Tetra Pak® Upgrades

Reduce energy, water, and waste in your existing food and beverage production equipment

Tetra Pak®
PROTECTS WHAT'S GOOD

Enhance the performance of your existing equipment

As a food and beverage producer, you need equipment that continuously delivers according to the highest standards of quality, safety, and sustainability at the lowest possible cost.

Based on many decades of industry expertise, we offer a comprehensive portfolio of food and beverage production upgrades to optimise the performance of your existing equipment, improve uptime, and environmental performance, while also reducing operational costs. Designed for quick and easy installation, these upgrades consist of retrofittable kits, pre-defined products, or customised solutions.

The four key benefits

SAFETY AND QUALITY

Improving equipment safety, compliance with regulations (e.g. FDA), traceability, and quality whilst reducing the risk of unsterility or contamination.

SUSTAINABILITY

Reducing the amount of energy, water, and waste produced or consumed by Tetra Pak® equipment.

PRODUCTION CAPABILITY

Production capability means to introduce new products, features, functionality, or regulatory demands without investing in new equipment.

LIFECYCLE MANAGEMENT

Modernisation of the installed base to address obsolescence both in automation and non-automation related components.

Upgrades increase resource efficiency

As a food and beverage producer, simultaneously meeting supply chain challenges, increasingly strict environmental regulations, and rising costs is a difficult balancing act. It requires the continuous optimisation of your production equipment, especially with regard to resource efficiency. That's why reducing energy, water, and waste is a central goal – and also a key benefit – of our equipment upgrades.

In this brochure, we zoom in on a selection of processing and packaging upgrades which specifically support your efforts to reduce utilities consumption and waste – thereby contributing to your sustainability targets, as well as your bottom line.

Our experts can support you with a quick assessment of your operations and, thereafter, recommend upgrades to enhance your equipment performance.

1. Calculation based on a Tetra Pak® Homogenizer 350 running 3.5% fat white milk at 200 bar, 30,000 l/hr, 6,000 hrs/yr.
2. Calculation based on an aseptic Tetra Pak® Homogenizer 400 which requires approx. 1,100 l/hr of cooling water.
3. Calculation based on 4-minute time reduction on each start-up, and lowering standard deviation in output from 2% to 1%. This gives potential combined savings of ≈62 k€/yr. Energy savings of up to 13,800 kWh.
4. Calculation based on running 4,000 hrs/yr.
5. Calculationsbased on installation in three Tetra Pak® A3/Speed running 4,000 hrs/yr.
6. Calculation based on comparison with a filling machine running 4,000 hrs/yr without the kit installed.

Upgrades in focus

Here are a few examples of upgrades that can help you reduce energy, water, and waste in your processing and packaging lines. (For our full range of resource efficiency enhancing upgrades, see pages 8 to 24.)

Processing upgrades

Reduce energy consumption by up to 26% per year by upgrading your liquid food homogenising device with an **homogenising device 100**.[1]

Reduce energy consumption

by up to **26%**/yr

Lower your water consumption by up to ~6,750 m³ per year with an **ECO cooling homogeniser** that recovers cooling water in a closed loop.[2]

Reduce water consumption

by up to **~6,750 m³**/yr

Upgrade the control system on any of our computer-controlled Tetra Pak® Continuous Freezers with a **control upgrade for freezers** and save up to 13,800 kWh of energy per year while also reducing product losses.[3]

Save up to

13,800 kWh of energy/yr

Packaging upgrades

Replace pneumatic cylinders on your Tetra Pak® A3/Flex with the **DIMC servo toolbox** and reduce compressed air consumption by up to 120,000 m³ per year (equivalent of 8,500 kg CO_2e).[4]

Reduce compressed air consumption

by up to **120,000 m³**/yr

Add a **water filtering station** to your packaging line and reuse up to 90% of the wastewater from your filling machines.[5]

Reuse up to **90%**

of **wastewater** from filling machines

Use an **oil filtering unit** to extend the life of the oil used in your filling lines, saving up to 20 litres of hydraulic oil per year, or 60 litres over a three-year period.[6]

Save up to

20 litres of **hydraulic oil**/yr

Overview

The upgrades below are categorised according to processing and packaging equipment. A third section highlights several relevant customer stories.

Processing upgrades

Liquid food

- ECO cooling homogeniser
- ECO cooling on deaerator condenser
- ECO vacuum on deaerator condenser
- Aseptic tank cooling water recovery
- Machine control equipment
- IntelliCIP 2.0
- Hibernation mode
- Vacuum control in high shear mixers
- Radial jet mixer
- Pressurised pre-sterilisation
- Insulation in tubular heat exchangers
- New homogenising device
- Product-to-product (P2P) regeneration
- Mix-phase reduction

Cheese and powder

- Dehumidification unit

Ice cream

- Low temperature kit
- Control upgrade for freezers
- Pressure distributor
- Tetra Pak® Airless Chocolate Spray
- Tetra Pak® Cone Dispensing unit

Packaging upgrades

- Additional external cleaning
- Water filtering station
- OK ice water
- MicroDry® Lubrication
- DIMC servo toolbox
- UK ASU paper reel reserve
- UK oil filtering unit
- UK EcoDot

Customer stories

- Helping AMC GLOBAL increase production capacity without increasing wastewater
- Creating a customised water-saving solution for a Middle Eastern dairy
- Implementing OPEX optimisation upgrades at Spanish customers' sites
- Helping Liquats Vegetals reduce water use
- Enabling 80% water savings for a plant-based beverage producer in South Europe
- Extending the lifetime of hydraulic oil in filling machines

Processing upgrades

Optimise your processing equipment for reducing energy, water, and waste.

