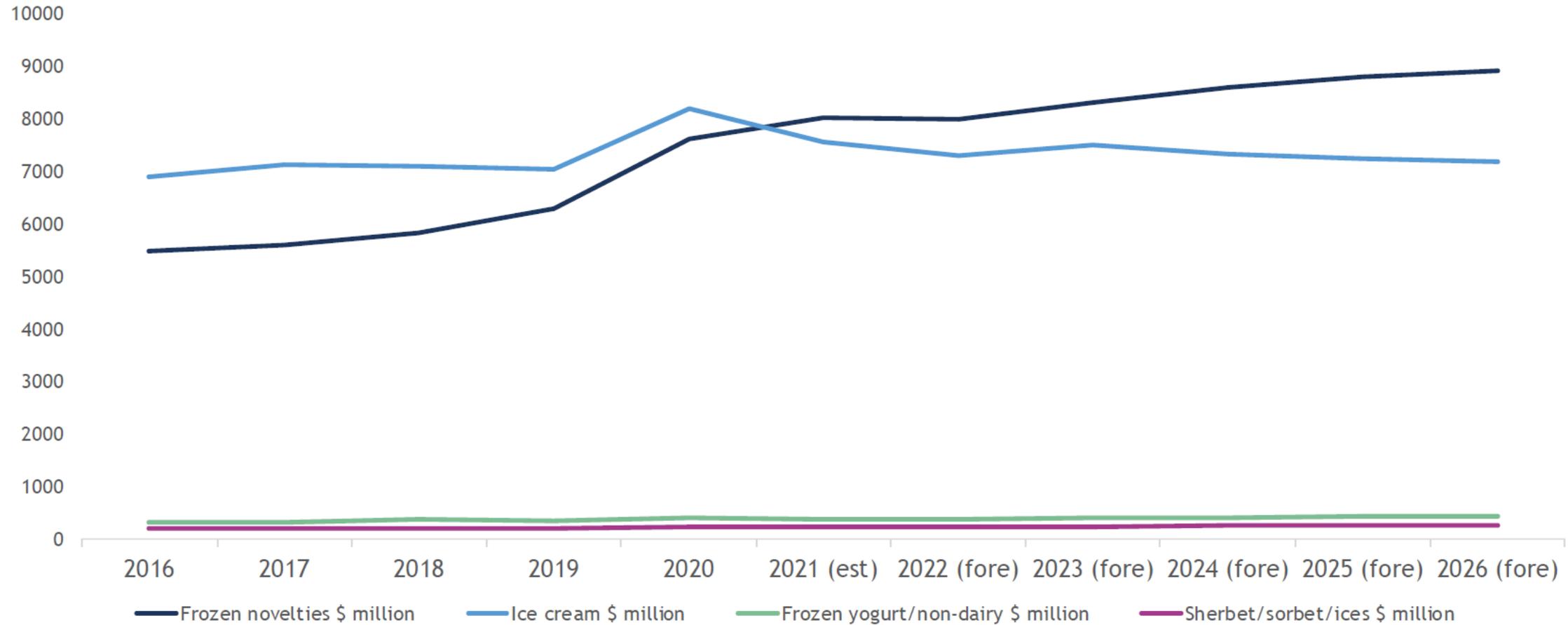
- Education: Marine Engineer
- 90-94: 2. Engineer – Maersk Line
- 94-95: Service Eng, Tetra Pak DK
- 95-97 Service Eng, Tetra Pak USA
- 97-99 Site Manager, Tetra Pak DK
- 99-08 SW programmer for Freezers
- 08-11 Manager for training
- 11-18 Tech. Sales Eng.
- 18-21 Team leader Sales support
- 21- ? Product Manager Freezing & Inclusion

So in total almost 29 years with Ice Cream....





FIGURE 10: TOTAL US RETAIL SALES AND FORECAST OF ICE CREAM AND FROZEN NOVELTIES, BY SEGMENT, AT CURRENT PRICES, 2016-26



Source: based on IRI InfoScan® Reviews; CSPDailyNews.com; US Census Bureau, Economic Census/Mintel

Courtesy Mintel Group Ltd. "Ice Cream and Frozen Novelties US, 2022"



Discussion Points

- ▶ Novelty Types, Developments
 - Stick Novelties
 - Sandwiches
 - Cones
 - Stickless items
 - Cups
 - Pouch
- ▶ Other Developments
- ▶ Conclusions and Questions



Extruded Stick Novelties



Typical Extruded Stick Process





Large Inclusion Wheel

For Stick & Stickless Novelties with Large Inclusions

Legacy Solution Issues

- ▶ Stick Inserted Crooked – Missed Products at Pick-up
- ▶ Stick Broken – Consumer Complaint
- ▶ Irregular Product Shape – Poor Product Appearance
- ▶ Product flight pattern to tray not repeatable – Missed Products at Pick-up

