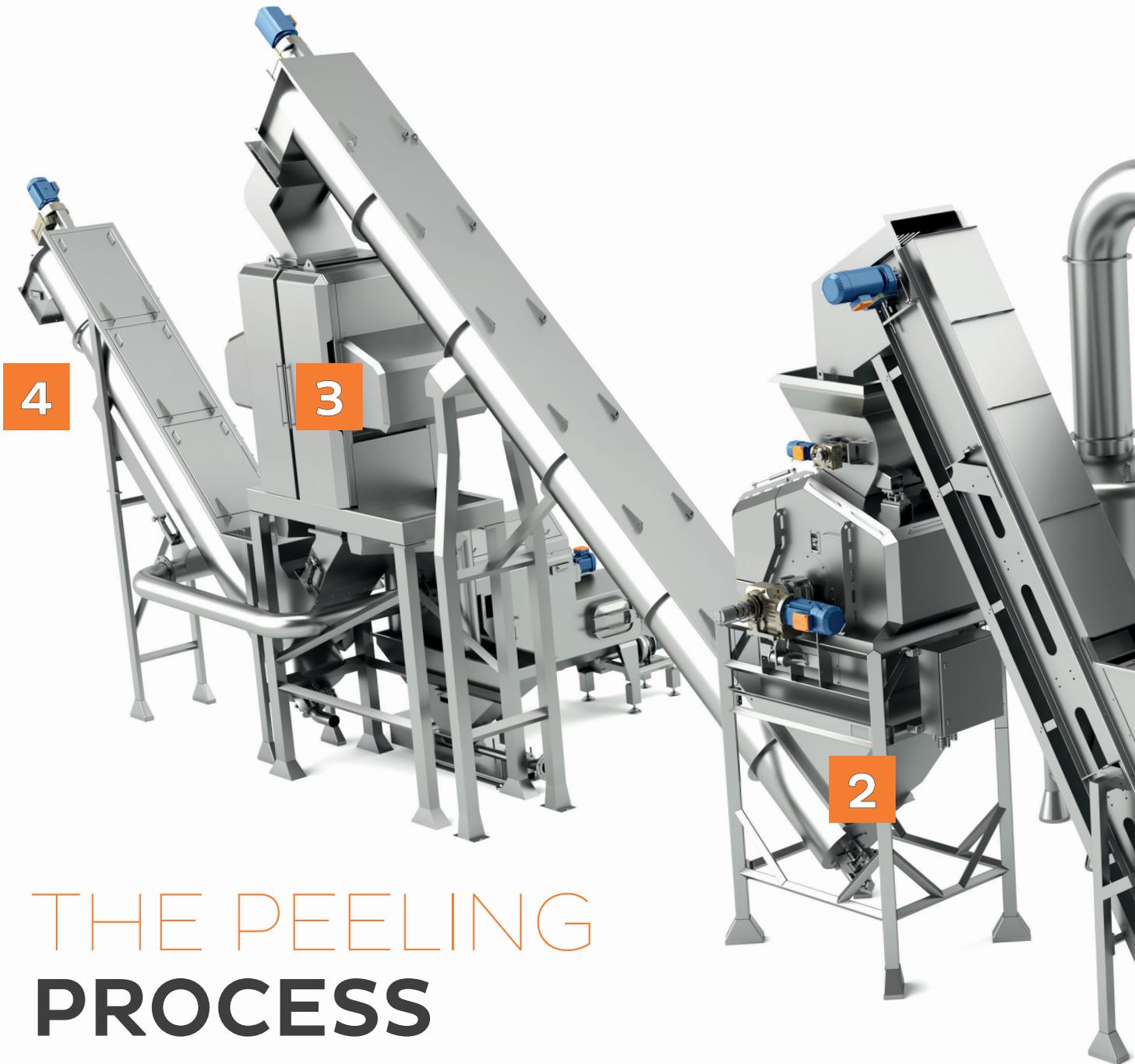




PEELING LINE





THE PEELING PROCESS

Tummers processing lines for peeling potatoes guarantee a high-quality final product with minimal peel loss. The steps in the process depend 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 excess steam into hot water for other purposes 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 vessel 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

During the steaming process, the peel is separated from the potato. The Tummers steam peeler has been developed for optimal yield, minimal maintenance and low steam consumption. The filled steam drum rotates at high speed, which exposes the potatoes to the steam evenly. The water under the peel is heated to above 212 °F. The blow-off system then causes a sudden drop in pressure by which 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.



