



Moving food forward. Together.

Processing with Tetra Pak





Mmmozzarella!

Getting the long stretchy structure that people expect in their pizza cheese is an art. The secret is to monitor the level of acidity in the curd and work within the short window of opportunity between the pH values of 5.35 and 5.10, which usually only lasts 15 to 20 minutes. Cheese that achieves the ideal level of acidity usually also has good meltability, good shredability, good browning properties and has a good protein structure in the extruded form, with low oiling and blistering.



Boost sales, trim costs, create something new

Everyone in the food industry wants to boost sales, trim costs or come up with a taste sensation that takes the world by storm. Preferably all three. Today's business is all about finding ways to gain that elusive competitive edge. You know it. We know it. The question is, how to do it?

Work with the food processing specialists

We enable brands in the cheese, dairy, prepared foods, ice cream and beverage businesses to find ways to move forward. Our strong focus on processing solutions for the food industry puts us in the best position to understand your business and offer just what you need to achieve a given result – to help you innovate, become more profitable, and grow.

Never compromise on food safety

As the innovators in aseptic processing and packaging, you can rely on us to take this topic as seriously as you do. Our food safety credentials are well established, and we continue to develop these credentials in every aspect of our business – from the design of our equipment, through microbiological research, to participation in and adherence to international food safety regulations.

Benefit from more innovation

With 20–30 product launches per year, Tetra Pak keeps introducing smarter, safer and more costeffective food processing technologies. The hardware, software and services we provide are all continually being refined and our offering revitalized to keep a step ahead of the industry's evolving needs. At the same time, we strive to help you satisfy consumers hunger for novel food products. Innovating with Tetra Pak's experienced food technologists at one of our Product Development Centres (PDCs) can help take your products to whole new levels of flavour and variety.



ICE CREAM BEVERAGES DAIRY PREPARED FOODS CHEESE

Demand the service you deserve

Whatever the size or geographic reach of your company, you deserve personal and professional service – throughout your journey from first idea to packaged product. As a customer you get all the benefits of proactive innovation: regular equipment upgrades, new service products, new automation software, product development ideas and much more. We're always there when you need us, with our reliable local service engineers offering front line support backed up by a team of global experts.

And get it all from one supplier

With over 60 years' experience, worldwide operations and highly skilled people – engineers, food technicians, microbiologists, software developers, project managers and more – the breadth and depth of Tetra Pak's food processing offer are hard to beat.

We all want to trim costs...

We are proud to have been involved in some game-changing breakthroughs in recent years. Our latest aseptic processing and packaging lines improve efficiency to help producers drive down costs. Our dairy lines with OneStep technology deliver dramatic results compared with conventional UHT solutions.

- Shortens processing time by up to 90%
- Cuts operating costs by up to 50%
- Reduces energy consumption by more than 40%
- Reduces water consumption by as much as 60%
- Cuts product loss by up to 33%





...tread lightly on the planet

To help your business meet increasing environmental demands, we strive to optimize the use of raw materials, energy and water. The result is often both a reduction in environmental impacts and operational costs. Here are a few things you can do.

Fine-tune pasteurization

Detailed microbial analysis and testing in our R&D labs indicate that beverage manufacturers may be over-cooking high-acid beverages. Lowering the temperature in the second pasteurization can lead to a 20% reduction in both energy consumption and carbon footprint, while maintaining product quality.

20% ENERGY REDUCTION

Use less water

Let's join forces with the help of our water-saving technologies.

- Focus on smart CIP minimizing water consumption in every step of cleaning
- Use closed circuits for efficient cooling of equipment. One Egyptian dairy recently achieved savings of 600,000 litres per day.
- Apply reverse osmosis (RO) filtration to evaporator condensate, and re-use water for the steam boiler



BOOK A PERFORMANCE ASSESSMENT!

Find out how you can reduce water and energy consumption, as well as minimizing product losses and release of effluents.

No chocolate waste, please

Precise processing equipment helps prevent unnecessary and costly waste. One good example comes from the Tetra Pak Ice Cream Filler A3. Its highly advanced chocolate sprayer covers the inside of each cone with just the perfect amount of chocolate to prevent it from getting soggy. The result? A 50% cut in waste, equal to 9 kilograms of chocolate per hour!*

Try smart homogenization

HD EnergyIQ for homogenizers can cut your energy costs and carbon footprint by up to 50%. This patented, pioneering design requires less pressure – typically 40–50 bar less – to achieve the same product quality.