ECO cooling homogeniser

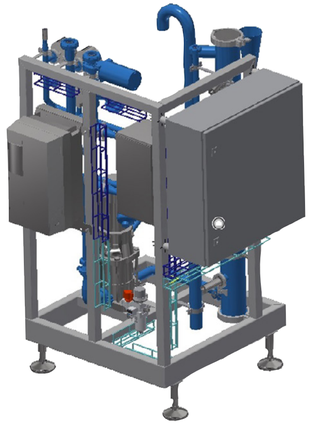
Upgrade Name	ECO cooling homogeniser
Equipment	Tetra Pak® Homogenizers
Category	Liquid food
Installation time	2 days

Solution description

The ECO cooling homogeniser is a water recycling unit which allows you to collect and reuse the cooling water from your homogeniser. It comes as a complete skid ready for installation.

Benefits

- Reduce water consumption by up to ~6,750 m^3 per year by recovering cooling water in a closed loop*
- Reduce operational costs



* Calculation based on an aseptic Tetra Pak® Homogenizer 400 which requires approx. 1,100 l/hr of cooling water.

ECO cooling on deaerator condenser

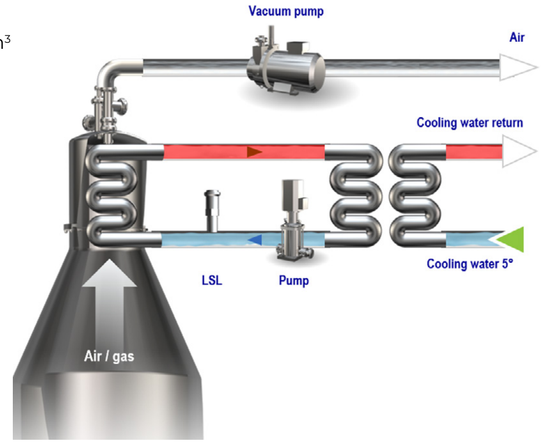
Upgrade Name	ECO cooling on deaerator condenser
Equipment	Tetra Pak® Indirect UHT units, Tetra Pak® Pasteurizers
Category	Liquid food
Installation time	1-2 days

Solution description

With the ECO cooling on deaerator condenser, the deaerator's condenser and a separate heat exchanger form a closed cooling water loop for the deaerator cooling water in the condenser circuit.

Benefits

- Reduce water consumption by up to 10,240 m^3 per year by using a closed loop in the cooling water*
- A circulating primary cooling media like iced water or glycol can be used without the risk of product contamination
- Increase the condenser's efficiency



* Compared with standard/normal design, without closed loop. Calculation based on annual production time: 200 days running 16 hrs/day with a capacity of 10,000 l/hr.

ECO vacuum on deaerator condenser

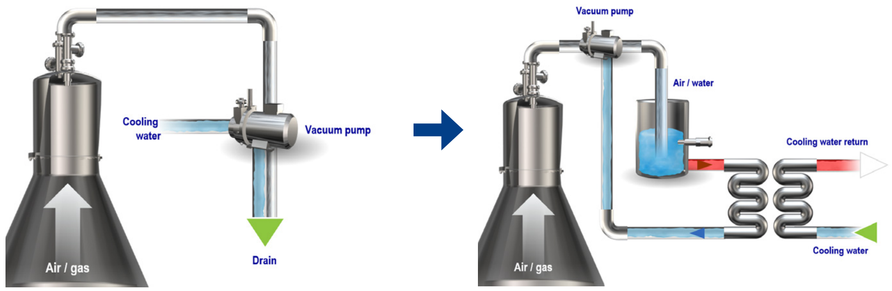
Upgrade Name	ECO vacuum on deaerator condenser
Equipment	Tetra Pak® Indirect UHT units, Tetra Pak® Pasteurizers
Category	Liquid food
Installation time	1-3 days

Solution description

The ECO vacuum on deaerator condenser seals water in the vacuum pump of your deaerator, rather than flushing it down the drain. The water is recovered and cooled in a closed loop, using a separate iced water or glycol circuit.

Benefits

- Reduce water consumption by up to 1,920 m^3 per year thanks to reuse system*
- Heat exchanger secures appropriate cooling of cooling water
- Activation of a CIP valve to allow cleaning of the vacuum pump and receiver vessel



* Compared with a standard design, without water recovery system. Calculation based on annual production time: 200 days running 16 hrs/day with a capacity of 10,000 l/hr.

Aseptic tank cooling water recovery

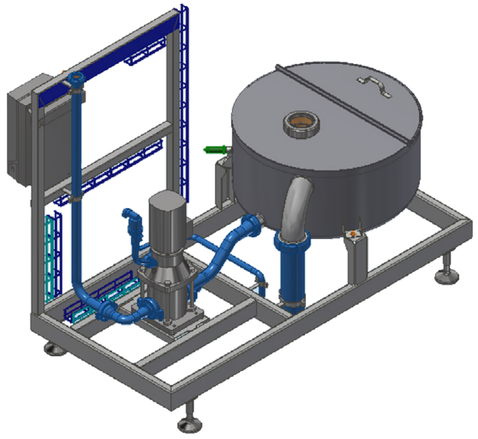
Upgrade Name	Aseptic tank cooling water recovery
Equipment	Tetra Pak® Aseptic Tank and Tetra® Alsafe
Category	Liquid food
Installation time	2 days onsite (1 for installation; 1 for commissioning)

Solution description

The aseptic tank cooling water recovery is a skid-mounted, easy-to-install kit which allows you to recover cooling water from the cooling jacket on the aseptic tank, after each sterilisation cycle. Suitable and retrofittable to entire installed base of Tetra Pak® Aseptic Tank or Tetra® Alsafe units.

Benefits

- Reduce water consumption by up to 3,600 m^3 per year thanks to water recovery system*
- Different water savings apply to different tank sizes for cold water and iced water



* Compared with a standard design, without water recovery system.