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 remove 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, an after washer removes any remaining peel residue and loose starch from the product. The products rub against each other and the drum wall and together with water, this ensures a perfectly clean final product. Washers are available as a drum washer or as a washing screw conveyor. The water is continuously filtered and reused, to guarantee minimum consumption. This particular line as shown above is with a washing screw, but more info on the drum washer is shown on page 10.

PEELING



STEAM PEELER

The Tummers Steam Peeler (TSP) design is based on many years of experience in the field of steam peeling. The vessel is designed for pressures up to 290 psi and its intuitive control system allows the operator to run at very short peeling times. The high rotational speed and high-speed exhaust system offer minimal peel losses, comparable to the industry standards.



EASY INSTALLATION

The very compact TSP is designed to fit in the same or smaller footprint as any other peeler. As it is available in right- and left handed execution, our engineers will always find the perfect way to fit this machine into your new or existing line.

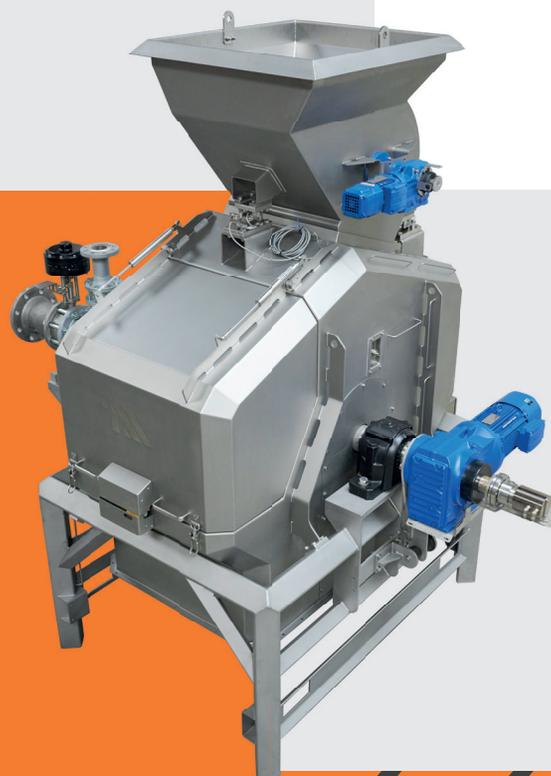
LOWER STEAM CONSUMPTION

The Tummers Steam Peeler is especially designed to offer an excellent peeling result with higher batch loads. The TSP therefore offers higher capacities and lower steam consumption compared to other steam peelers on the market.



“THE VERY COMPACT TSP IS DESIGNED **TO FIT IN THE SAME OR SMALLER FOOTPRINT** AS ANY OTHER PEELER”





LOW MAINTENANCE COSTS

The key components of the peeler have been designed for improved lifetime and extended maintenance intervals. This reduces the maintenance downtime of your peeling line and thereby the overall costs of maintenance.

IMPROVED PERFORMANCES

We offer several ways to improve the overall performances of your peeling process. In combination with the Tummers ZicZac Brusher, the TSP offers excellent peeling quality in terms of cook ring and appearance of your final product. In addition we can also equip your steam peeler with our revolutionary E2E-Condenser, which excludes odour, noise and visual nuisance.

