

Tetra Pak® Services

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TETRA PAK® SERVICES THOUGHT LEADERSHIP TECHNICAL PAPER

FRONTIERS OF PARTS LOGISTICS

How Tetra Pak reduces equipment downtime and optimises our customers' maintenance costs by supplying spare parts. On time. Every time. Everywhere.

Ulf H Persson, and Pontus Holm, Tetra Pak Services, Global Parts Supply Specialists





PARTS LOGISTICS

Customers all around the world rely on genuine Tetra Pak® Parts to keep their equipment running. This means they can focus on maintaining production at the high-performance standards they expect from Tetra Pak equipment.

Every day, hundreds of customers order parts for their food processing, filling and packaging lines and then have them safely delivered at the time they specified. But few people know how our Parts Organisation achieves this. On time. Every time. Everywhere.

This paper explains how Tetra Pak® Services, help to keep our customers' manufacturing operations running smoothly, with fewer unplanned stops and reduced spare parts costs.

It describes our world-class Global Parts organisation and explains how this global team liaises with hundreds of suppliers to manage a global inventory of over 500,000 individual parts numbers, monitors consumption at eight global distribution centers and ships over 20 million parts every year to customers all around the world.





CUSTOMERS NEED...

All maintenance engineers know how frustrating it is when an equipment manufacturer supplies the wrong parts, delivers them late or charges an excessive cost. They need to be able to order a genuine replacement part, have it delivered quickly and to be charged a reasonable price.

Tetra Pak, as the packaging industry's leading manufacturer of food and beverage processing, filling and packaging equipment, understands this need. To meet it, we have developed a sophisticated, world-class parts logistics solution that ensures we can support customers all around the world with genuine parts, at the right time and for the right cost.