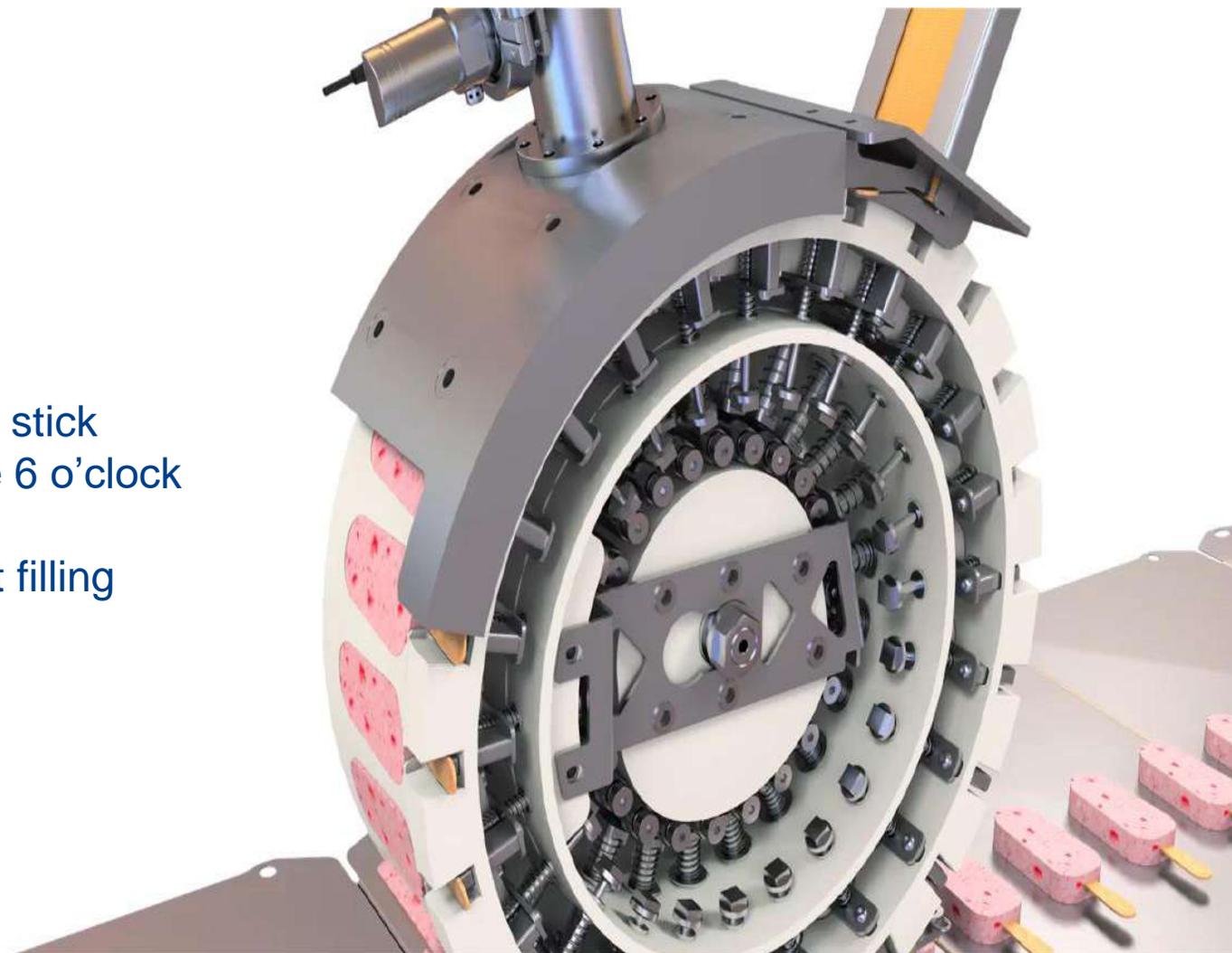




Large Inclusion Wheel

Process Steps

1. Insert Stick into Empty Cavity
2. Fill Ice Cream into the cavity, around the stick
3. Press the product out of the cavity at the 6 o'clock position onto moving tray
4. Retract the piston to prepare for the next filling





It takes about the space of a traditional wire cutter system





Product Examples





Make more complex products with dual dosing

The dual hopper – your easy path to a wider product range

- ▶ **Optional dual hopper** doses two ingredients simultaneously into single ice cream pump
- ▶ **Minimises disturbance** to ice cream flow and avoids air ingress to safeguard highest product quality
- ▶ **Precise dosing** control with individual weighing cells under both funnels





Designed to innovate

Tetra Pak[®] Decoration Depositing unit



Decoration Depositing

Capabilities:

- ▶ Decoration with chocolate, compound or caramel
- ▶ Decoration on either enrobed or naked products
- ▶ High accuracy/low deviation in consumption

Technique:

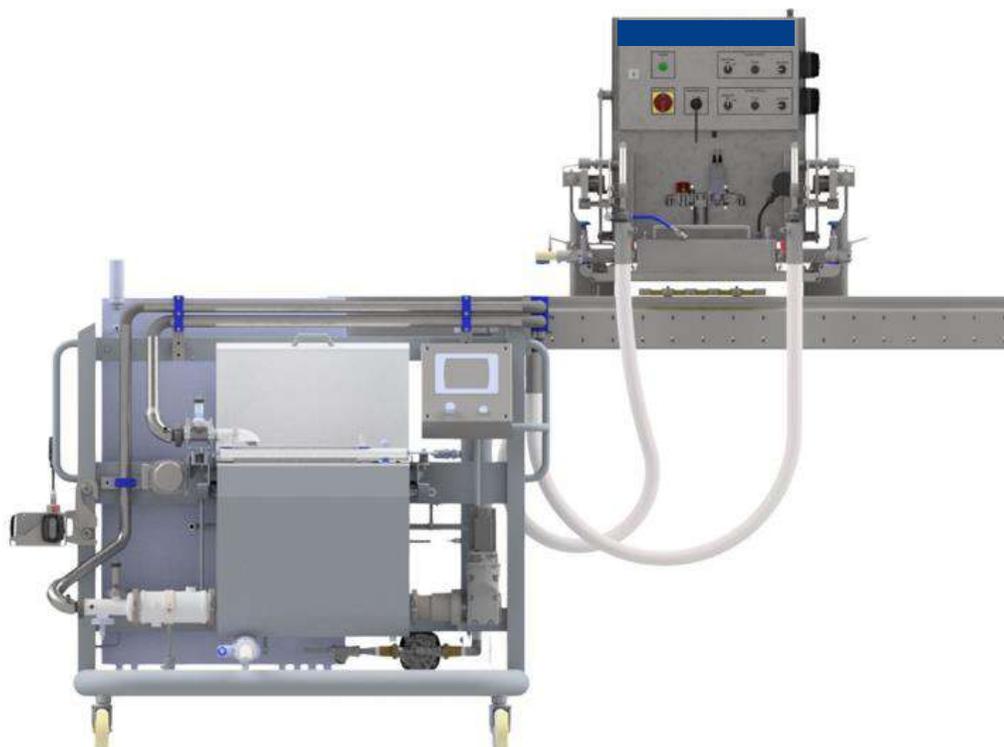
- ▶ Precise depositing heads to be placed on worktable or conveyer
- ▶ Easy pattern change, can be done on the fly
- ▶ Requires one additional work station space + a small area for the decoration supply





Innovation based on expertise

How does it work?