Using HD EnergyIQ in Tetra Pak® Homogenizer and running a 3.5% white milk at a NIZO of 85% (at 45,000 l/h), you can lower the pressure by 33% and hence reduce energy consumption and costs by 33%.

*production scenario 18,000 cones/hour

...and attract consumers with safe and exciting products!

What would happen if you increased homogenization pressure or changed the temperature? How do you go from a retort process to a UHT process... or from a batch process to a continuous process? Or maybe you'd like to get a 'Clean Label' product. Could you change your process parameters to achieve this?



PDC

At your service

At our Product Development Centres, we help you innovate successfully. Our food processing experts are on hand to help fine-tune your recipes and design the perfect processes to make your products taste, look and behave just right.



How can our Product Development Centres help you? See 10 examples here!

Flavours and textures under full control

Thanks to the combination of the Tetra Pak® PlantMaster plant automation system and our high-accuracy equipment, we ensure that your food product will always have the same flavour, appearance and texture. This also provides full traceability throughout the whole value chain – from cow to consumer.



Food on the move

On the following pages we showcase a few examples of how we have helped customers in the ice cream, beverage, dairy, prepared food and cheese businesses to move their brands forward.

Read more on pages 12–31



Trends, trends, trends...

Consumers' desire for green, healthy, safe, on-the-go food products just keeps on growing. See our Food & Packaging Trend Report for a fresh update.



Scan me for a trend report!



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Ice cream is one of the world's favourite desserts. Consumers enjoy being tempted with new frozen treats. Manufacturers generally renew their range by about 30% each year to meet the demand for novelty. And with 80% of the products' value residing in the ingredients, it pays to get the new product formulations just right.

Kasper Madsboell Business development Ice Cream "

ICE CREAM

Cones Sandwiches Snack-bar & bite size

Sticks

Cup & bulk

lce cream powder

Consumables



Scan with QR reader for more product information

One of our Product Development Centres is 100% dedicated to ice cream trials, so we can help you innovate successfully, and provide you with the right equipment to maximize production efficiency. For high-volume production, we offer tried and tested lines that minimize product waste and enable accurate dosing of expensive ingredients, to ensure you get a good quality end product that doesn't eat up your margins.

ICE CREAM



Tetra Pak[®] Ingredient Doser 4000 A2

Designed for the continuous and accurate injection of free-flowing or viscous ingredients into ice cream or similar products.

- Accurate dosing of ingredients of all sizes
- Gentle handling of sticky or fragile ingredients
- Low operational costs and low TCO overall enhance profitability

A tasty morsel in every mouthful

One of the things that make this global ice cream brand so popular is the addition of chunky extras like chocolate biscuits or cookie dough. These delicious ingredients need to be spread evenly throughout the tub so that everyone gets their fair share. Thanks to our Tetra Pak[®] Ingredient Doser 4000 A2, they are.

Designed to evenly distribute fruit pieces, nuts, candies and other ingredients into ice cream, this machine enables highly uniform product quality, with less give-away, less waste and lower costs. At the same time, it assures gentle handling, enabling the use of fragile ingredients.

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Particulate products? Coconut water? Horchata? It's a thirsty planet, and with 1,500 new beverages hitting the shelves each month, there is hot competition for every gulp consumed. Tetra Pak can help you compete successfully in this busy arena – supporting you to anticipate the trends and satisfy novelty-hungry consumers.

Katarina Ternström Business development Beverage "

BEVERAGES

Juices Still drinks Particle drinks Carbonated soft drinks Soy Tea

Coconut water





The natural sports drink

Coconut water is all the rage. The number of new product introductions in this category has increased exponentially in the last few years, and products containing coconut water have taken off on an international scale. This astonishing boost in popularity is partly due to advertising campaigns starring Madonna and Rihanna, who describe coconut water as the natural sports drink. Science supports their claims: one study reported that coconut water consumed after exercise-induced dehydration was significantly more hydrating than other sports drinks. A whole series of other benefits including lower blood pressure, reduced cancer risk and better heart health are also under investigation.