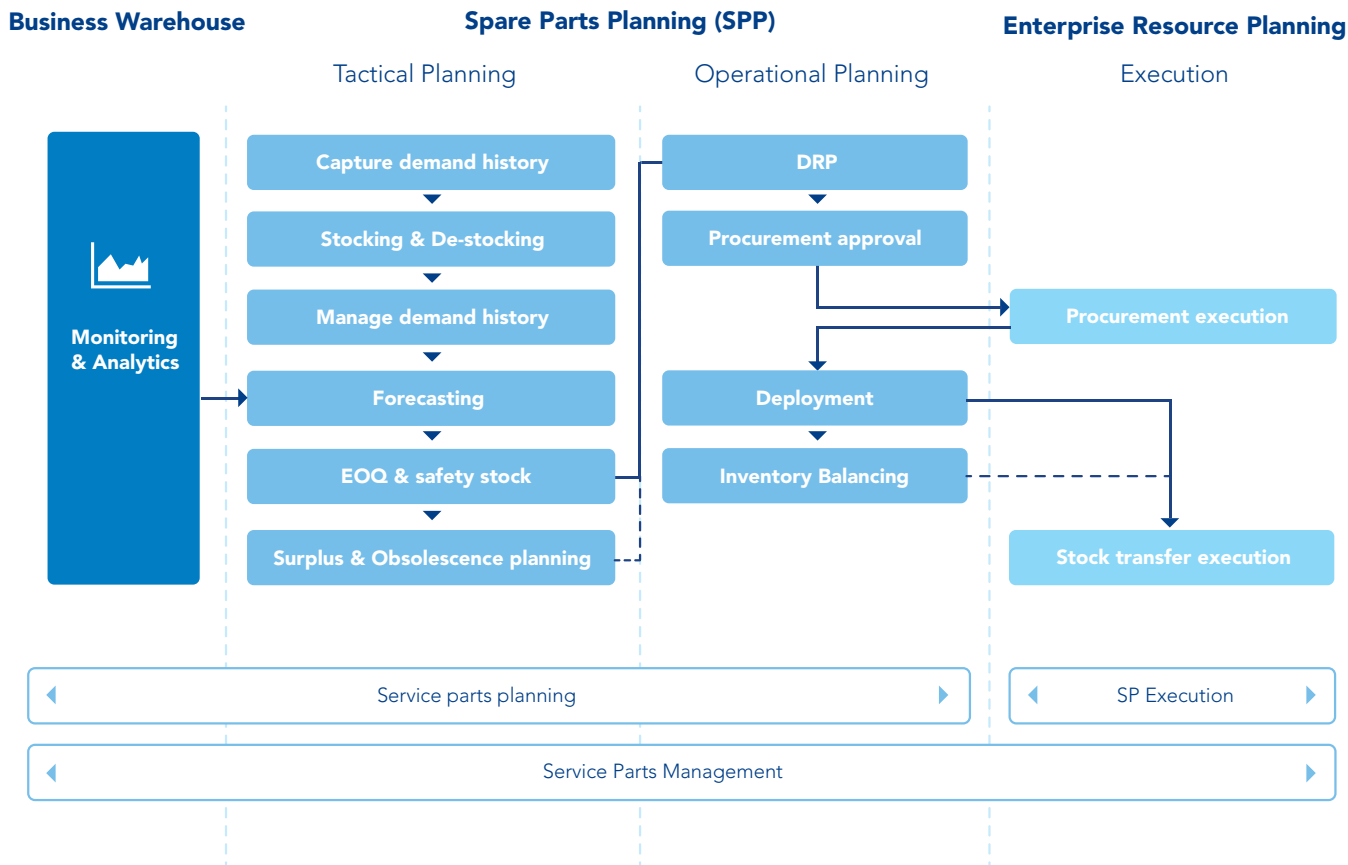


Fig 1: In extreme situations, Tetra Pak can arrange to hand-carry a part to the customer's site...the ultimate Express Delivery



RIGHT PARTS, RIGHT TIME & RIGHT COST

A CUSTOMER CENTRED, DEMAND-DRIVEN SOLUTION



"Our brief is clear," says Ulf H Persson, VP of Tetra Pak's global Parts Supply Chain. "We need to anticipate the demand for parts and then work with our suppliers, the teams at our distribution centers and our global logistics partners to deliver the right part when and wherever the customer needs it. And we need to do this at a fair price."

This is a significant challenge as every year, Tetra Pak supplies customers all around the world with over twenty million individual parts in 250,000 shipments. 95% of orders are completed in full and delivered when the customer needs them. The balance is made up of rarely ordered items that are not stocked and hence need to be bought to order or, in very occasional cases, when a part is out of stock locally and cannot be supplied from another global distribution centre.

Fig 2: The integrated global parts supply solution keeps customers equipment running and minimises unplanned downtime



INVENTORY DESIGN

At the core of the Tetra Pak® Parts solution is a sophisticated inventory planning system. Over 500,000 parts are needed to support the global installed base of over 100,000 food processing systems, filling machines and packaging / distribution equipment.

Of these, 120,000 part numbers are actively planned and 15,000 have been identified as fast-moving, high demand parts such as rollers, bearings, seals and wear parts. The balance are parts that are slower moving but are regularly ordered by customers so need to be on-hand to respond to demand.

This inventory is continuously reviewed, and the parts team works closely with the engineers in Tetra Pak Capital Equipment to make sure that when a new machine is released to the market, any new parts are added to the inventory.

The Parts Service Challenge

Tetra Pak® Services supports customers on 6 continents.



Everyday field service engineers, process specialists and food safety & quality experts add value to our customers' operations.

They make sure our equipment is properly maintained, is working 24/7 at optimum performance and is producing high quality products, safely.

Tetra Pak equipment installed base (as of December 2017)

Packaging machines in operation	8,860
Processing units in operation	76,000
Downstream equipment in operation	20,000



Fig 3: Tetra Pak® Services manages equipment installation and commissioning to ensure new or refurbished equipment goes into production quickly.

After machines are installed, stocks are built up in local distribution centres to support customers using the latest Tetra Pak equipment. As they do not have an ordering history for these new parts, the Parts team makes an initial assessment and boosts stock levels to cover potential demand. Over time this holding is refined to reflect actual consumption, so inventory cost is optimised, and parts costs are kept as low as possible.

The team also tracks the installed base and takes measures to cater for the relocation of equipment after machines have been refurbished at Capital Equipment's refurbishment facilities in Brazil, Italy and India.



DYNAMIC PLANNING

Managing the inventory is complex. The Tetra Pak® Parts solution is based on SAP's Service Part Planning module, a core component of their Supply Chain Management suite. This produces parts demand forecasts based on demand patterns.

The system analyses activity at each distribution centre down to the level of individual part numbers to generate a global consumption summary. This is then reviewed by market planners and maintenance specialists to create a range of forecasts based on different scenarios and models.

The global parts management team in Lund, Sweden reviews the forecasts and identifies the best fit to create the weekly forecast. This is used to generate replenishment orders from suppliers, optimises stockholding costs and ensures that the organisation is as ready to supply customers.

