TUMMERS
FOOD PROCESSING SOLUTIONS

CONTENTS

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"OUR MISSION HAS ALWAYS BEEN TO **DEVISE, REALISE AND MAINTAIN** MACHINES AND SERVICES OF UNRIVALLED LEVELS OF INNOVATION FOR **THE FOOD PROCESSING INDUSTRY."**

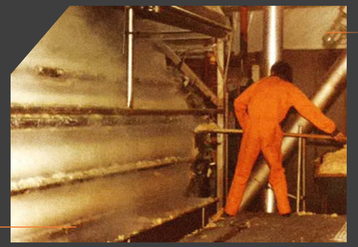
FOREWORD

As I write this foreword, the Tummers organisation has been existing for over 40 years, something we are very proud of. My father Fons Tummers started out the company in 1976 as "Tummers Machinebouw B.V.", with the aim of staking out a clear position in the agricultural sector and crop processing industry. Around the turn of the century, we chose to follow the name Tummers with the word Methodic, focusing more fully on our unique approach to engineering. Nowadays not only the organization has grown strongly, but also our markets have changed significantly. So we continued to push ourselves and worked even harder to meet higher expectations.

Our mission has always been to devise, realise and maintain machines and services of unrivalled levels of innovation for the food processing industry. Therefore, in 2014 we changed our name to "Tummers Food Processing Solutions". We want to state that we always strive to think outside the box to achieve solutions of the highest quality for the food processing industry. We believe we can only achieve this by listening properly to you and our markets, while developing sustainable solutions. Therefore we are now pleased to give you a glimpse of the 'new' Tummers in our newly stylized corporate brochure.

Best wishes,
Erwin Tummers – CEO Tummers Group

THE TUMMERS TIMELINE



1976

FOUNDED AS REPAIR SHOP
FOR MACHINES

Technisch Centrum Tummers

1982

FIRST INSTALMENT
FLAKE LINE

1983

MOVE TO
HOOGERHEIDE
MAIN OFFICE

1999

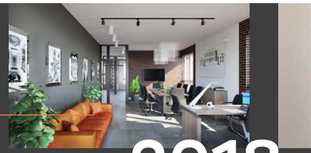
FIRST
FLAKE LINE
INSTALMENT IN CHINA

2016

HANDOVER TO
2ND GENERATION

2008

OFFICE OPENING
IN RUSSIA



2018

NEW OFFICE IN
MOSCOW, RUSSIA

STATE OF THE ART
NEW FACILITIES

2021

NEW OFFICE IN
HOOGERHEIDE

2022

Tummers have already been in business for over 45 years. By always working hard, we have become the market leader in the development and production of potato flake lines. This timeline shows several of our biggest milestones, but these do not even cover our broad history by far. Over the years we have been through many special moments and these experiences cannot be shown on just two pages.

Also, because we are evolving ourselves continuously, many new moments will be added to our timeline in the future. Therefore, for now, it is just our honor to show you our greatest events of the past 45 years!

THE TUMMERS GROUP

The Tummers organization has traditionally focused on developing, producing and maintaining machines for the potato processing industry. In 1976, the family business started out as a machine building factory and maintenance partner for the flourishing potato industry in the province of Zeeland in the Netherlands.

Since then, the company has grown to be an influential designer, producer and service provider of both machines and complete production lines for the international potato processing industry. The Tummers 'Group' now comprises several companies next to Tummers Food Processing Solutions with in total more than 150 employees, operating around the world.

TUMMERS PLAATBEWERKING

Located next to the Group's headquarters in Hoogerheide in the Netherlands, Tummers Plaatbewerking started out as the production department of Tummers Machinebouw B.V.. Since then, the department has grown to become highly successful in its own right as a part of the Tummers Group.

Tummers Plaatbewerking nowadays employs around 60 employees and undertakes a great range of work in metalworking disciplines. The company is well-known for its laser-cutting, rolling, welding and assembly. Tummers Plaatbewerking has also built up a large circle of clients outside the Tummers Group. These days, only 7% of its activities are directed at production for the other businesses within the Group.