Considering adding coconut products to your portfolio? Interested in learning more about handling this sensitive product? Experts at our **Product Development Centre** in Singapore are on hand to help you get started.

Get the Coconut Handbook

This 183-page reference book from our experts in Singapore includes useful technical information as well as notes on the health and nutritional benefits of this versatile delicacy.



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If there's one supplier of processing solutions that's really equipped to help you handle the challenges of the dairy business, it's Tetra Pak. Our experts thoroughly understand the complexities of dealing with this sensitive product, in all its forms. Academics agree! Tetra Pak's Dairy Processing Handbook* is often used as a reference in university studies.

Frederik Wellendorph Business development Dairy

*Order your copy on QR Code.



DAIRY

UHT milk

Pasteurized & ESL milk

Cream

Flavoured & formulated products

Fermented dairy products

Concentrated & condensed milk

Milk powder

Recombined milk

When one leading US supplier of cultured dairy products sought to expand their capacity for Greek yoghurt, they jumped on the opportunity to run comparative tests at the PDC. Testing our new filtration techniques, they were impressed by the creamy, high-quality end product. Their new, Greek-style yoghurt is now available in US supermarkets and selling well!



Scan with QR reader for more product information

DAIRY



Ultra filtration

The ultra-filtration technology for continuous production gives superior quality yoghurt. Benefits include:

- Low running costs and easy maintenance
- Flexible production for different fat contents
- Higher protein retention for improved yield
- No fat loss to the permeate
- Proven technology

Authentic style Greek yoghurt

Tetra Pak is continuously developing new filtration methods to help producers achieve the right consistency in Greek yoghurt. Our latest innovation, based on ultra-filtration technology, only extracts the permeate with no fat content. Besides superior product quality, the new method generates up to 50% higher protein retention and boosts yield by up to 10%. If you're looking for the best filter types and operating conditions for your product, we invite you to try out different membrane filtration units at our Product Development Centre in Lund.

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Tetra Pak works closely with producers to not only replicate but actually improve traditional recipes. We help you offer consumers greater convenience in preparation and eating on the go, whilst reducing the sugar, fat and additives they spurn. We also suggest ways to add value to your products, helping defend them against commoditization and securing your long-term profitability.

Dan Björklund Business development Prepared Food

PREPARED FOODS Soups Tomato preparations Baby food Sauces Fruit preparations Desserts

Wrong cuts? Great! Whilst we've been developing new techniques for protecting particle integrity during processing, it turns out that our customers' preferences have also matured. In the production of vegetable soups, for example, they often welcome 'wrong cuts'. It's because oddshaped vegetables make the soup seem more homemade... and that's what the market wants!



Scan with QR reader for more product information



PREPARED FOODS



The Tetra Pak[®] Coiled Heat Exchanger

Efficiently heats and cools low- and high-viscosity food products, with or without particles.

- Enables high capacity processing of high-viscosity products
- High heat transfer efficiency minimizes system volumes
- Gentle treatment ensures excellent particle integrity up to ø 25 mm
- Designed for high hygiene and low maintenance





Healthy babies, healthy business

Baby food, an especially fast-growing category, is characterized by strong, science-driven innovations that add value and care for the baby, beyond its mere nutritional needs. One of the main challenges our customers face is how to prevent overcooking ingredients and maintain product quality. When a North American producer of our natural, organic baby food wanted to modernize their production, we supplied them with a Tetra Pak® Indirect UHT unit PFF based solution. At the heart of the system is the coiled tubular heat exchanger designed specifically for products with high viscosity and particles. It not only processes such products very efficiently, but also offers excellent heat transfer rates and successfully preserves product quality.



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Recent years have seen a boost in global cheese consumption along with the westernization of South East Asia's dietary habits. Bulk production is at an all-time high, but margins are still slim. We can help you increase plant capacity and take advantage of global trends in a profitable way. Our industry leading technologies deliver superior efficiency in all kinds of cheese production, from the highest volumes down to 150,000 litres per day.

Jaco Baron Business development

CHEESE

Cheddar Edam & Gouda Pasta Filata Emmental Whey

Take your drying operation to the limits!