Machine control equipment

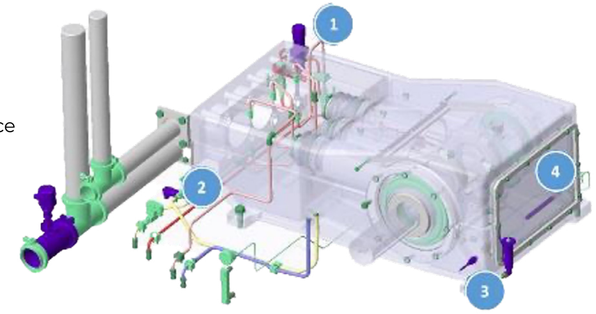
Upgrade Name	Machine control equipment
Equipment	Tetra Pak® Homogenizer, Tetra Alex®
Category	Liquid food
Installation time	2-4 days installation and commissioning

Solution description

Consisting of a crank case thermostatic valve, oil level transmitter, oil temperature gauge and a cooling water flow guard, machine control equipment controls the cooling water released to the crank case, based on oil temperature.

Benefits

- Reduce cooling water consumption since cooling water only starts to flow when the oil has reached the designated operating temperature
- Improve crank case lubrication



1. Crank case thermostatic valve
2. Cooling water flow guard
3. Crank case oil level transmitter
4. Crank case oil temperature.

IntelliCIP 2.0

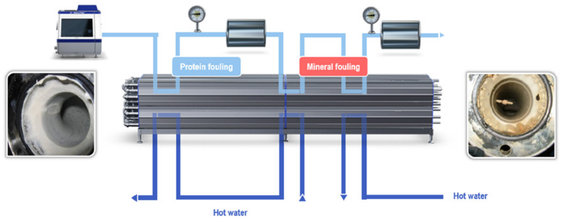
Upgrade Name	IntelliCIP 2.0
Equipment	Tetra Pak® Indirect UHT
Category	Liquid food
Installation time	2 days (requires production stop)

Solution description

IntelliCIP™ 2.0 allows you to shorten CIP time based on level of fouling. Thanks to CIP sensors for monitoring CIP and software, you can monitor how fouling is being removed from the surfaces inside the plant (presented as a graphs in the HMI) while cleaning is in progress. This allows you to optimise the cleaning procedure and only clean according to need.

Benefits

- Save up to 121,000 kg of steam per year with CIP by only cleaning according to need*
- Reduce detergent consumption thanks to more accurate dosing
- Optimise cleaning procedures and CIP recipes, adapting to type of product, length of production cycle, amount of fouling
- Improve production efficiency and safeguard CIP results while increasing uptime



* Exact savings depend on the production scenario. These calculations are based on production of basic milk, 10 hrs/day, 300 days/yr, running at capacity of 15,000 l/hr. Note that this must be validated on a case-by-case basis depending on product.

Hibernation mode

Upgrade Name	Hibernation mode
Equipment	Tetra Pak® Pasteurizer, Tetra Pak® Indirect UHT, Tetra Pak® Direct UHT
Category	Liquid food
Installation time	1 day (implementation*) 1 week (commissioning*) * If only software upgrade

Solution description

Hibernation mode reduces equipment capacity to a minimum by automatically (or manually) shutting off extra-cooling sections during each pre-set ‘hibernation’ phase. It thus reduces the need for steam, energy, cooling water, and iced water during sterile water circulation.

Benefits

- Reduce steam, water and electricity consumption by 60-90%*
- Save up to ~34 MWh energy per year
- Save up to ~411 m^3 water per year

* Compared with machine without hibernation, running at nominal capacity (15,000 l/hr). The exact % savings are equipment dependent.

Vacuum control in high shear mixers

Upgrade Name	Vacuum control in high shear mixers
Equipment	Tetra Pak® High Shear Mixer / Tetra Almix®
Category	Liquid food
Installation time	1 week (implementation)

Solution description

The vacuum control in high shear mixers allows you to reduce water and energy consumption by 25% and 50% respectively*. This upgrade consists of a water recycling unit with integrated temperature sensor and level switch to reduce water consumption, and a frequency converter to control the level of the vacuum.

Benefits

- Reduce water consumption by up to 25%
- Reduce energy consumption by up to 50%
- Get full integration to existing recipe control for high and consistent food quality
- Improve the working area (vacuum pump will not run continuously)

* Calculations based on Mixer R300-2500V, producing infant formula, running 5,000 hrs/yr.

Radial jet mixer

Upgrade Name	Tetra Pak® Radial Jet Mixer T, Tetra Pak® Radial Jet Mixer S
Equipment	Mixing tanks in beverage plants
Category	Liquid food
Installation time	1 week (implementation)

Solution description

The Tetra Pak Radial Jet Mixer T uses the latest mixing technology to reduce mixing time by up to 50%. The Tetra Pak Radial Jet Mixer S mixes up to four to six times faster than a traditional mechanical agitator.

Both models agitate liquids without mechanical force on the product and achieve fast results by creating turbulence at both low and high fluid levels. These mixers are ideal for dissolving solids in solvents, emulsions, dispersions, suspensions, aeration, chemical reactions and homogenising.

Benefits

- Reduce energy and water consumption by shortening mixing time by up to 90%
- Tetra Pak Radial Jet Mixer T reduces mixing time to 2-6 minutes for a standard beverage*
- Tetra Pak Radial Jet Mixer S reduces mixing time to 3-10 minutes for a standard beverage*
- Get a homogeneous mixing result independent of the filling level (10-100%)

Pressurised pre-sterilisation

Upgrade Name	Pressurised pre-sterilisation
Equipment	Tetra Pak® Indirect UHT B, D, and PF; TA Flex, TA VTIS, TA Drink, and TA Visco
Category	Liquid food
Installation time	5-10 days (implementation)

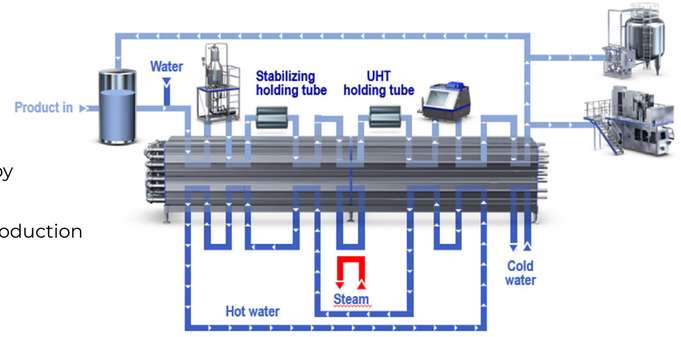
Solution description

Pressurised pre-sterilisation reduces energy and utility consumption and improves operational efficiency by shortening the start-up time of the pre-sterilisation phase.