The **standalone unit** allows placing the printer head just above the extrusion worktable

The decoration design is pre-defined and prepared in software belonging to the printer heads.

You can decorate naked ice cream or chocolate enrobed products using **different materials** like caramel, ripple/fruit sauce, chocolate compound etc.



Endless options

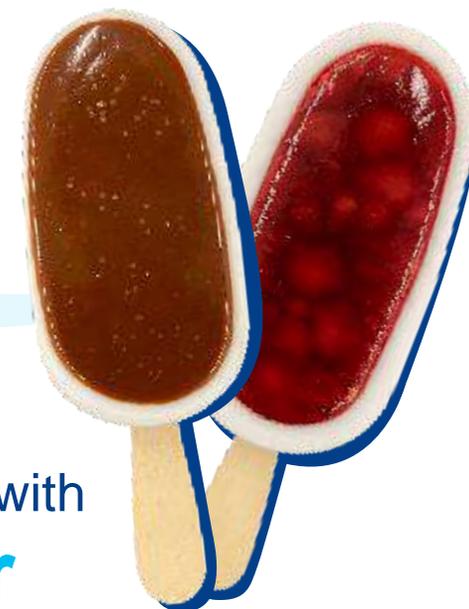
Broad range of possibilities



Product with
simple
decoration



Product with more
advanced
decoration



Product with
layer
decoration









Printing on sticks

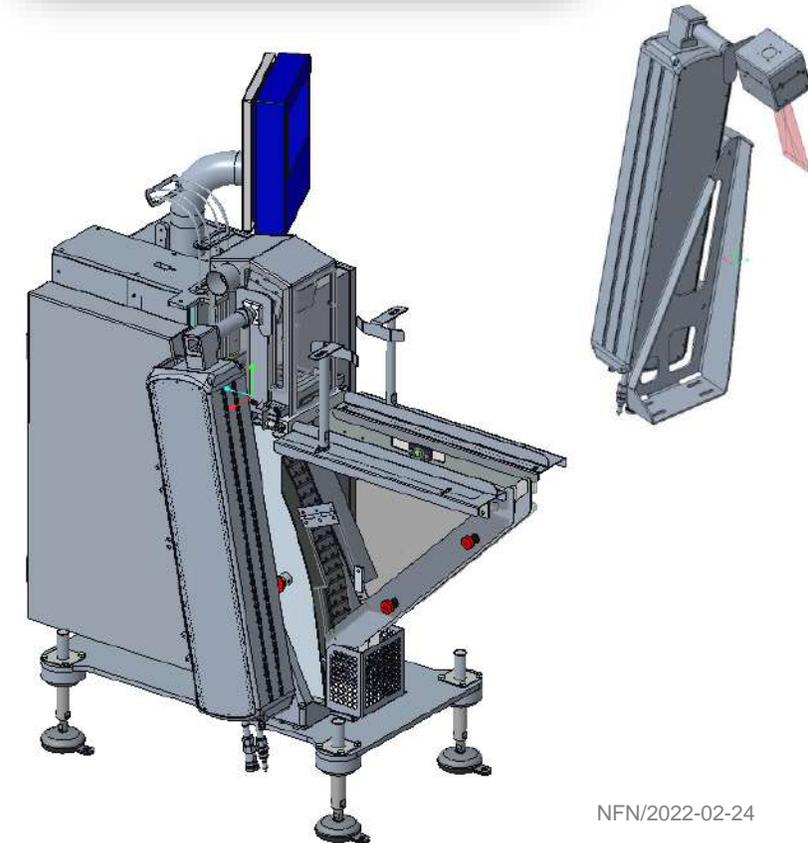
Flexible marking solution – Extrusion lines



The technical solution

Adaptable into main mechanics

- ▶ Robust integration of laser unit into existing design.
- ▶ High Occupational Health & Safety risk level safety guarding included in scope – due to laser.
- ▶ Suction of vapours with external suction unit included.
- ▶ Laser control interfaced with Stick inserter automation.
- ▶ Up-grade potential is being evaluated – will require a frequency drive of collecting belt.





