Advances in Novelty Production

Lars Them - Tetra Pak
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

- Blue Bunny Super Fudge Brownie
- Load'd Bars 2X the Mix-in's
- Häagen-Dazs Extraaaz Salted Caramel Brownie
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**
The wafers are pushed into the pockets of the star wheel … the moving star wheel cuts the ice cream … and a conveyor transfers the sandwich to wrapping.

The sandwich is wrapped … sealed and discharged.
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
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).

Sleaved 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)
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.
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
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