TUMMERS SIMON DRYERS TECHNOLOGY

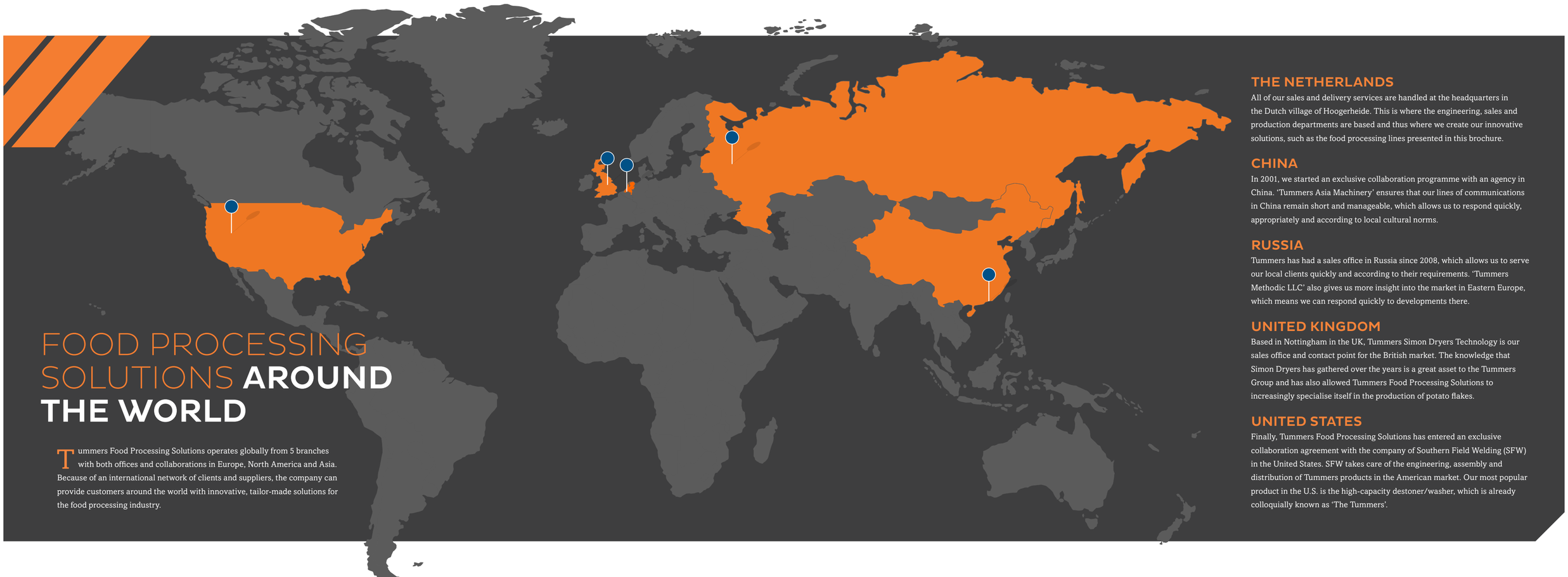
In 2003, the Tummers Group acquired the English company Simon Dryers, expert and world-leader in drying techniques within various industries. Simon Dryers has become an integral part of the broad range of services and products offered by the worldwide Tummers Group. For that reason, its name changed to 'Tummers Simon Dryers Technology'. With a history dating back to late nineteenth century, this company is very broad-based.

Early in the twentieth century, founder Richard Simon obtained licenses for the manufacture of 'drum dryers'. In the 1930s, he expanded the range and production of this machines to include high-capacity drum dryers, which played a great role in meeting the post-war demand for powdered milk. The company's origin and base in Nottingham also helped the business to build a strong position in the drying of 'draff' (the spent grain left over from the big whiskey distilleries in Scotland).

In the 1970s and '80s, Simon Dryers developed 'rotary dryers', which brought about a clear change in the business. The focus on additional markets to the food and drink sectors gave way to a wide variety of applications for its drying technology, particularly in the chemical and pharmaceutical industries.

Nowadays, Tummers Simon Dryers Technology is involved in testing and developing pharmaceuticals, food products, and new environmentally friendly materials. The strength of this business is not only to be found in its products, but also in the way the company works. A long tradition of successful innovations and applications goes hand-in-hand with knowledge of an incredible range of technologies. Therefore Tummers Simon Dryers Technology has clients all over the world, in countless lines of businesses and activities.

"WITH A HISTORY DATING BACK TO LATE NINETEENTH CENTURY, **THIS COMPANY IS VERY BROAD-BASED.**"



FOOD PROCESSING SOLUTIONS **AROUND THE WORLD**

Tummers Food Processing Solutions operates globally from 5 branches with both offices and collaborations in Europe, North America and Asia. Because of an international network of clients and suppliers, the company can provide customers around the world with innovative, tailor-made solutions for the food processing industry.