Extrusion solutions Sandwich novelties

Vertical extruded

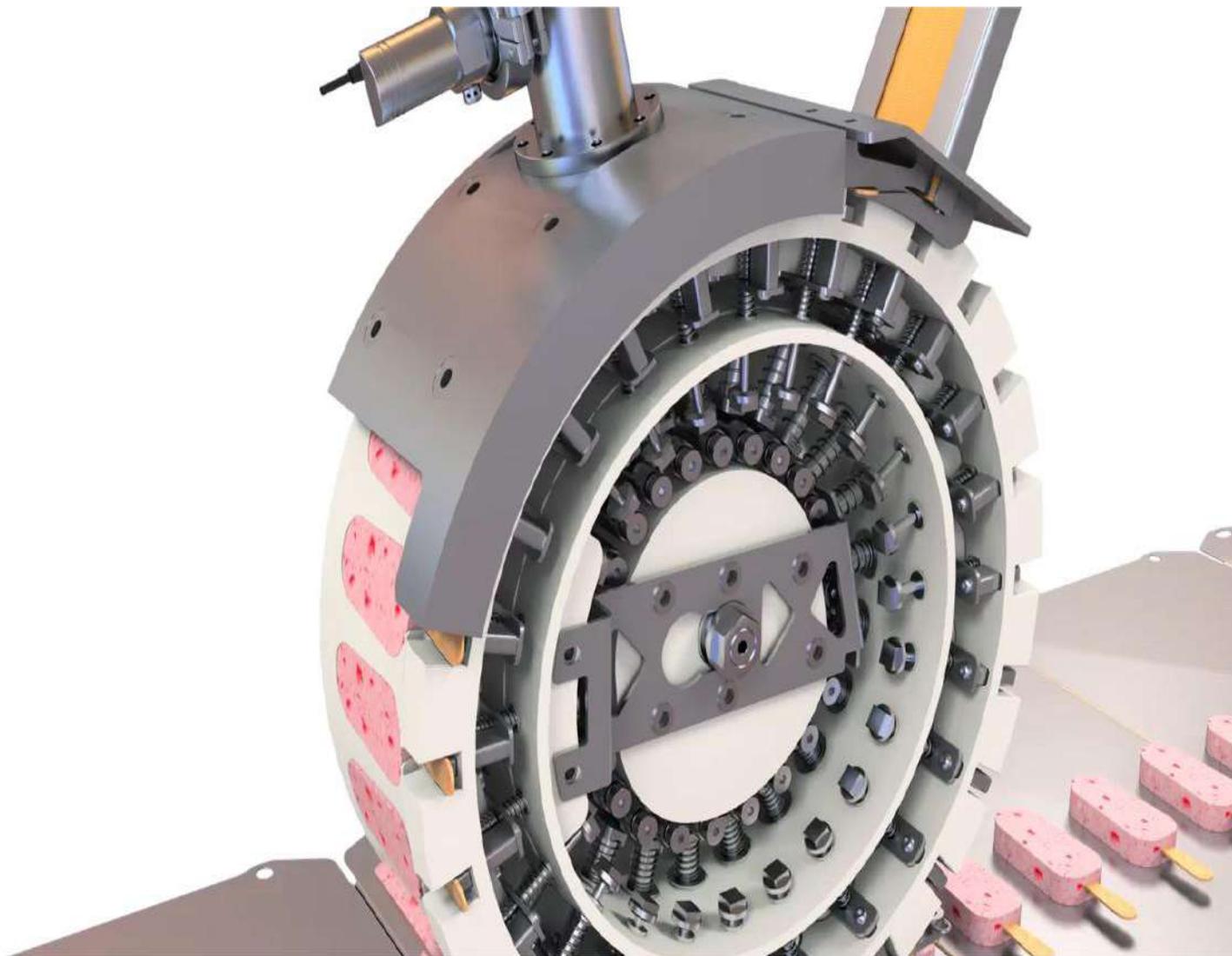


Extruded Sandwiches on a Tray Extrusion Line





Large Inclusion Wheel For Ice Cream Sandwiches





Layering of Sauce (Sandwiches)

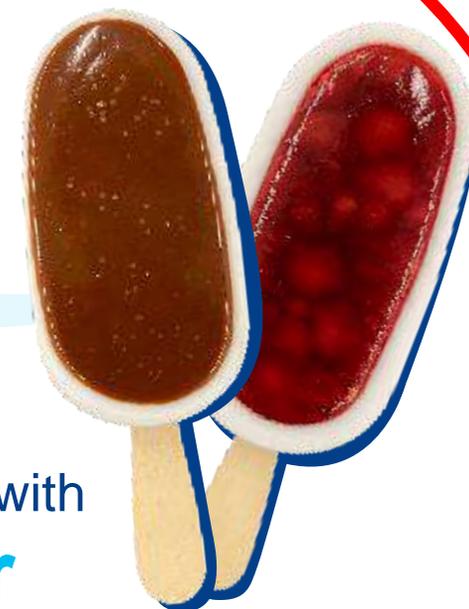
Broad range of possibilities



Product with **simple** decoration



Product with more **advanced** decoration



Product with **layer** decoration



Tetra Pak[®] Ice Cream Sandwich unit A1

How it works



The air flow is stopped
when the top of the
strapping is...