The team is never satisfied and is always looking for improvements to increase their forecasting accuracy even further. They are currently working with the Capital Equipment team to investigate ways to integrate a predictive maintenance view into the system. One approach that looks promising is to add sensors to equipment to monitor the condition of critical parts, such as servo motors. This would show when a component is reaching the end of its service life and alert the customer, so a replacement can be supplied, and a maintenance intervention can be planned.

A second area of investigation is to drill down and analyse the thousands of service outages managed by the field service organisation. This holds the prospect of finding ways to optimise spare parts cost for the customer. For many high cost, critical components, rather than simply recommending a lifetime-based replacement, Tetra Pak suggests the parts are physically checked by a service engineer who can determine if the part needs to be replaced.

Using advanced analytical techniques (also called "big data analytics") the team can determine the likelihood that a part will fail an inspection and need to be replaced. Based on this they can decide if it is necessary to equip the field service engineer with a replacement part, so they are able to fit the replacement should that be necessary. This reduces the time the equipment is down and eliminates the need for an express, higher cost parts delivery.

To ensure that the team continues to deliver a world-class service to customers, the Parts Organisation benchmarks their performance and shares best practice with their counterparts in DeLaval & Sidel, their sister organisations in the Tetra Laval Group.



GLOBAL NETWORK, LOCAL SUPPORT

Tetra Pak has a network of distribution centres. This is a considerable investment and a significant difference from most other parts organisations who typically either establish a single global distribution centre, adding significant time and cost penalties or supply parts via local distribution companies who will only stock a fraction of the parts inventory.

The Tetra Pak® Parts network is a “top down” system. There are two entry points at the hubs in Lund, Sweden and Shanghai, China. These manage the replenishment of local distribution centres in Dubai, Moscow, Chicago, Mexico City, Sao Paulo and Buenos Aires. These locations have been selected to reflect the density of customers using Tetra Pak equipment and to optimise customs and cross-border transport.

The network is complemented by six additional centers, known as emergency depots, where a limited assortment of critical parts is held. These centers are used to support customers in countries where customs clearance can be particularly challenging, where there are special needs or where it is not possible to respond to a customer’s unplanned, urgent demand for a part with a hand-carry option.

In addition to optimising coverage, the Tetra Pak approach also allows the parts organisation to support smaller, local distribution centres with stock refill from the Lund hub centre and results in high fill rates and few backorders or incomplete deliveries.