BENEFITS

- Low peel losses
- Excellent peel quality
- Low maintenance
- Small footprint

MODEL

TSP-350	17,6000 LBS/hr
TSP-800	39,700 LBS/hr
TSP-1150	57,300 LBS/hr

CAPACITY

TECHNICAL EXECUTION

Vessel Material
Pressure Directive
Control System

STANDARD

Carbon Steel
PED
Siemens

OPTION

Duplex
ASME / SELO
Allen Bradley

ENERGY SAVING



E2E CONDENSER

Steam peeling is the most efficient way to peel potatoes, but the emission causes loss of energy, a smelly steam cloud above the factory and lots of noise. The E2E-Condenser saves energy by condensing the steam and using the water for other purposes that take place further in the process. Because the condensed steam stays within the system, the peeling process does not produce any emission.

EMISSION TO ENERGY (E2E)

The Tummers E2E-Condenser redirects the emission of a steam peeler, so the excess energy can be used for purposes like blanching or heating cleaning water. Because the steam does not escape to the atmosphere, the process does no longer cause any emission. 'E2E' therefore stands for 'emission-to-energy'.

COMPACT SIZE

This innovative solution is the fourth generation condenser and the first one that excludes any emission. In addition, it distinguishes itself through its compact size; a lot of space was saved by fitting the square condensation plates in a rectangular housing, instead of the regular cylindrical form.



ENERGY SAVING

The E2E-Condenser saves energy by recovering the emission so the excess energy can be used for purposes like blanching or heating cleaning water.



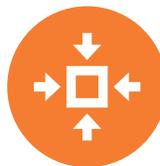
NO EMISSION

As the steam peeler's emission is redirected, your peeling process does not cause any smell, noise or visual nuisance.



COST SAVING

The E2E-Condenser offers a typical payback time of one to four years, depending on various parameters.



COMPACT SIZE

Due to its compact size and our experience in the field of system integration, the E2E-Condenser will fit into every steam peeling line.

“STEAM PEELING IS THE **MOST EFFICIENT WAY TO PEEL**

POTATOES”



COST SAVINGS

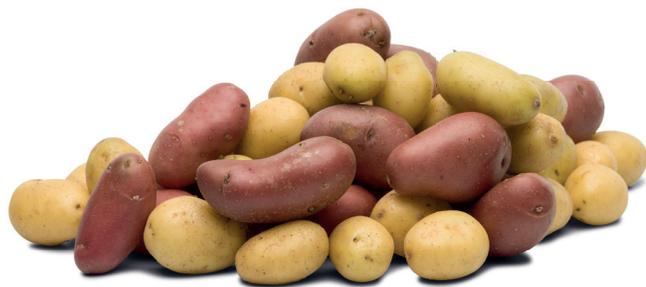
The E2E-Condenser fits to every steam peeling line. Due to its lower cost price, the Tummers E2E-Condenser offers a typical payback of one to four years. The exact saving of costs in terms of energy depends on your peeling line's running time, the use of the excess water and your original energy consumption.



MODEL PEELER SIZE

E2E 350	92.5 gal
E2E 800	211.3 gal
E2E 1150	303.8 gal
E2E 1600	422.7 gal

Other dimensions upon request.



EXCELLENT EXHAUST FLOW

In addition to the development of a compact and cost saving design of this condenser, emphasis was given to the back pressure of the system. The exhaust steam flow is designed to have less resistance than a conventional exhaust system and therefore will have a positive effect to the peeling process.

SKIN REMOVAL

ZICZAC BRUSHER (ZZ)

Based on many years of experience, Tummers has developed the high-capacity ZicZac Brusher (ZZ). This innovative peel remover conveys potatoes vertically between roller brushes in a zigzag arrangement to remove their peel. The patented ZicZac brush technology keeps the skin loss to an absolute minimum. The two 'towers' of the machine can be automatically moved from each other, to enable quick and safe cleaning of the brushes.



HIGH CAPACITY

The ZZ allows for an easy change-over to different product/peel settings. Therefore, it is one of the most versatile solutions on the market. In addition this machine needs less service than comparable machines and despite its compact size, it is capable of processing up to 132,300 LBS of potatoes an hour.

LOW PEEL LOSS

The ZicZac Brusher combines a gentle treatment with the functionality of brushing and as its brushes allow for a gentle treatment, your potatoes do not suffer any damage. The ZZ therefore ensures a minimum of peel loss, and a perfect smooth finish of any product surface. For French Fry Potatoes we have developed HR brushes, which enable an even lower peel loss.