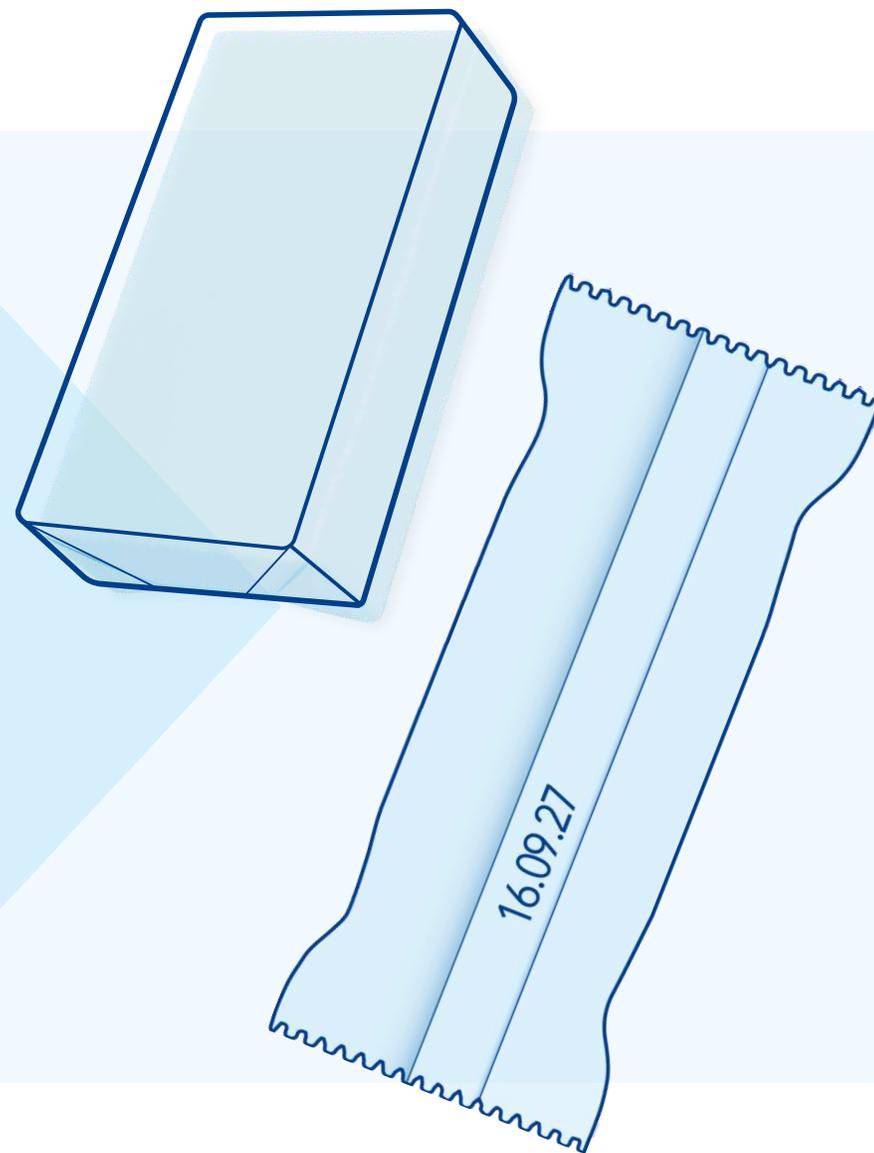
Wrapped up for the future

The sustainable power of paper wrapping

Paper wrap with seal:

environmentally superior to plastic or foil flow wrap

Compared to flow wrap, the envelope wrap uses **10% less paper-based packaging material**