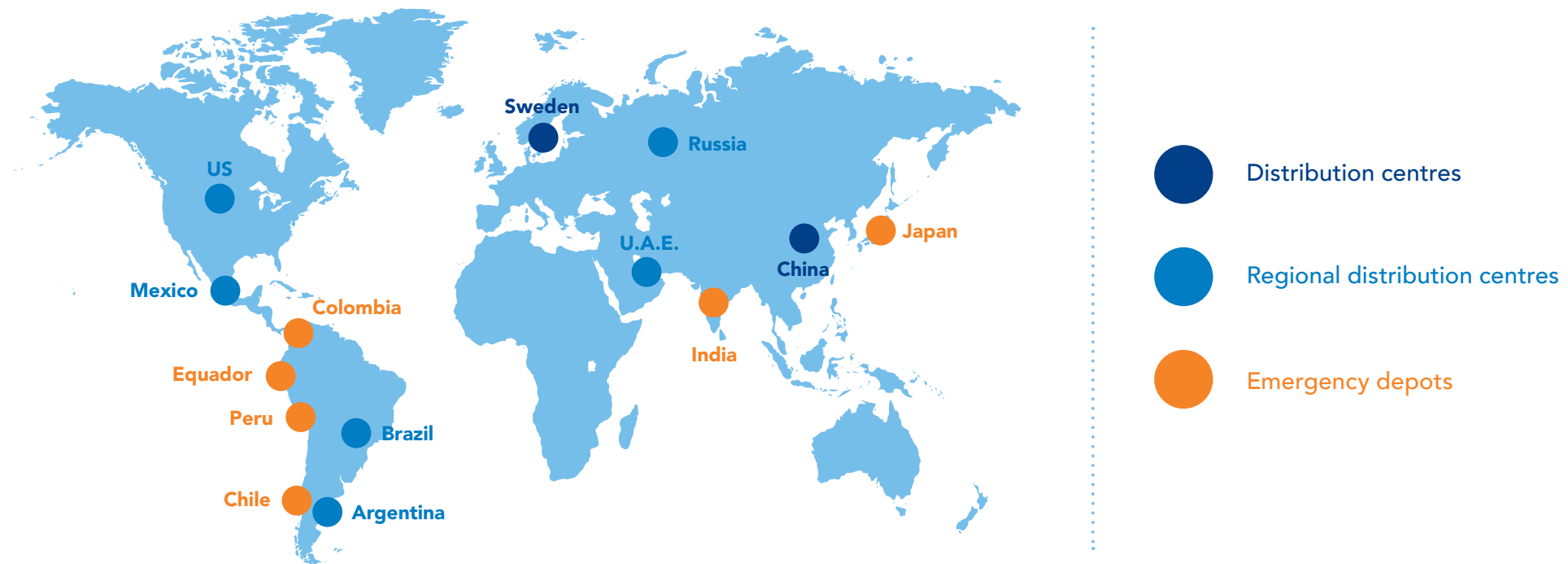


Fig 4: Tetra Pak has invested in an integrated global parts distribution network that is managed by the Parts Organisation to ensure the right parts are always available close to our customers.



GLOBAL LOGISTICS EXCELLENCE

Continuing the drive to deliver a customer-centric solution, the Parts Organisation has established collaborative partnerships with all major global logistics organisations, including DHL, FedEx/TNT & UPS.

In addition to leveraging their expertise and global networks, these are particularly effective for cross-border shipments. However, where their networks are less developed and where there is a high demand for shipments in countries such as China, Brazil and Russia, they have partnered with local carriers.



“Tetra Pak and DHL Express is a marriage made in heaven. They put high demands on our performance, but together, we have set tough targets that we closely follow with daily reports and monthly meetings. Sometimes we face tough challenges beyond our control, such as bad weather, but we work together to tackle these and strive to give the best possible service to customers.”

Sean Wall, EVP Network Operations and Aviation, DHL Express Asia Pacific



DATA DRIVES IMPROVEMENTS

Since early in 2010, the Parts Organisation has used standardised global measures for transportation performance of all their partners. The measures reflect customer needs rather than the carrier's performance so ignore "uncontrollable" items such as delays due to hold-ups in customs clearances or adverse weather conditions.

Each delivery failure is used as the basis for an investigation to identify the root causes and then find ways to make improvements on both sides. This approach helped one partner change the routing they used to deliver parts in Europe and identified ways to improve the documentation used in key countries in Asia to speed customs clearances.

Where appropriate, Tetra Pak uses Break Bulk¹ for airfreight to streamline customs clearance. They also pre-book daily airfreight slots to guarantee both volume and weight capacity for shipments to replenish stocks across the distribution centre network from the Lund and Shanghai hubs. They also pay close attention to potential choke points and/or capacity issues in the global airfreight market to overcome any issues or delays as airfreight volume rapidly increases.²



¹ The shipper consolidates multiple customer orders into a single shipment with a single document pack to simplify customs clearance. When the shipment has cleared customs, the shipper splits the shipment into individual packages and delivers them to our customers.

² The International Air Transport Association (IATA) report that demand for airfreight grew by 9.0% in 2017 vs an increase of 3.6% in 2016. This is twice the reported growth in world trade during 2017, which was reported to be 4.3%.



GENUINE PARTS ON-TIME (GPOT)

At the core of the Tetra Pak® Parts solution is a sophisticated inventory planning system. Over 500,000 parts are needed to support the global installed base of over 100,000 food processing systems, filling machines and packaging / distribution equipment.

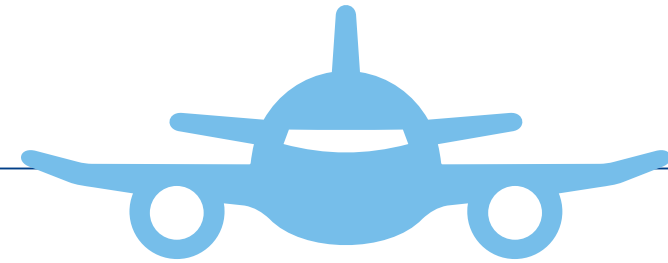
To address this, Tetra Pak offers three delivery options:

In the last resort, the express service can help customers when they face a critical part failure. The global Parts Network is complemented by stocks of critical parts in local depots. These are managed by the global team and are used to expedite delivery of parts in countries where customs clearance or in-country logistics would add additional delivery time.