THE NETHERLANDS

All of our sales and delivery services are handled at the headquarters in the Dutch village of Hoogerheide. This is where the engineering, sales and production departments are based and thus where we create our innovative solutions, such as the food processing lines presented in this brochure.

CHINA

In 2001, we started an exclusive collaboration programme with an agency in China. 'Tummers Asia Machinery' ensures that our lines of communications in China remain short and manageable, which allows us to respond quickly, appropriately and according to local cultural norms.

RUSSIA

Tummers has had a sales office in Russia since 2008, which allows us to serve our local clients quickly and according to their requirements. 'Tummers Methodic LLC' also gives us more insight into the market in Eastern Europe, which means we can respond quickly to developments there.

UNITED KINGDOM

Based in Nottingham in the UK, Tummers Simon Dryers Technology is our sales office and contact point for the British market. The knowledge that Simon Dryers has gathered over the years is a great asset to the Tummers Group and has also allowed Tummers Food Processing Solutions to increasingly specialise itself in the production of potato flakes.

UNITED STATES

Finally, Tummers Food Processing Solutions has entered an exclusive collaboration agreement with the company of Southern Field Welding (SFW) in the United States. SFW takes care of the engineering, assembly and distribution of Tummers products in the American market. Our most popular product in the U.S. is the high-capacity destoner/washer, which is already colloquially known as 'The Tummers'.

KEY **VALUES**

Tummers Food Processing Solutions has extensive knowledge of the potato as a raw material and knows how to design an efficient process. We offer both standard and custom-made solutions for potato processing 'from field to customer', without losing sight of our key values.

"OUR **FOCUS ON SUSTAINABILITY** IS CLEARLY TO BE SEEN IN OUR SOLUTIONS **AND ALREADY STARTS AT DEVELOPMENT"**

PROCESS INNOVATORS

Tummers Food Processing Solutions is capable of quickly responding to the changing needs of the global food industry. The requirements of the processing industry on issues such as efficiency, sustainability and production rate ensure that our focus is firmly fixed upon innovation. We combine the latest technologies to build efficient and reliable potato processing solutions. All of our engineering, production and installation processes take place in-house, after which the machines are assembled and commissioned on customer locations.

SUSTAINABILITY

All of Tummers Food Processing Solutions' innovations are aimed at sustainable potato processing. Our focus on sustainability however is not only to be seen in the way our machines and process lines work, but also in our approach when finding new solutions. In the stage of development and engineering, for example, the aim always is to obtain an optimum combination of raw material and energy consumption, together with a high quality final product and as little waste as possible.

"THE PEOPLE, NOT THE MACHINES, ARE **THE HEART OF TUMMERS".**

SERVICE

At Tummers, it is not only the technical expertise of our engineers and project managers that we consider important. We also see the human aspect of service, or, in the words of founder Fons Tummers: "The people, not the machines, are the heart of Tummers". Our staff listen well to you, putting together the ideal combination of machines fully based on your wishes and requirements. In addition, after the installation of any machine or line, trainers come by to give your employees professional instruction in process control and machine maintenance.

FOOD SAFETY

Tummers Food Processing Solutions provides both machinery and process lines in multiple fields of potato processing all over the world. Thereby we combine the latest technologies to build not only efficient and reliable, but also a food safe and hygienic process equipment. All machine parts that may come into contact with food products, are therefore made of stainless steel or provided with easy recognizable colors. We are now pleased to present you an overview of our most important process lines and machinery.

WASHING LINE

As the supply conditions for potatoes vary between seasons, it is important that they are properly cleaned before they are processed. Tummers continuously develops new, sustainable processes for this. The components in a washing line depend on how your product arrives and how it must subsequently be processed. Our washing lines include machines for removing clay, stones and floating matter, and for washing and drying potatoes.

STEP 1: DESTONING

The Tummers destoner/washer is the result of our many years of experience in the field of potato processing. This combined machine is suitable for 24/7 operation, and guarantees you a perfectly clean final product. We often reduce the burden on this system by removing heavy soiling beforehand. Once the potatoes enter the system, upward water pressure pushes the product to the top. This causes clods and stones to sink to the bottom, where they are removed from the machine by a conveyor belt.