Getting the ideal flow in and out of the dryer – as well as inside the dryer itself – is the key to drying performance. But what is the ideal flow for your production line? Tetra Pak's Computational Fluid Dynamics (CFD) model gives you a quick, clean way to find out. At 5,500 CPUs, our in-house computer cluster is the most powerful in the industry. It can simulate the behaviour of the most complex drying operations.



Industry unique – Tetra Pak[®] Casomatic system

This unique equipment provides a fully automatic and continuous system for whey drainage, pre-pressing, accurate cheese block formation and mould filling in one sequence. It is used for the production of hard and semi-hard cheeses. Adding a de-wheying screen enables it to be used to produce granular varieties, too.



Scan with QR reader for more product information



CHEESE

Validating the equipment together

A great example of a working partnership is the case of the major Dutch cheese manufacturer that teamed up with Tetra Pak to help validate the performance of a new Tetra Pak® Casomatic system. The equipment was installed at one of the production sites, and Tetra Pak employees worked with the customer's own staff to improve and fine-tune it for optimal performance.

On the basis of the test results, the customer decided to buy a commercial fourcolumn Tetra Pak® Casomatic system SC7. They are now producing more efficiently than ever. Downtime has been reduced, operational costs are lower, and cheese and whey quality are higher. The jointly targeted performance criteria for microbiology, moisture and weight accuracy have actually been surpassed, and product waste has been reduced by around 95 percent!

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So where do you want to go?

There are lots of ways to move your business forward. Whichever you choose, a trusting long-term partnership is the best route to success. In fact, we're convinced there is no other way. The more we understand about what you want to achieve, the greater the likelihood of success.



Expand into new geographies

Food traditions vary so much from country to country. Just how thick and creamy do North American consumers want their yoghurt to be? What colour do Scandinavians consider normal for vanilla ice cream? As a global company with a strong local presence, we have the answers to questions like these, and can help you meet local expectations, anywhere in the world.



Increase production capacity

When you see new growth potential, you don't want to wait around. Talk to us about finding the smartest and fastest way to ramp up production. With 1,350 experienced process engineers and project managers, working from three global hubs and five regions around the world, we are well equipped to help.

Develop new products!

When you're creating a new product, you need a partner that knows how the food behaves during processing. Tetra Pak's Product Development Centres are staffed by experienced food technologists and process engineers, and equipped with pilot plants for small-scale commercial trials. We're always on hand to help you innovate successfully.



Optimize production

Cost optimization is also an enabler of growth, ensuring the profits you need to fuel your business expansion plans. Together we can study where savings are possible – with new recipes, process improvements and reductions in the use of utilities.

Here's how we take you there...

When starting up a new engineering project, we apply a rigorous and proven business approach called UCCD. It stands for Understand, Create, Convey and Deliver. Our 1,350 experienced process engineers and project managers, working from three global hubs and five regions around the world, are trained to follow the steps of UCCD. Thanks to their professionalism – and sometimes challenging questions – you can be sure of ending up with the right solution. Here's how it works:





First, we work together to **understand** exactly what you need to achieve a given ambition. How well a project turns out owes most to the efforts made in this step. Agreeing on the requirements – whether you need a single equipment module or a completely new plant – requires careful planning and forethought. We then **create** a proposal for a customized solution combining the appropriate hardware, software and service products, with a focus on long-term operating costs. This step includes the technical design and any decisions about how the solution will be delivered.

In real life

Our UCCD approach was put to the ultimate test when Vietnam's Vinamilk asked us to build a state-of-the-art production facility, with 17 production lines and an annual capacity of 400 million litres. Vinamilk has ambitions to become one of the world's top 50 dairies, with over \$3 billion revenues by 2017.

We delivered a fully integrated plant, in which the individual machines work together "as one" to deliver optimal performance, with high efficiency and the best possible prerequisites for food safety.

A. Tetra Pal



The first two steps results in a complete set of documentation and drawings, covering all the requirements, the design, service agreements, project timetable, price and payment terms, etc. We **convey** this solution to you to ensure complete alignment on the scope of the project. Last, we **deliver** according to the contract and performance guarantee – following the time plan and the scope of supply, and dealing professionally with any changes that have arisen unexpectedly along the way.