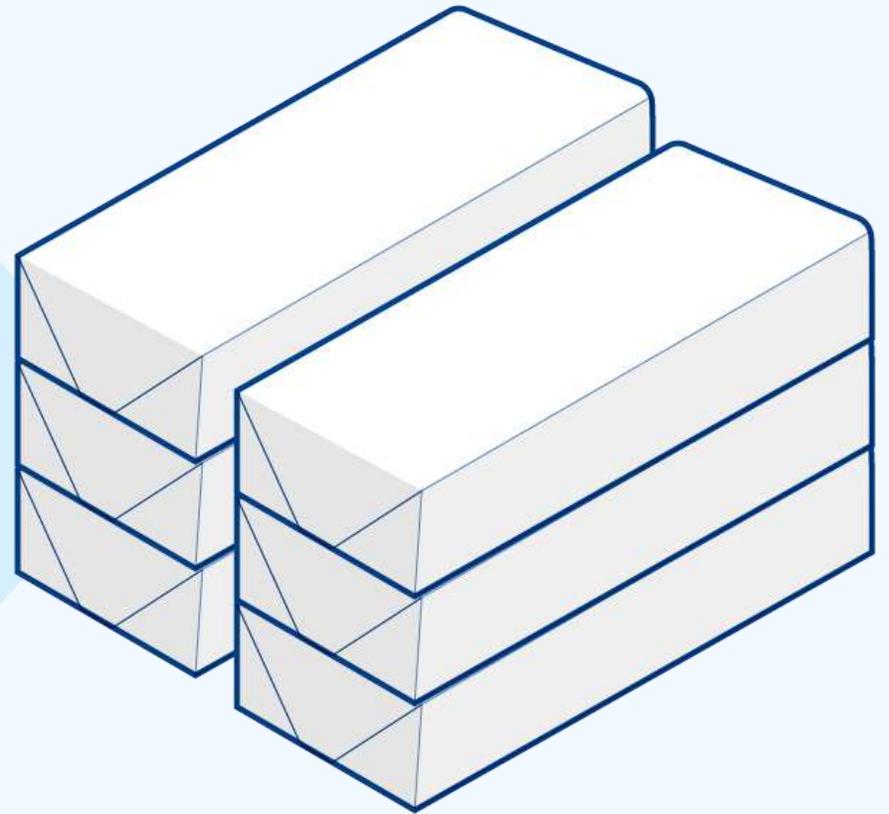


Wrapped up for the future

Less secondary packaging material –
flow wrap products require bigger boxes

No air between product and packaging –
product is tightly wrapped

Dedicated cartoner with stacker





Extrusion solutions - Candy bar novelties

Horizontal extruded



Stickless Extruded Bars and Minibites are evolving





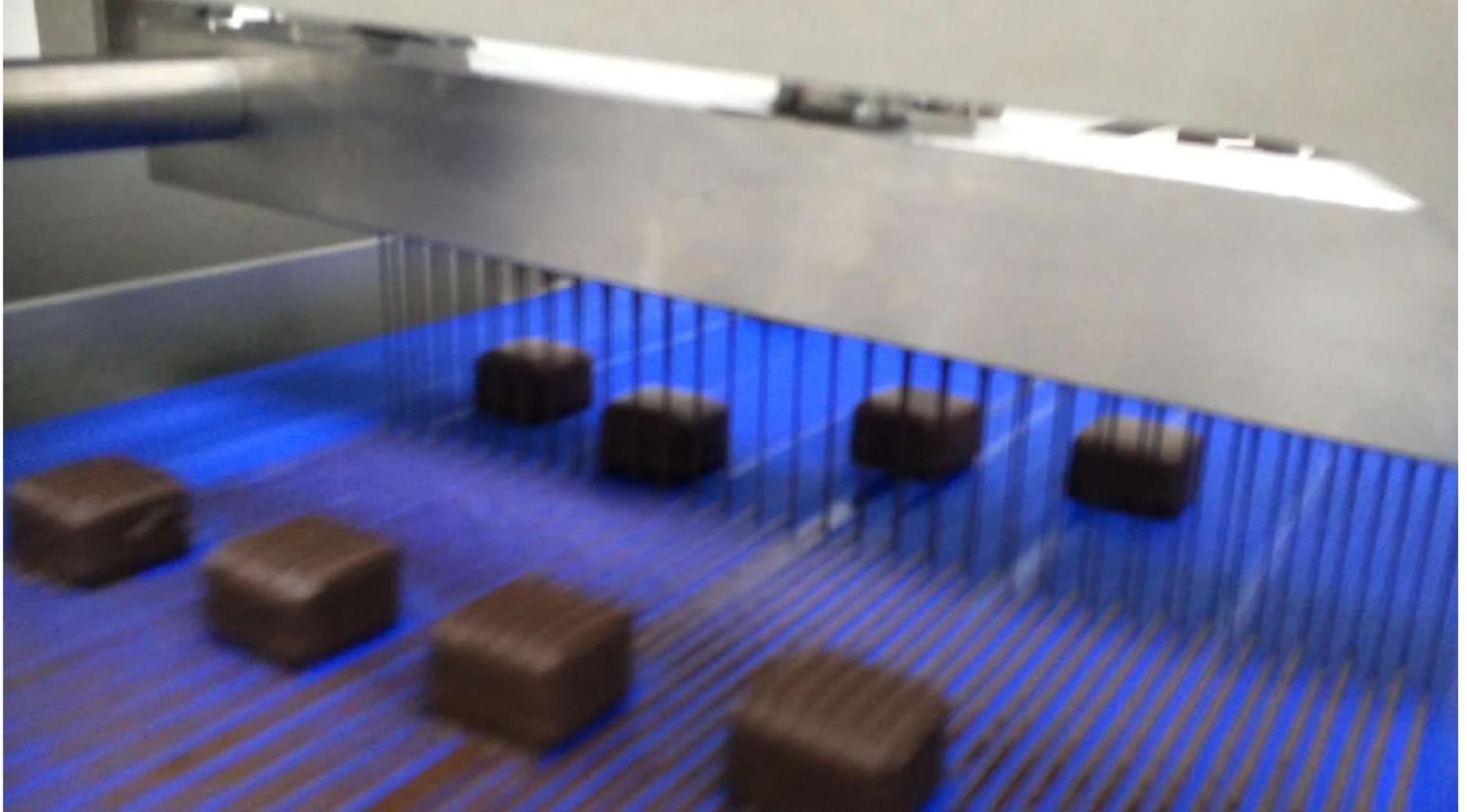
Product Decoration on Extruded Mini Bite Line



24.000 PCS/HOUR



Product Decoration on Extruded Mini Bite Line





Extrusion **- Ball top cone production**

Vertically filled / shaped



Cone Products – Cone Type

- ▶ Sugar Cone – Can be machine dispensable-able, but usually from sheets
- ▶ Wafer Cone – Machine dispensability depends on characteristics
- ▶ Waffle Cone – Not machine dispensable-able



Sugar Cone



Wafer Cones/Cake Cone

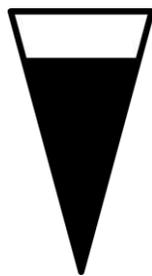


Waffle Cone



Cone Products – Ice Cream Shape

Flat-top/Sleeved Cone



Ball or Round-top Cone





Cone Primary Packaging

Ball cones are typically flow-wrapped (top illustrations). In the case of mini cones these are sometimes packed loose in a clam-shell container (lower illustration). In both cases the products are further packaged in a retail carton.





Cone Primary Packaging

Wafer cones can be sold in a cup/dome lid package (typically for impulse sale only) (illustration, right) or flow-wrapped (for impulse or retail sale)



Sleeved cones can be sold pre-inserted into a conic wrap (illustration, left) then filled and sealed (flat-top cone only)



Flat-top Cones (US Market)

- ▶ Historically not individually hardened/not hardened upright in the US market
- ▶ With fancier designs and because of the need to improve quality, the US market is moving towards individual upright hardening