STEP 2: WASHING

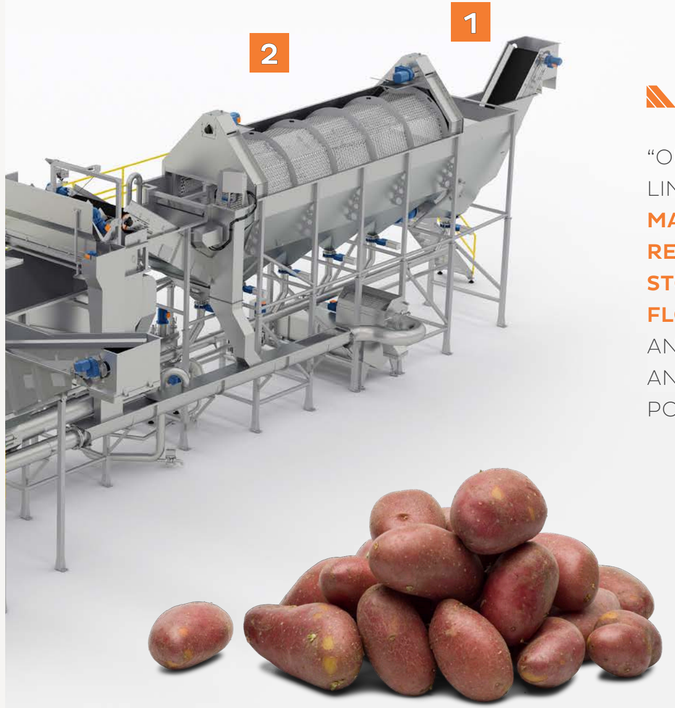
After destoning, the potatoes enter the washing process, where blades push them, together with water, through a spinning drum. The unique shape of the washing drum ensures that the product remains in motion continuously. This causes the potatoes to rub against one another and the drum wall, which scrubs them clean.

STEP 3: SEPARATING FLOATING MATTER

If your product is mixed with floating matter, this must be removed as with other foreign bodies. We offer a number of solutions for this, which remove the floating matter in stages. The potatoes first enter another bath, where they sink to the bottom, after which a specially-developed unit removes most of the floating matter. Finally, a pintle belt removes any green vegetation from the potato batch.

STEP 4: DRYING

The final stage in the washing line is to dry the potatoes. In this stage, the product is transported over the Tummers roller dryer, which consists of moisture-absorbing felt rollers. These rollers remove the excess water on the surface of the potato, and are squeezed out by pressure rollers on the underside of the roller dryer. This machine is designed in such a way that potatoes can be transported at high speed and dried without incurring any damage.



"OUR WASHING LINES **INCLUDE MACHINES FOR REMOVING CLAY, STONES AND FLOATING MATTER,** AND FOR WASHING AND DRYING POTATOES."

PEELING LINE

Tummers processing lines for peeling potatoes guarantee you a high-quality final product with minimal peel loss. The steps in the process are dependent on the condition of the potatoes, the required final product and the required capacity. Based on your specifications, we assemble the most effective combination of equipment to set up your peeling process optimally. We also offer the option of converting the waste steam into hot water for use later in the process. The major benefit of this system is a sustainable and emission-free peeling system.

STEP 1: **INPUT**

Following the washing process, the potatoes proceed to the peeling line, where they enter the peeling drum via a weighing hopper. Accurate control of the filling weight ensures an optimal balance between peeling yield, capacity and steam consumption.

STEP 2: **STEAM PEELING**

The Tummers steam peeler has been developed for optimal yield, minimal maintenance and low steam consumption. During the steaming process, the peel is separated from the potato. The filled steam drum rotates at high speed, which exposes the potatoes to the steam evenly. The water under the peel is warmed to above 100oC. The blow-off system then causes a sudden drop in pressure, the water turns into steam, and the potato peel is loosened. The peeled product is subsequently transported to the next step in the process via a discharge screw.

"BASED ON YOUR SPECIFICATIONS, WE ASSEMBLE THE **MOST EFFECTIVE COMBINATION** OF EQUIPMENT **TO SET UP YOUR PEELING PROCESS** OPTIMALLY."

STEP 3: **DRY PEELING**

Following the steaming process, a brushing machine removes the peel from the product. Depending on the desired peeling result and the required capacity, we install either a U-Brusher or an innovative ZicZac-Brusher. The brushes in these machines separate the potato peel, which is subsequently removed. As no water is used during the brushing process, the peels remain suitable for further processing into, for example, animal feed.

STEP 4: **AFTER WASHING**

Finally, after washing systems remove any remaining peel residue and loose starch from the product. The products rub against each other and the drum wall, which together with water ensures a perfectly clean final product. After washers are available as Drum washers, or as Washing screw conveyors. The washing water is continuously filtered and reused, to guarantee minimum consumption.