During pre-sterilisation, hot water is circulated over the pressurised side in a closed loop, thus eliminating the need for cooling in the return line.

Benefits

- Reduce steam consumption by up to 22,000 kg per year
- Reduce water consumption by up to 80,000 litres per year
- Reduce annual CO_2/emissions by up to 4,400 kg per year
- Shorten start up time before production



* Calculation based on TA Flex or TA VTIS with 12,000 l/hr capacity, 300 pre-sterilisations/yr..

Insulation in tubular heat exchangers

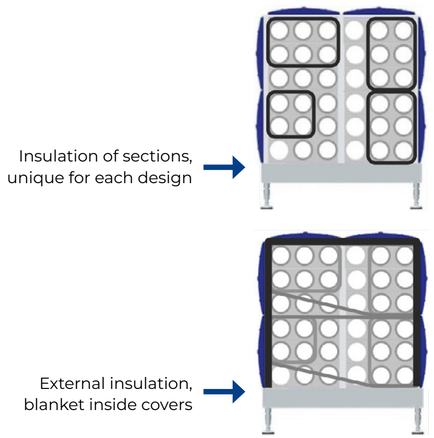
Upgrade Name	Insulation in tubular heat exchangers
Equipment	Tetra Pak® Tubular Heat Exchanger
Category	Liquid food
Installation time	Varies from case to case

Solution description

Insulation in tubular heat exchangers allows you to save up to 11% in energy overall.* Sections of the tubular heat exchanger are wrapped in a thin insulation blanket, and the whole frame is covered with a thicker insulation blanket. To maximise effectiveness, designs are tailored to the customer unit in question.

Benefits

- Reduce energy consumption by up to 11% with protective panels and insulation
- Reduce heat loss by up to 40% lowering both your running costs and carbon footprint
- Reduce the cost of cooling on site thanks to lower heat emissions from the heat exchanger
- Enhance safety on site with a 10-15°C lower heat exchanger surface temperature



* Comparing the energy consumed by Indirect UHT units without protective panels vs. with protective panels (6% savings) and with both protective panels and insulation (11% savings)

Homogenising device 100

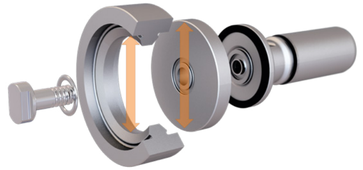
Upgrade Name	Homogenising device 100
Equipment	Tetra Pak® Homogenizer / Tetra Alex®
Category	Liquid food
Installation time	~1-2 days (Implementation), 1 day (Commissioning)

Solution description

In milk production, the design of your homogenising device can have a big impact on the amount of energy required to reach the desired homogenisation effect. By upgrading your homogenising head from HD1 to HD 100 or from HD 1 to HD EnergyIQ, you can reduce energy consumption by up to 26% per year.

Benefits

- Reduce energy consumption by up to 26% per year*
- Reduce operational costs and environmental impact thanks to lower pressure
- Increase uptime by up to 40% thanks to longer service intervals on pistons, seals, and bearings (prolong lifetime of wear and tear parts)



* Calculations based on Tetra Pak® Homogenizer 350 running 3.5% fat white milk at 200 bar, 30,000 l/hr, 6,000 hrs/yr.

Product-to-product (P2P) regeneration

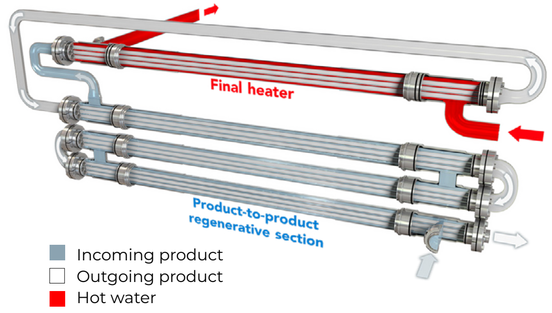
Upgrade Name	Product-to-product (P2P) regeneration
Equipment	Tetra Pak heating equipment
Category	Liquid food
Installation time	~1 week (Implementation and commissioning)

Solution description

Heat exchangers with product-to-product regeneration capabilities circulate hot product around the tubes/plates containing the product, rather than hot water. They use energy from already heated product to achieve the required sterilisation temperature and use incoming cold product to cool the already sterilised product down to package-ready temperature.

Benefits

- Reduce steam consumption by up to 718,000 kg per year by heating incoming cold product with hot product and cooling sterilised product to package ready temperature with the incoming cold product*
- Reduce overall energy consumption by up to 55%



* Calculations based on:CM vs CMR 125 running at 15,000 l/hr, 16 production hrs/day, and 300 production days/yr.

Mix-phase reduction

Upgrade Name	Mix-phase reduction
Equipment	Tetra Pak® Pasteurizer, Tetra Pak® Indirect UHT, Tetra Pak® Direct UHT
Category	Liquid food
Installation time	5 days (Implementation) requires production stop), ~2 days (Commissioning)

Solution description

Mix-phase reduction allows you to minimise product losses during change-overs between water and product, and vice versa. This is achieved by replacing or modifying the existing balance tank and/or valve solution, in order to optimise their functionality and shorten the mix-phase in water-product changes.

Benefits

- Reduce product loss by 150 litres per production cycle (at 15,000 litres per hour, translates into ~49,500 litres less product loss per year)*
- Reduce need for CIP detergent reduced with more accurate dosing
- Lower operational costs

* Calculations based on Tetra Therm® Aseptic Flex with "Low loss balance tank", annual production of 300 days, with 3 change-overs per day and a capacity of 15,000 l/hr.