....with a clear cost picture, up front

Have our specialists to carry out a production improvement study using our proven TCO tool. At a large dairy customer in Asia we recently identified over 100 improvement opportunities, potentially reducing TCO by 5.3% and improving environmental performance throughout the plant.



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In my ten years at Tetra Pak I've worked on some really exciting projects. Developing the TCO* method was definitely one of the main highlights. This method gives us a common understanding of lifecycle costs and a clear, comprehensive way of calculating where the money goes. It does away with speculation. In fact, it has revolutionized the way we talk to customers.

Johan Braks – Global Owner Plant Performance & Life Cycle Cost "

* Total Cost of Ownership

And we keep delivering!

Of course, you want the most reliable, best performing equipment. As few headaches as possible. Minimal downtime. Consistent end product quality. Ideally, you also want equipment performance to improve over time. That's why Tetra Pak offers a portfolio of service solutions that ensure everything works and keeps working, just as it should. We establish a lifecycle service relationship that not only ensures performance today, but continuously adds value to your installed base.

A service solution to suit you

Since every customer's needs are different, we customize each service package based on the three stages of the plant's life cycle: from line validation to securing performance, to improving it.

Local service, global back-up

To help you handle the unexpected, our local service engineers are always ready to step in when needed. Tetra Pak's global experts provide a second tier of support to certified engineers in the field. Spare parts are always available through our efficient logistical network. With about 70,000 items in stock, we can meet most needs. If not, we offer an emergency hand-carry service to fly the part out to you, anywhere in the world.



How well is your line or plant performing?

Why not book a Performance Assessment with Tetra Pak and find out. Recommendations are always customized to match your specific business drivers, taking factors like the local price of utilities and food safety requirements into account. In one plant-wide Performance Assessment recently carried out at an Asian customer, our experts identified 102 potential improvements, worth 400,000 euros per year.

Discover intelligent customization

Every line we build is customized, because every customer situation is different. So, how can we be sure your production line will meet all the performance criteria for parameters such as running time, food safety, traceability, food quality, water usage and energy consumption... and still keep costs under control? Find out on the following pages.



EQUIPMENT

Seamless integration with the Tetra Pak® PlantMaster automation solution gives you control of the entire production from processing to packaging and logistics. Based on open industry standards and production know-how, Tetra Pak PlantMaster helps you manage your production safely, efficiently and with full traceability throughout the value chain. Ultimately, it's all about performance, and we guarantee it.



Start from lines or single components

Using unique patented technologies as a core, we can either start from a best-practice line or from single products when customizing your solution. Or a combination. Meeting your requirements in the most intelligent way. And with guaranteed performance.



Best-practice lines are available across five food categories: beverages, cheese, dairy, ice cream and prepared foods. The continuous sauces line above, allows you to produce a broad range of smooth and small particle sauces – natural products without preservatives or additives.



Key components ready to integrate

Made for smooth integration with your existing equipment, or as the backbone of your new line, these key components all make for consistent product quality and excellent total cost of ownership.



HOMOGENIZERS

With pioneering design that enables lower pressure and saves energy

- Capacity from 55 to 53,000 l/h
- For homogenization of liquid food products



INGREDIENT DOSERS

For even distribution of ingredients and low waste

- Capacity from 20 to 2,000 l/h
- Dosing of fruit pieces, nuts, candies and other ingredients into ice cream



MIXERS

With unique mixer head with no air ingress

- Capacity from 700 to 30,000 l/h
- For mixing of powders and liquids



SEPARATORS

With patented AirTight technology

Capacity from 5,000 to 75,000 l/hFor dairy and beverage liquid products



PLATE HEAT EXCHANGERS

Plate geometry optimized for food applications

- Capacity up to 100,000 l/h
- Food products from low to high viscosity, with fibres up to max 5 mm.





CONTINUOUS FREEZERS

For easy operation and uniform output

- Capacity from 100 to 6,000 l/h
- Accurate and efficient freezing, mixing and whipping of ice cream and air.



SCRAPED-SURFACE HEAT EXCHANGERS

Vertical design with efficient agitation and cylinder wall scraping

- Capacity from 300 to 3,000 l/h
- Suitable for viscous, sticky and particulate food products.