CUTTING LINE

Cutting potatoes for human consumption requires great accuracy, and is an important step in obtaining a perfect final product. To facilitate this, Tummers Food Processing Solutions assembles a high-quality cutting process based on your requirements, with a series of innovative cutting technologies.

STEP 1: SORTING

Because not all potatoes are the same size, they first enter a continuous sorter on arrival, regardless of their origin. This machine sorts the potatoes based on their diameter and size. The Tummers fresh produce pump then transports the products to the correct cutting head for each diameter. The number of cutting blocks and the blade dimensions selected also depend on the tonnage and the various diameters of the initial product.

STEP 2: CUTTING

The fresh produce pump transports the sorted potatoes to the cutting block at the correct speed and without damage. Specially-developed technologies also ensure that individual potatoes are separated and reach the correct speed in steps, to guarantee that the cutting process operates optimally.

The patented Tummers Fin aligner then ensures that the potatoes are perfectly centred before entering the cutting block, which avoids damaging them and ensures that the final product always has the optimal length, regardless of the dimensions or shape. The perfect alignment and the Tummers cutting block reduce the chance of “feathering”, which results in an optimal product yield and minimal oil absorption during cooking.

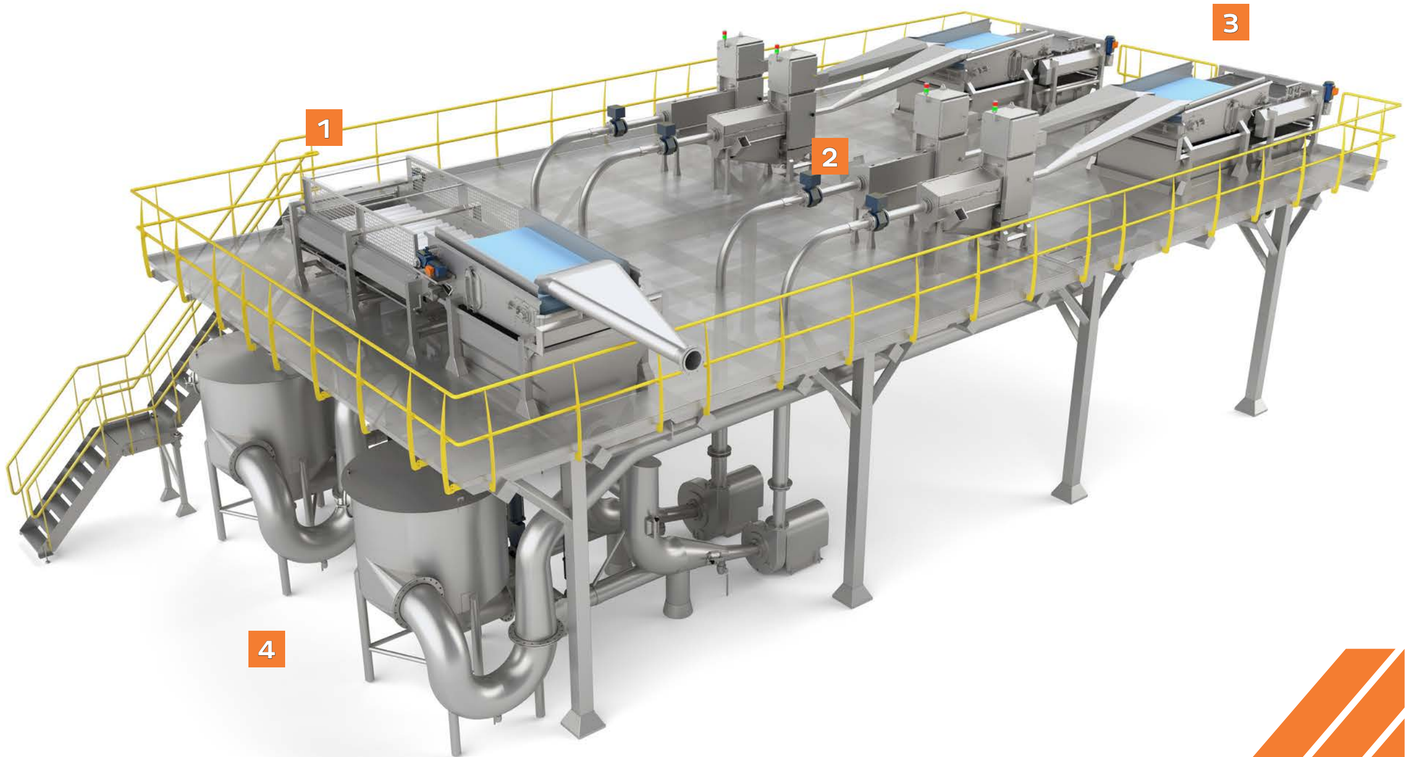
STEP 3: DEWATERING & SLIVER SORTING

The product, which is cut at high speed, is slowed down on a dewatering belt after the cutting process to prevent damage. A sorting machine subsequently separates the “slivers” that arise during the cutting process from the product with the desired size. Because the slivers can be reused in, for example, a flake or speciality line, none of your product is lost, which avoids wasting food.

STEP 4: WATER RECYCLING