Gripper head & individual controlled gripper fingers





Transfer of Sleeved cones from Filler to Tray Hardening Line



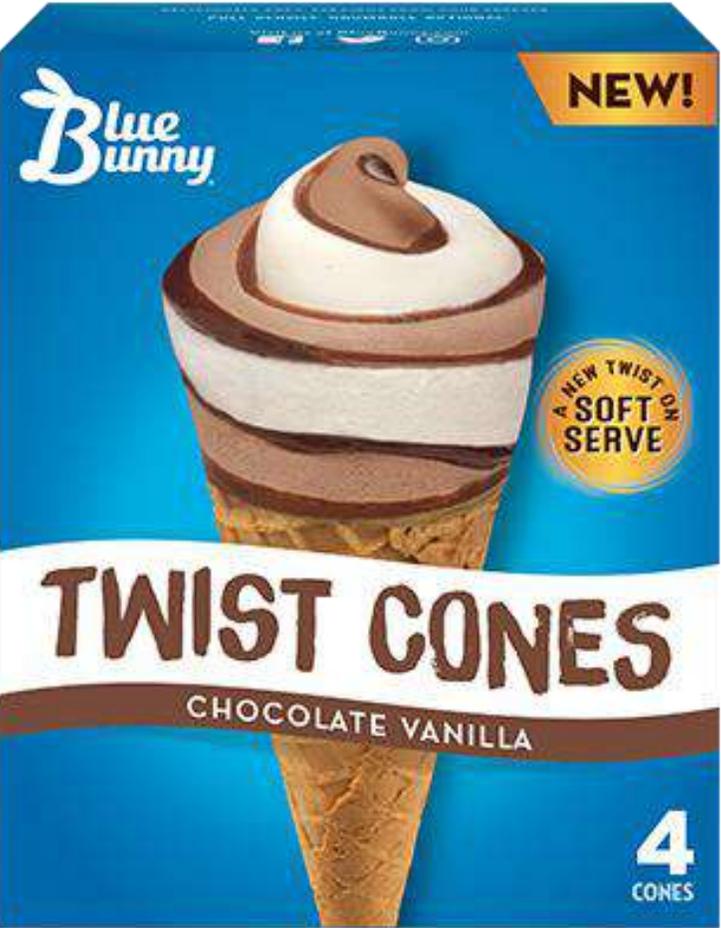


Sleeved Cones with Large Inclusions





Sleeved Cones with Twisted Appearance





Unilever (Initially imported from Italy, now Russia)





Imported Wafer Cups





Wafer Cone Production on Tray Extrusion Line





Ice Cream Filling Solutions

CUPS



Pints as Single-serve Novelties



Product Analysis

Pack Size:

14.0 fl. oz (US)



Premiumization of Cups/Pints

- ▶ The market is looking for sophistication, contrasting texture and indulgence
- ▶ Layers, cores, large inclusions, chewy inclusions and rich sauces, swirl products
- ▶ This in turn has driven development of new dosing systems for wet and dry products, all individually lane controlled





Layered Product





Magnum Crackle (Unilever)



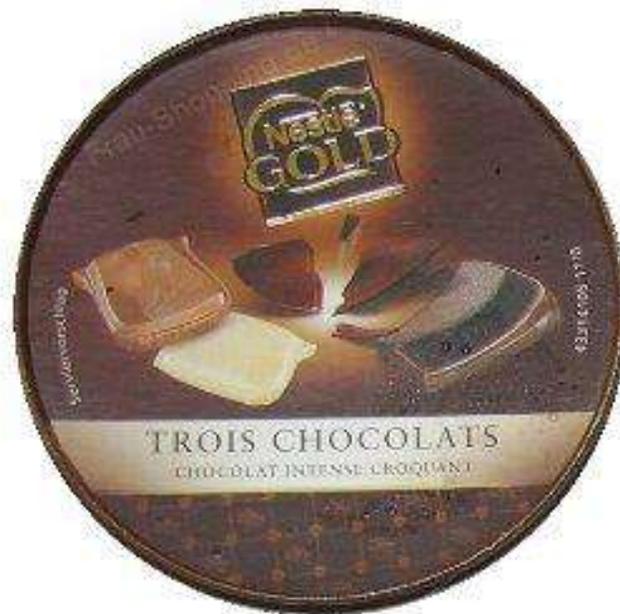


Core Products (Unilever)





Swirl Filling Examples



One or two flavours of ice cream and one syrup or sauce without inclusions are dosed and twisted by means of servos at the same time.

Pouches



Traditional Pouch Products

Form-fill-seal bag (no closure)



- ▶ water, high fructose corn syrup, 2% or less of the following (apple juice from concentrate, pear juice from concentrate, citric acid, natural flavors, artificial flavors, preservatives (sodium benzoate, potassium sorbate), red 40, yellow 5, yellow 6, blue 1)



Reformulated Pouch Products



orange ingredients:

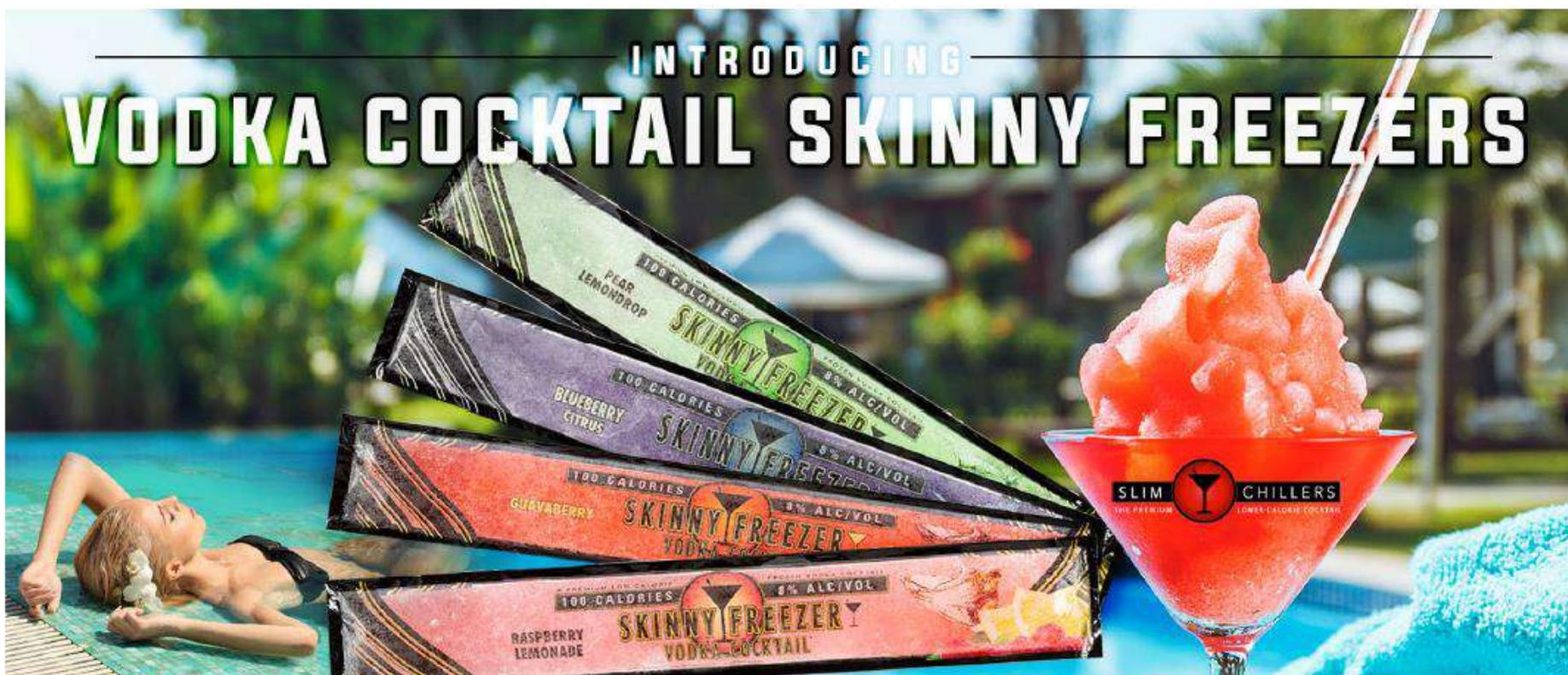
filtered water, organic cane sugar, organic orange juice concentrate, organic lemon juice concentrate, organic orange extract, organic guar gum