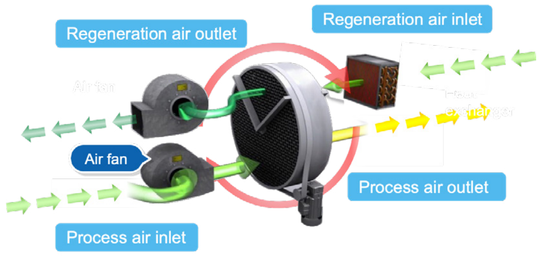
Processing upgrades – Cheese and powder

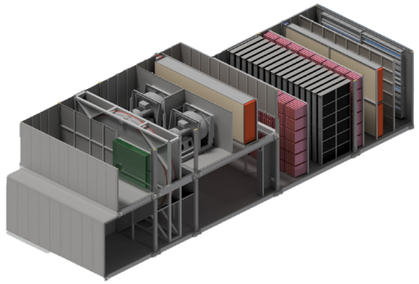
Dehumidification unit

Upgrade Name	Dehumidification unit
Equipment	Tetra Pak® Dryers / Stork
Category	Cheese and powder
Installation time	2 weeks (implementation)

Solution description

The dehumidification unit removes moisture from the air in your spray drying operations using a silica gel surface to absorb water molecules during operation. This facilitates the production of complex, sticky powders such as infant formula with syrups or GOS and FOS at a 15-30% higher capacity with lower energy consumption per unit of output.





Benefits

- Reduce energy consumption by 15-20% while producing the same amount*
- Increase capacity of complex powder products by 15-30%**
- Fewer production stops
- Less CIP time required

* Calculation based on a real-world customer case.
** Additional capacity 6.6 k€ (additional 9,110 tonnes/yr).

Low temperature kit

Upgrade Name	Low temperature kit
Equipment	Tetra Pak® Continuous Freezers
Category	Ice cream
Installation time	2 days (installation), 1 day (testing)

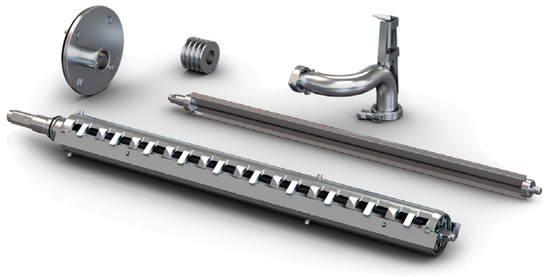
Solution description

Use of Tetra Pak® Continuous Freezers enables stable production of ice cream with, typically, an additional 2-2.5°C lower draw temperature and about 10-12% more pre-frozen water, depending on the actual ice cream recipe.

The kit enables energy savings of up to 15% per litre of finished product, achieved by reducing the energy added by the dasher and reducing the pressure drop-out through the front cover and the start-up valve.*

Benefits

- Reduce total kWh per litre energy finished product by up to 15%
- Freeze water more efficiently, and add a higher proportion of frozen water before the product enters the hardening system
- Shorten time in the hardening tunnel from 10 to 6 hours
- Reduce the amount of energy consumed by the cooling system in the hardening tunnel and by the air circulation fans
- Increase the freezing effect – system designed to expend less energy on churning



* Calculations based on a KF1000 + Wing beater kit.

Control upgrade for freezers

Upgrade Name	Control upgrade for freezers
Equipment	Tetra Pak® Continuous Freezers
Category	Ice cream
Installation time	1.5 weeks per freezer on-site, depending on local support (installation and commissioning)

Solution description

The control upgrade for freezers reduces your energy consumption thanks to faster start-up of the freezer and higher accuracy in the output of ice cream mix. Suitable for any computer-controlled Tetra Pak® Continuous Freezer, it involves the replacement of all critical parts and automation components to bring your machine/s up to the latest advanced CF state or F1 (on request).

Benefits

- Reduced energy consumption by up to 13,800 kWh per year*
- More consistent output, reducing production costs and improving quality
- Lower product loss and less rework

* Calculations based on 4-minute time reduction on each start-up, and lowering standard deviation in output from 2% to 1%. This gives potential combined savings of ≈62 k€/yr. Energy savings of up to 13.800 kWh.

Pressure distributor

Upgrade Name	Pressure distributor
Equipment	Tetra Pak® Extrusion Tunnels, Tetra Pak® Ice Cream Filling machines,
	Tetra Pak® Molding machines, third-party equipment
Category	Ice cream
Installation time	5 days (Implementation), ~2 days (Commissioning)

Solution description

Mix-phase reduction allows you to minimise product losses during change-overs between water and product, and vice versa. This is achieved by replacing or modifying the existing balance tank and/or valve solution, in order to optimise their functionality and shorten the mix-phase in water-product changes.

Benefits

- Reduce product loss by 150 litres per production cycle (at 15,000 litres per hour, translates into ~49,500 litres less product lost per year*
- Reduce need for CIP detergent reduced with more accurate dosing
- Lower operational costs

* Calculations based on Tetra Therm® Aseptic Flex with "Low loss balance tank", annual production of 300 days, with 3 change-overs per day and a capacity of 15,000 l/hr.

Tetra Pak® Airless Chocolate Spray

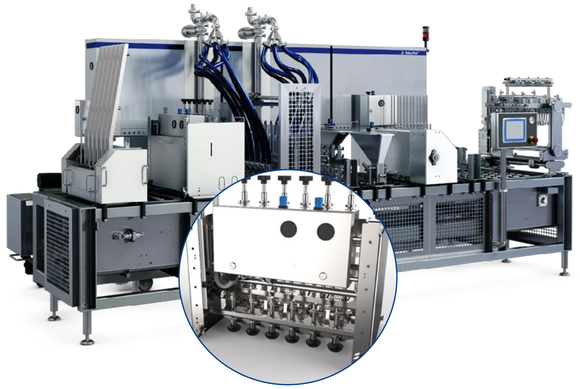
Upgrade Name	Tetra Pak® Airless Chocolate Spray
Equipment	Tetra Pak® Extrusion Tunnels, Tetra Pak® Ice Cream Filling machines,
	Tetra Pak® Molding machines, third-party machines
Category	Ice cream
Installation time	1 day (piping and fixtures), ~4 hours per distributor (installation)

Solution description

The Tetra Pak® Airless Chocolate Spray for cone impregnation can save you up to 9kg of chocolate per hour. It achieves this with a series of features that reduce give away, eliminate inconsistencies, and prevent the chocolate nozzles from clogging up.