During the process, the pumping water that circulates within the cutting line is cleaned in a balance tank. Starch sinks to the bottom of the tank, and is removed for other applications, while the purified water is continuously fed back for reuse within the closed system. This water-saving and low-maintenance solution provides you with a controlled water level, with pumping water at a constant quality.

“THE PATENTED TUMMERS FIN ALIGNER THEN **ENSURES THAT THE POTATOES ARE PERFECTLY CENTRED** BEFORE ENTERING THE CUTTING BLOCK.”



FLAKE LINE

By devoting continuous attention to potato processors and innovation, Tummers Food Processing Solutions has grown to become the market leader in solutions for the processing of potatoes into flakes. Our processing lines process harvested potatoes into high-quality flakes and powders, with high and low density. Based on your wishes, we assemble an optimal combination of machines, to help you achieve the maximum possible efficiency.

STEP 1: CLEANING, PEELING AND CUTTING

The potatoes arrive directly from the field, or from storage bunkers next to the processing line. Following the removal of foreign bodies, the batch is first washed, peeled, brushed and inspected. The potatoes are then cut to the same thickness, which improves the boiling process.

STEP 2: BLANCHING, COOLING AND COOKING

Prior to cooking, the potato pieces are blanched and cooled, so that they have the correct structure for a good, stable mash. During blanching, the potato pieces are briefly soaked in hot, non-boiling water, at a temperature dependent on the variety and growing conditions. Once the structure is optimal, a mashing screw mashes the pieces into a light mash. A special pump subsequently transports the mash to the drying roller hygienically and without damage.

"ONCE THE LAYER IS THICK ENOUGH, **A SKIN OR "SHEET" OF DRIED POTATO FORMS.**"

"PRIOR TO COOKING, **THE POTATO PIECES ARE BLANCHED AND COOLED,** SO THAT THEY HAVE THE CORRECT STRUCTURE **FOR A GOOD, STABLE MASH.**"