In extreme situations, Tetra Pak can arrange to hand-carry a part to the customer's site. The value of this is immense as a major ice cream manufacturer in North America can attest:

"A load cell on our production line failed," said their production manager.
 "We did not have a spare on site, so Tetra Pak hand-carried a replacement to us. This meant we could restart the line in just twelve hours. I call that world-class!"
 "Wherever you are, our service is just a click away," concluded Ulf Persson.
 "Our e-Business solution [www.tetrapak.com/services/e-businessservice] gives registered customers access to our entire parts inventory. And to complete the circle Tetra Pak® Services can also help customers manage their on-site parts stock with the Parts Control Service.

When it comes to Parts, whatever your need, we have the solution."



PLANNED	PRIORITY	EXPRESS
Scheduled weekly delivery <ul style="list-style-type: none"> - More complete deliveries - Reduced freight cost - Minimised environmental impact 	Same day dispatch <ul style="list-style-type: none"> - Courier Air Express (standard services) or similar to balance speed and cost - In case of less time critical orders, the Planned freight option can be selected also for Priority orders 	Emergency service with hand-carry option <ul style="list-style-type: none"> - Hand carry (Tetra Pak courier) - Next-Flight-Out - Courier Air Express (premium services)
When to use: <ul style="list-style-type: none"> - Planned refill of stock - Regular maintenance 	When to use: <ul style="list-style-type: none"> - Risk of machine stop - Bug in planning 	When to use: <ul style="list-style-type: none"> - Machine stopped - High risk of machine stop
Benefits <ul style="list-style-type: none"> - Efficiency and cost 	Benefits <ul style="list-style-type: none"> - Fast delivery 	Benefits <ul style="list-style-type: none"> - Minimised machine downtime - Deliveries closely monitored by 24/7 team
Lead time: <ul style="list-style-type: none"> - Min 3 weeks 	Lead time: <ul style="list-style-type: none"> - Min 1-5 days 	Lead time: <ul style="list-style-type: none"> - ASAP



CONCLUSION

In this paper we reviewed how Tetra Pak® Services helps to keep our customers' operations running smoothly, with fewer unplanned stops and reduced spare parts costs.

We explained how our world-class Global Parts organisation plans and manages an inventory of over 500,000 individual parts... how, by forging mutually beneficial relationships with hundreds of suppliers and the leading global logistics partners, the team fulfils orders for over 20 million parts a year through a network of global distribution centres... and we shared a glimpse into the future by discussing how, by close cooperation with engineers in the Tetra Pak® Capital Equipment and Field Services organisations, we are pushing to make a great service even better.

Customers all around the world rely on Tetra Pak to keep their equipment running at the high-performance standards they demand from us. The Parts Organisation plays a crucial role in achieving this by meeting our customers' needs. On time. Every time. Everywhere.

Please follow the following links to learn more about Parts Logistics and associated services

Tetra Pak eBusiness service:	www.tetrapak.com/services/e-business
DHL Industry Logistics Solutions:	www.dhl.com/en/express/industry_solutions.html
DHL Break Bulk Service:	www.dhl.com/en/express/industry_solutions.html
UPS Solutions for Business:	www.ups.com/lc/en/services/mid-large-business.page
FedEx Industry Solutions:	www.fedex.com/gb/learn/index.html#industry-solutions
IATA Facts & Figures:	www.iata.org/pressroom/facts_figures/Pages/index.aspx
IATA Air Freight Market 2017):	www.iata.org/pressroom/pr/Pages/2018-01-31-01.aspx
SAP Supply Chain suite:	www.sap.com/uk/products/supply-chain-iot/scm.html

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AUTHOR BIOGRAPHIES



Ulf H Persson

VP Parts Supply Chain, Tetra Pak Services

I have worked at Tetra Pak for over twenty-five years and have spent the past fifteen years working in the Parts Logistics organisation at the hub in Lund and with colleagues globally to help our customers reduce downtime and optimise costs. Before moving into this area, I spent time in the Finance team after graduating from Lund University where I studied Business Administration.



Pontus Holm

Supply Chain Optimisation Manager, Tetra Pak Services

I have worked at Tetra Pak for over ten years. As a supply chain specialist, I have worked in the Parts Logistics organisation and had global roles managing supply chain management and optimisation. Before joining Tetra Pak, I held several supply chain and operations management positions in other industries. I graduated with a degree in engineering combined with a Masters in Business Administration from Chalmers University of Technology and the Linné University.

Tetra Pak® Services cover every aspect of your food production, from daily routines to business insights. Our tailored service solutions improve performance, optimise costs and ensure food safety throughout the lifecycle of your operation. With Tetra Pak as your partner, you get the people, portfolio and presence to achieve your performance goals. Find out more about Tetra Pak® Services at tetrapak.com/services.