Benefits

- Save 0.5 grammes chocolate per cone (at 18,000 cones per hour) with volumetric chocolate dosing that reduces give away*
- Reduce product losses with air flush feature that cleans chocolate nozzles when idle



* Calculations based on 50% improvement in deviation, reducing waste value of 84K€. Typical savings of 0.5 grams per cone (at 18,000 cones/hr).

Processing upgrades – Ice cream

Tetra Pak® Cone Dispensing unit

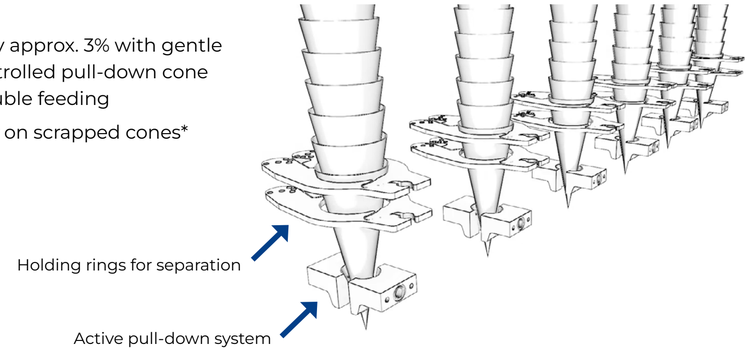
Upgrade Name	Tetra Pak® Cone Dispensing unit
Equipment	Tetra Pak® Ice Cream Filling machines A2/A3, CometC/ C2, Comet N, Fillmark, Cattani,
	Viking, and third-party machines
Category	Ice cream
Installation time	1 day (installation), 3-4 days (commissioning)

Solution description

The Tetra Pak® Cone Dispensing unit can dispense cones on up to six lanes on a filling machine. Thanks to gentle handling, holding rings, and a carefully controlled pull-down cone system, it reduces the number of scrapped cones and reduces your ingredients costs.

Benefits

- Reduce product losses by approx. 3% with gentle handling, and a well-controlled pull-down cone system that prevents double feeding
- Save up to 69K€ per year on scrapped cones*



* Calculations based on production 3,200 hrs/yr, 6 lanes, and 50 strokes/min: 300 products (cone costs minimum 0.04 €/unit).

Packaging upgrades

Optimise your packaging equipment for reducing energy, water, and waste.

Additional external cleaning

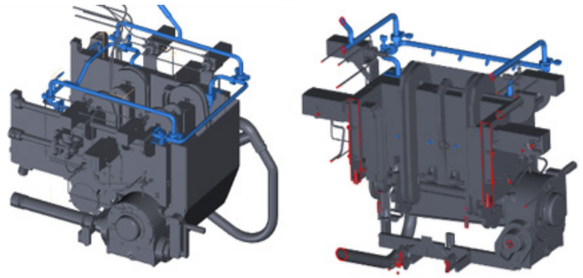
Upgrade Name	Additional external cleaning
Equipment	Tetra Pak® A3 Compact Flex, Tetra Pak® A3 Speed
Installation time	22 hours

Solution description

Additional external cleaning consists of additional nozzles (both static and rotating) which are placed in certain strategic areas of the jaw system, final folder unit and waste conveyor of your Tetra Pak® A3 filling machine, leading to annual water savings of up to 50 m³ per machine.

Benefits

- Reduce water consumption by up to 50 m³ per year thanks to improved cleaning efficiency
- Reduce manual cleaning time by 40-50%, thereby reducing labour costs and increasing available production time*
- Improvement of the overall hygiene level of the equipment, leading to a reduction of corrosion impact



* Calculations based on 220 cleaning cycles/yr, (Daily care) on Tetra Pak® A3 Compact Flex and/or Tetra Pak® A3 Speed

Water filtering station

Upgrade Name	Water filtering station
Equipment	Tetra Pak® A3 Flex, Tetra Pak® A3 Compact Flex, Tetra Pak® A3 Speed, TBA/19, TBA/22, TBA/8
Installation time	2-3 days (installation, depending on layout)

Solution description

The water filtering station collects used water from the sterile air compressor and cooling media compressor, then neutralises the residues of hydrogen peroxide so the water can be recirculated back to your filling machine.

Benefits

- Reduce water consumption by up to 22,000 m³ of water per year* by re-using up to 90% of the wastewater from your filling machines
- Improve the lifetime of components by recirculating filtered water that's free from contaminants (which eliminates build-ups)

*Calculations based on 3 x Tetra Pak® A3 Speed running 4,000 hrs/yr.

Packaging upgrades

OK ice water

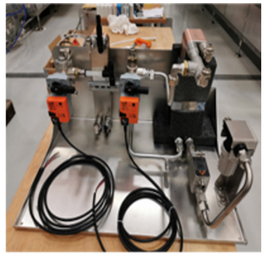
Upgrade Name	OK ice water
Equipment	Tetra Pak® A3/Speed 0300, 0400, 0500
Installation time	7 hours

Solution description

OK ice water is an optional kit that makes use of a centralised ice water system to provide chilled water rather than using the internal compressor unit of your Tetra Pak® A3/Speed 0500. The result is a reduction in water consumption of up to 15 litres per minute, and potential annual savings of up to 3,600 m^3 per filling machine.

Benefits

- Save up to 15 litres of filling machine water consumption per minute*
- Reduce annual water consumption by up to 3,600 m^3 per filling machine



* Calculations based on 4,000 running hrs/yr compared to standard A3/Speed configuration.