STEP 3: DRYING

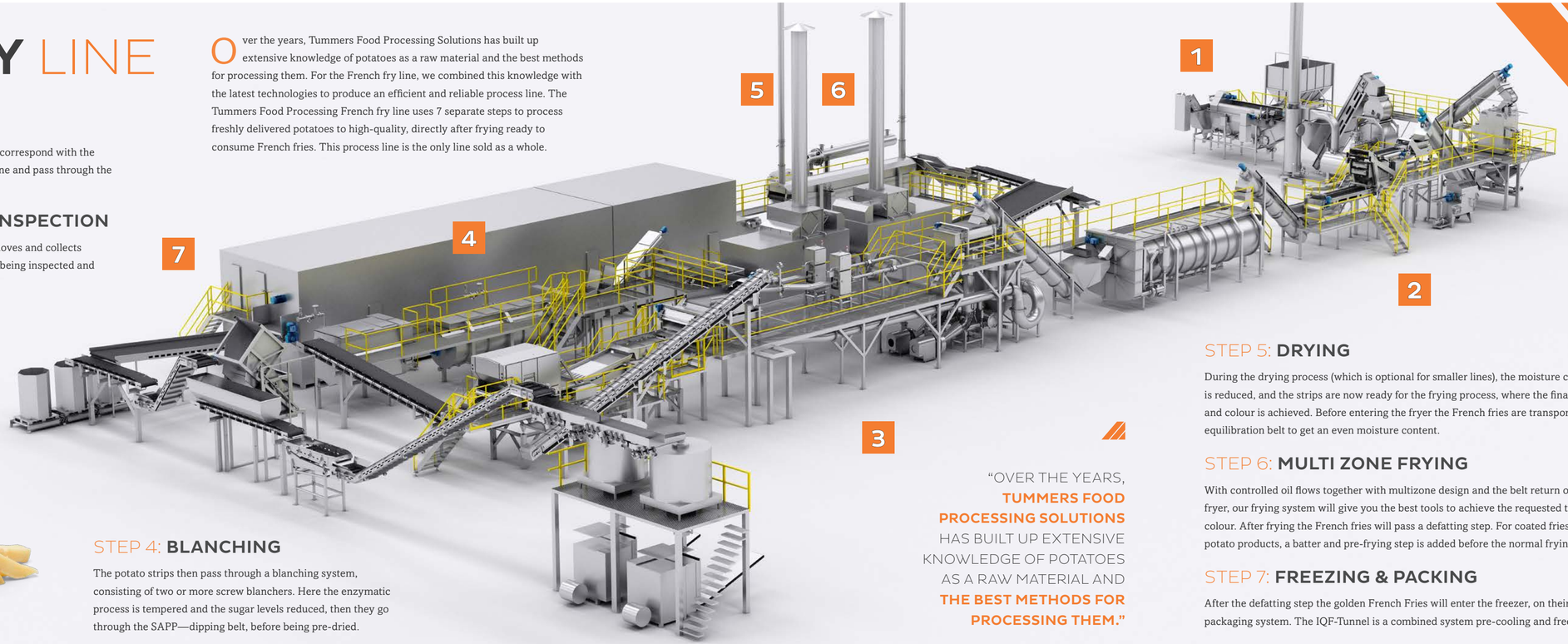
To dry the mashed potato, a continuous, thin, and perfectly-spread layer of mash is applied to a heated cylinder. This ensures that the correct quantity of moisture evaporates, after which a new layer of mash is applied. Once the layer is thick enough, a skin or "sheet" of dried potato forms. The roller then breaks this sheet into rough flakes, which are then transported to the packaging process via a pneumatic transport system.

STEP 4: MILLING AND PACKAGING

The pneumatic transport system is a conditioned space, in which a stream of air separates the rough flakes from the heavy matter. Controlled doses of flakes are added to the sieving mill, which processes the large flakes into standard dimensions. The flakes can subsequently be even more finely milled to obtain a higher bulk density. Depending on the desired specification and application of the flakes, these may be passed through an optical sorter or sieve prior to packaging.

FRENCH FRY LINE

Over the years, Tummers Food Processing Solutions has built up extensive knowledge of potatoes as a raw material and the best methods for processing them. For the French fry line, we combined this knowledge with the latest technologies to produce an efficient and reliable process line. The Tummers Food Processing French fry line uses 7 separate steps to process freshly delivered potatoes to high-quality, directly after frying ready to consume French fries. This process line is the only line sold as a whole.



STEP 1: PREPARATION

As potatoes are received, they are sorted and pre-graded to correspond with the type of French fry to be produced. Potatoes then enter the line and pass through the destoner and washing process, before being peeled.

STEP 2: STEAM PEELING AND INSPECTION

After steam peeling, a de-skinner (ZicZac or U-Brusher) removes and collects the peel waste. The potatoes are then washed clean prior to being inspected and transported to the cutting process.

STEP 3: CUTTING

The cutting process is performed by either a hydro- cutting or mechanical cutting system, depending on your wishes. These machines cut the potato into strips, crinkled or straight, to the desired size, and then pass through equipment that removes slivers and nubbins.

STEP 4: BLANCHING

The potato strips then pass through a blanching system, consisting of two or more screw blanchers. Here the enzymatic process is tempered and the sugar levels reduced, then they go through the SAPP—dipping belt, before being pre-dried.

"OVER THE YEARS, **TUMMERS FOOD PROCESSING SOLUTIONS** HAS BUILT UP EXTENSIVE KNOWLEDGE OF POTATOES AS A RAW MATERIAL AND **THE BEST METHODS FOR PROCESSING THEM.**"

STEP 5: DRYING

During the drying process (which is optional for smaller lines), the moisture content is reduced, and the strips are now ready for the frying process, where the final texture and colour is achieved. Before entering the fryer the French fries are transported on the equilibration belt to get an even moisture content.

STEP 6: MULTI ZONE FRYING

With controlled oil flows together with multizone design and the belt return outside the fryer, our frying system will give you the best tools to achieve the requested texture and colour. After frying the French fries will pass a defatting step. For coated fries and other potato products, a batter and pre-frying step is added before the normal frying system.