TUBULAR HEAT EXCHANGERS

With floating protection system for enhanced efficiency and quality

Capacity from 400 to 60,000 l/h
For food products from low to high viscosity, with or without particles

Heat treatment

It doesn't matter whether you're looking for a single valve or, an equipment module, or you're planning to build multiple production facilities around the globe. Whatever you need, we're here for you, with a portfolio of 30,000 selected plant components, 200 highperformance products in core technology areas, and over 50 Best-practice lines.

PASTEURIZATION



Tetra Pak[®] Pasteurizer D



Tetra Pak[®] Pasteurizer BF Tetra Pak[®] Pasteurizer BC Tetra Pak[®] Pasteurizer PFC

UHT TREATMENT



Tetra Pak[®] Indirect UHT unit DE Tetra Pak[®] Indirect UHT unit DC



Tetra Therm[®] Aseptic VTIS



Tetra Pak® Indirect UHT unit PFF

HEAT EXCHANGERS



Tetra Pak® Tubular Heat Exchanger



Tetra Pak[®] Coiled Heat Exchanger



Tetra Pak® Plate Heat Exchanger

Tetra Pak[®] High Shear Mixer



Tetra Pak[®] Food Processor

Homogenization



Tetra Pak[®] Homogenizer

Separation

FILTRATION

Mixing



Filtration solutions

CENTRIFUGAL SEPARATORS



Tetra Pak[®] Separator

EVAPORATORS



Tetra Pak[®] Evaporator



Tetra Pak[®] Extraction unit

SPRAY DRYERS



Tetra Pak[®] Spray Dryer

Sugar dissolving

Carbonization



Tetra Pak® Continuous Sugar Dissolver



Tetra Pak[®] In-line Blender B with carbonation

Automation

Tetra Pak[®] PlantMaster

Our complete equipment portfolio is complemented by Tetra Pak® PlantMaster automation solutions. Tetra Pak PlantMaster offers cutting-edge technology dedicated to the food industry, contributing to efficient production, food safety and quality with full traceability throughout the value chain.

Blending, dosing and standardization

STANDARDIZATION



Tetra Pak[®] Standardization unit

BLENDING



Tetra Pak[®] In-line Blender B for final beverage Tetra Pak[®] In-line Blender B for final syrup Tetra Pak[®] In-line Blender D



Tetra Pak® Aseptic Dosing unit F



Tetra Pak® Aseptic Dosing unit E

Cleaning-in-place



Tetra Pak® CIP unit

Aseptic buffering

Tetra Pak[®] Aseptic Tank VD

Tetra Pak[®] Aseptic Tank VC

Tetra Pak[®] Aseptic Tank H





Powder handling systems

Plant components



Integration components Automation & electrical components Measuring instruments



Cheese-specific products

CURD MAKING



Tetra Pak® Cheese Vat Tetra Pak® Cheese Vat OST Tetra Pak® Cheese Vat OO Tetra Pak® Cheese Vat Yieldmaster

CURD HANDLING



Tetra Pak® Casomatic system • Tetra Pak® Cheddaring machine

Tetra Pak® Draining Matting machine • Tetra Pak® Finishing Vat

Tetra Pak[®] Blockformer • Tetra Pak[®] Blender

LIQUID FILLED CHEESE



Tetra Pak® Liquid Filled Cheese system

Ice cream-specific products

EXTRUSION



Tetra Pak[®] Extrusion Tunnel

MIX PREPARATION Tetra Pak® Ice Cream Mix unit

CARTONING Tetra Pak[®] Sideload Cartoner

FREEZING

Tetra Pak[®] Drainer Washer



Tetra Pak® Continuous Freezer



Tetra Pak[®] Ingredient Doser

MOULDING

Tetra Pak[®] Rotary Moulder Tetra Pak[®] Volumetric Bottom Filler

FILLING Tetra Pak[®] Ice Cream Filler

HANDLING Tetra Pak[®] Dip and Transfer unit

WRAPPING Tetra Pak® Singlelane Wrapper Tetra Pak® Multilane Wrapper

HARDENING & AFTER-COOLING

Tetra Pak® After-Cooler



Ask your local Tetra Pak representative for more information.



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