MicroDry® Lubrication

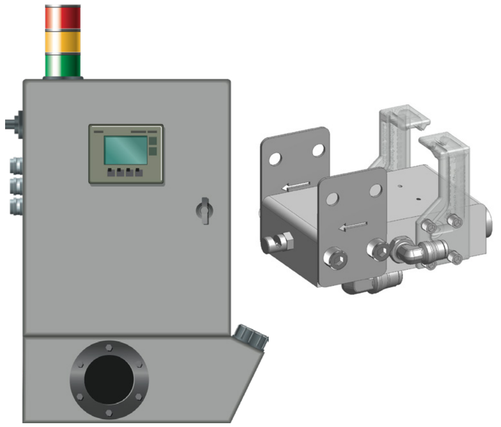
Upgrade Name	MicroDry® Lubrication
Equipment	All Tetra Pak conveyors: PC21, PC23, UC24, Cardboard Packers and Accumulators
Installation time	Depends on the line layout

Solution description

Suitable for both single and multi-line conveyors, the MicroDry® Lubrication unit lubricates your conveyor chains with a non-water-based lubricant. It does so in a precise, uniform way, completely eliminating the need for water.

Benefits

- Save up to 110m^3 per year by reducing / eliminating water consumption for conveyor lubrication
- Lubricant is 100% water and silicon free (required annual consumption under 10 litres)
- Reduce overall energy consumption since less power needed to drive conveyor motors



* Calculations based on a standard Tetra Pak® line: 6 x Package Conveyor 23 + Helix + Cardboard Packer running 4,000 hrs/yr.

UK DIMC servo toolbox

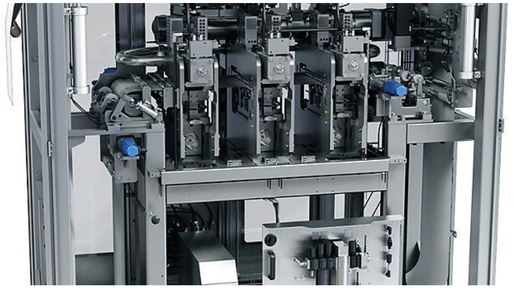
Upgrade Name	UK DIMC servo toolbox
Equipment	DIMC Tetra Pak® A3/Flex 0200-0400
Installation time	42 hours

Solution description

Implementing a DIMC servo-driven toolbox on your Tetra Pak® A3/Flex 0200-0400 filling machine in place of pneumatic cylinders leads to savings in compressed air, as well as noise reduction and several other important benefits.

Benefits

- Reduce consumption of compressed air by up to 120,000 m^3 per year (equivalent to 8,500 kg CO_2e)*
- Eliminate the need for compressed air for cylinders movement (-500 Nl/min)
- Eliminate the need to replace your pneumatic cylinders every 3,000 hours
- Reduces noise levels in the operating environment



* Calculations based on 4,000 running hrs/yr.

UK ASU paper reel reserve

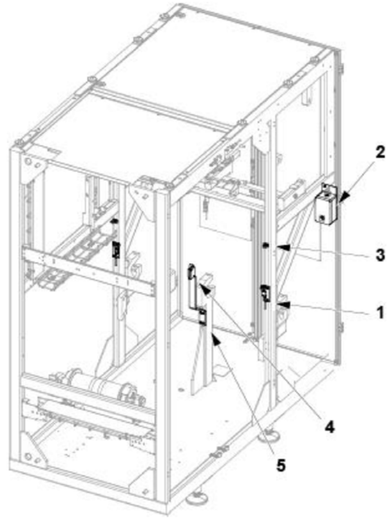
Upgrade Name	UK ASU paper reel reserve
Equipment	Tetra Pak® A3Flex 0300-0400, Tetra Pak® A3 Speed 0300-0400
Installation time	6 hours

Solution description

The UK ASU paper reel reserve is an upgrade kit designed to reduce energy consumption by 40-50%. It does this by lowering the temperature of the sealing bar when the running reel is almost full and raising it again when the reel is nearly empty.

Benefits

- Reduce annual anergy consumption by up to 1,600 kWh*
- Reduce energy consumption by 40-50%*
- Improve sealing bar lifetime



* Compared with an A3/Speed running 4,000 hrs/yr without kit installed.

UK oil filtering unit

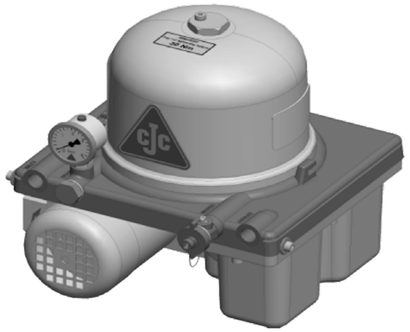
Upgrade Name	UK oil filtering unit
Equipment	Tetra Pak® A3Flex, Tetra Pak® A3 Compact Flex
Installation time	10 hours

Solution description

The UK oil filtering unit is an upgrade kit consisting of a coalescence filter for hydraulic system oil. By removing insoluble particles, oil degradation products, and water, it extends the lifetime of your hydraulic system oil from 2,000 to 4,000 hours.

Benefits

- Reduce hydraulic oil consumption by 60 litres over a three-year period*
- Double the lifetime of hydraulic oil from 2,000 to 4,000 hours*
- Reduce the risk of filling machine breakdowns due to oil contamination and degradation*



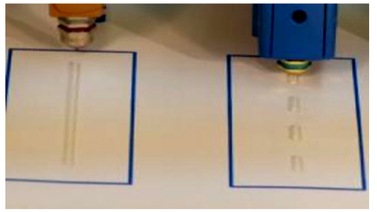
* Compared with a filling machine running 4,000 hrs/yr without the oil filtering unit installed.

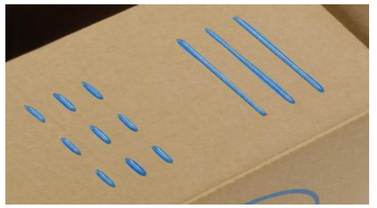
UK EcoDot

Upgrade Name	UK EcoDot
Equipment	Tetra Pak® Cardboard Packer 32 and Tetra Pak® Cardboard Packer 70
Installation time	8 hours

Solution description

UK EcoDot is a hotmelt gun system which delivers short, intermittent beads of hot melt instead of a single continuous line, reducing the overall amount of hotmelt consumed. On the Tetra Pak® Cardboard Packer 70, this is achieved by a new pattern generator installed in line with the glue guns. The Tetra Pak® Cardboard Packer 32 on the other hand, has an embedded EcoDot function on the user-interface.