STEP 7: FREEZING & PACKING

After the defatting step the golden French Fries will enter the freezer, on their way to the packaging system. The IQF-Tunnel is a combined system pre-cooling and freezing.

TUMMERS SUPPORT GROUP

SERVICE AND SPAREPARTS

The increasing global demand for potatoes and potato products is also increasing the demand for 24/7 production. Reliability, efficiency and minimal downtime are of great importance. This is why Tummers Food Processing Solutions offers not just high-quality systems, but also tailor-made services. Regardless of how specific your requirements are, we can take care of everything from A to Z.

COMMISSIONING

Tummers develops and builds all its products in house. This means our engineers know all the ins and outs of the machines in your processing line. These specialists guide you through the process of starting up the new equipment during commissioning. They explain the correct settings, and instruct you about how to operate the equipment safely. Once the machine or processing line is commissioned, they hand it over to you.

GLOBAL SERVICE

At Tummers, we are committed to sustainability, quality and service. Because we design and manufacture our systems in house, our employees possess broad knowledge. Across the globe, our team of service engineers are ready to assist you and to obtain the highest possible yield from your equipment at the lowest possible cost.

CUSTOMER-SPECIFIC ADVICE

Rapid delivery of the right spare parts is crucial to preventing stoppages. Thanks to our large stocks of spare parts, you never need to wait long for a replacement part. However, for a 24/7 production company, every hour of lost production means lost profits. As such, we can offer you advice about the use of high-quality components and parts that you are advised to keep in stock yourself, so that you are assured of minimal downtime in the event of an emergency.

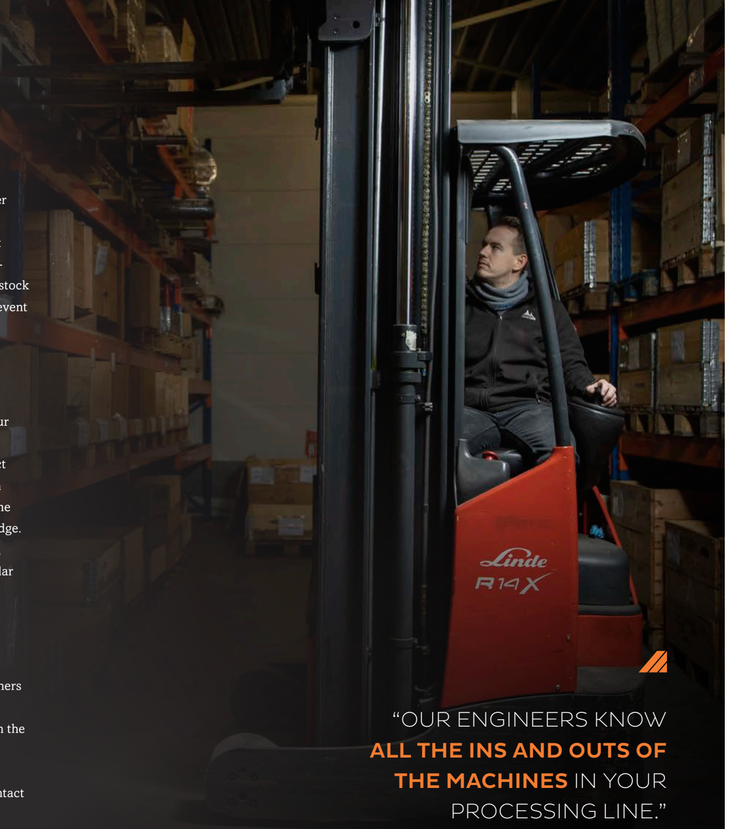
HELP ON LOCATION

It is better to take preventive measures than to respond to problems. As such, our versatile service engineers support your maintenance department by carrying out regular inspections, and ensuring optimal availability of your equipment. If a defect nevertheless arises, our engineers will also respond rapidly on site. They support you with help on location, and can rectify the defect as rapidly as possible, thanks to their extensive knowledge. They subsequently analyse the cause of the problem with you, and incorporate the results into a prevention plan for the regular inspections.

MODIFICATIONS

In a world of constantly-changing demand, requirements and legislation, you need a partner that supports you in this. Tummers has the knowledge and specialists to modify your equipment throughout the entire life cycle, so that it always complies with the latest specifications.

We would be happy to help you, so please don't hesitate to contact our specialists if you have any questions!



"OUR ENGINEERS KNOW **ALL THE INS AND OUTS OF THE MACHINES** IN YOUR PROCESSING LINE."

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