Alcoholic Pouch Products

Slim Chillers (8% Alc. by Volume)





Aseptic Pouches

- ▶ Can be high or low acid products
- ▶ Ambient distribution chain
- ▶ Frozen at point of use
- ▶ Value-added products



Tetra Fino
Aseptic

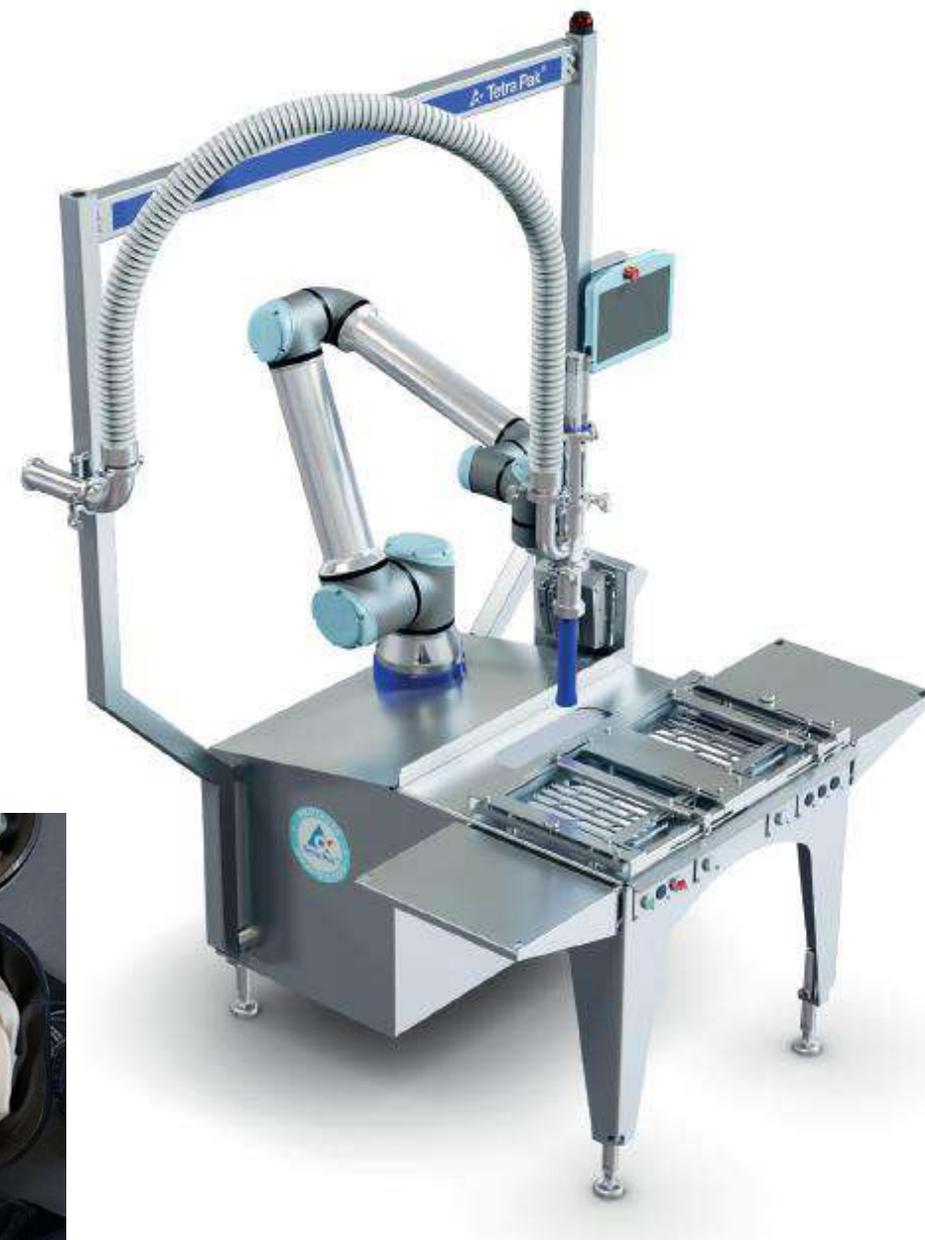


Other Developments



Collaborative Robot Fillers

- Collaborating 6-axis robot (“Co-Bot”)
- No safety guarding needed
- Two filling positions for alternating use
- Waste / stand-by position
- Filling of Trays or smaller packages





Base fill Lengthwise + decoration fill Wavy





Quadruple Discharge Pump Option





THANK YOU !

Lars Them

Product Manager – Freezing & Inclusion

Tetra Pak Processing Systems

Ice Cream Solutions

 **Tetra Pak**[®]
PROTECTS WHAT'S GOOD