Benefits

- Reduces hotmelt consumption by 15-30%, depending on the type of distribution unit
- Can save up to 900 kg of hotmelt per year*

* Calculations based on production of 24 million packs/yr and 12 packs per box.

Customer stories

Helping AMC GLOBAL increase production capacity without increasing wastewater

We worked with AMC GLOBAL, a leader in the production of chilled drinks, to increase their production capacity without increasing wastewater. This was achieved by installing an **ECO cooling homogeniser** at their main bottling site in Vlissingen in the Netherlands. It reuses water to cool the homogeniser, saving AMC Vlissingen 10,000 litres of water per day – which is equivalent to 3 million litres per year.[7]

The team involved employees from engineering, sustainability, and production and has enabled AMC GLOBAL to serve more European shoppers with high-quality oat drinks, while contributing to delivering the company's sustainability plan.

7. Compared with the amount of water used in production during the previous year, www.amcnatural.com

Creating a customised water-saving solution for a Middle Eastern dairy

One of our customers is a large dairy located in a water-scarce region of the Middle East. Operating with older control platforms and lacking proper communication between the UHT equipment, aseptic tanks, fillers, and CIP machines, the dairy found it was consuming unnecessarily high volumes of water and chemicals.

We worked together to develop and implement a **tailor-made upgrade package** which would bring their operations in line with the latest technological standards. Our solution included a customised upgrade of the dairy's control panels to the TIA portal platform, the conversion of ALCIP 100 machines to the latest CIP platform, and the activation of a water plug function to save 90% of rinse water volumes.

Thanks to close collaboration between the customer and our automation and process teams, we were able to reduce the dairy's water use by 10 million litres per year and their chemical consumption by approximately 6%.

Implementing OPEX (operating expenses) optimisation upgrades at Spanish customers' sites

Following a rapid rise in energy costs in 2022, several Spanish customers sought assistance to reduce their energy consumption, aiming to do so without compromising product quality or extending running time beyond what was necessary.

Our proposed solution involved adding the **UHT indirect mode** to equipment that had previously operated only in UHT direct mode, which has a higher steam consumption. We also introduced other improvements, such as a **new control cabinet** and **mix phase reduction**.

Between 2022 and 2023, these upgrades were implemented across seven UHT lines, resulting in a 70% reduction in energy consumption, primarily steam, for each line.

Thanks to careful calculations and precise adjustments to processing parameters, the impact on product quality and operational time was minimal. Moreover, our customers experienced a return on investment within a few months.

Helping Liquats Vegetals reduce water use

Liquats Vegetals is a plant-based beverage producer in Catalonia, Spain. Due to a severe drought in the region, water restrictions were put in place in March 2022. Liquats Vegetals wanted to reduce water use in their production process. We worked with them to introduce an innovative water-saving solution that maintained production efficiency, particularly during peak demand periods.

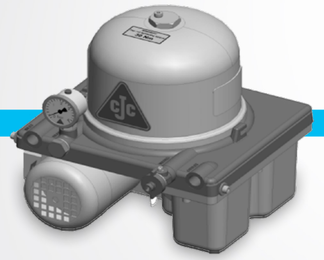
The solution was to install **water filtering stations** for filling machines to collect and treat the water used by a sterile air compressor and a cooling media compressor. This technology effectively eliminates residues of hydrogen peroxide so the water can be recirculated to the filling machines, which resulted in an increase of water recycling rate of up to 95%. The average volume of water filtered daily is 50 m^3, resulting in annual savings of 12.9 million litres, based on the company's production activities in 2023.

Enabling 80% water savings for a plant-based beverage producer in Southern Europe

One of our customers in Southern Europe, who produces plant-based beverages using Tetra Pak® A3/Flex 1000 Edge filling machines, encountered issues with wet lubrication and manual cleaning of conveyors on their two distribution equipment lines. To address these challenges, we recommended the installation of **MicroDry® All-in-One Lubrication and Cleaning**.

This packaging upgrade lubricates conveyor chains with a non-water-based lubricant, thus completely eliminating the need for water in the producer's conveyor lubrication. This is now saving the customer around 450m³ litres (80% of water consumption) per year. At the same time, it reduces overall annual energy consumption, and eliminates the need for operators to manually clean conveyors, freeing up 45-60 minutes daily for them to spend on other tasks.

Following on from these good results, the customer later decided to add MicroDry® All-in-One Lubrication and Cleaning to two new Tetra Pak® A3/Speed distribution equipment lines In addition to the benefits mentioned above, this upgrade reduces the risk of mould contamination and of operators slipping on wet floors.



Extending the lifetime of hydraulic oil in filling machines

In a bid to reduce oil consumption and costs, many food and beverage producers seek to extend the lifetime of hydraulic oil in their filling machines. However, they must avoid moisture and contamination getting into the oil, as this can cause hydraulic system failures and lead to unpredictable production stops.

By installing an **oil filtering unit** on their Tetra Pak® A3/Compact Flex and Tetra Pak® A3/Flex filling machines, we helped an Asian customer extend the lifetime of their hydraulic oil. This reduced their hydraulic oil requirements and lowered their costs, while also making their production more reliable. With the oil filtering unit in place, not only is less oil required overall, but the oil and filters can be changed less often, thereby also lowering maintenance costs.

Since the installation, this customer noticed an overall reduction in total cost of ownership, and consequently requested two more oil filtering units be installed on a further two filling machines.

Explore your upgrade options

If you’d like to learn more about which equipment upgrades you could use to reduce water, energy, and waste in your production, get in touch today.

Our experts will identify the right upgrades for your operations so that you can accelerate progress towards your sustainability targets while also reducing your operational costs.

Tetra Pak®
PROTECTS WHAT'S GOOD