MINIMAL MAINTENANCE COSTS

Compared to products in regular brushing machines, potatoes within the ZicZac move vertically by gravity instead of a horizontal screw conveyor. Therefore the brushes do not carry the product, which ensures a longer lifetime of these parts. In addition, the drive system and bearings are of heavy duty design to ensure the longest possible lifetime and a minimum of maintenance costs.

NO WATER NEEDED

The adjustable ZicZac arranged brushes within this machine gently remove the skin of the potatoes, which are then discharged without the use of water. This is done by means of the centrifugal force caused by the high speed rotation of the brushes. As the brushing and discharging do not involve any use of water, the peels remain perfectly suitable for further processing into -for example- animal feed.

MODEL

CAPACITY

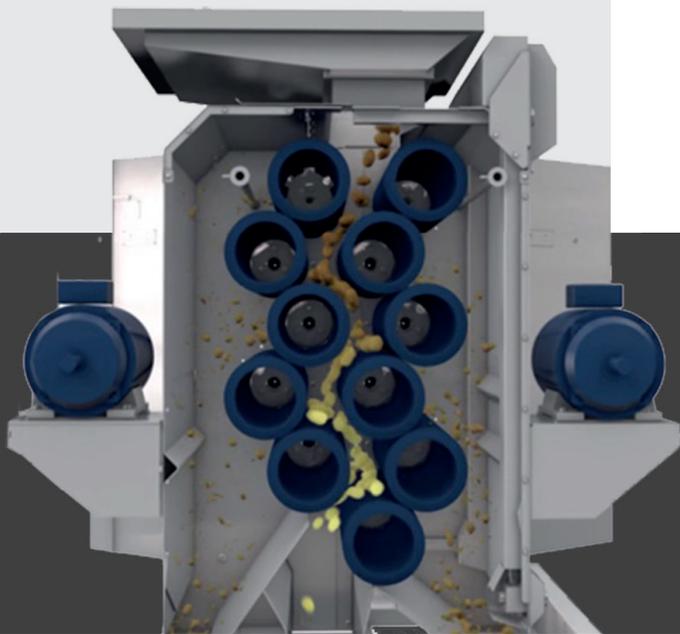
ZZ-600	33,000 LBS/hr
ZZ-1000	66,100 LBS/hr
ZZ-1500	99,200 LBS/hr
ZZ-2000	132,300 LBS/hr
HB-0600x2000-6R	11,000 LBS/hr
HB-0600x3000-6R	22,000 LBS/hr

AVAILABLE BRUSHES

French Fry Potatoes:	HR Brushes
Regular Potatoes:	Standard Brushes
Carrots - Root crops:	CA Brushes

“THE PATENTED **ZICZAC BRUSH TECHNOLOGY** KEEPS THE SKIN LOSS TO AN ABSOLUTE **MINIMUM**”





BENEFITS

- High capacity
- Minimal skin loss
- Adjustable brushing result
- No water needed



HORIZONTAL BRUSHING MACHINE (HB)

As a lower capacity alternative for the ZicZac Brusher we can also offer a horizontal brushing machine, or 'U-Brusher'. In this machine a conveyor screw in a U-shaped bed conveys potatoes past horizontally arranged brushes to remove their skin. The U-Brusher is fitted with suitable brush types depending on the product to be processed.

PEEL WASTE PUMP

In order to process peel waste to for example animal feed, the peels have to be transported to a central collection point without use of water. For this purpose we install a Mono Pump, which moves the peel waste to a central collection pump tank. We supply the peel waste pump for all requested capacities.



AFTER WASHING



WASHING SCREW CONVEYOR

The Tummers industrial screw washer washes potatoes while also transporting them to the next step in the process. This machine is extremely efficient and reliable in operation and, in addition, has low maintenance costs. The Tummers Washing screw conveyor can be installed together with a Tummers dewater drum sieve in a closed water management system for additional water saving.

BENEFITS

- Compact design
- High capacity capability
- Washes and transports at the same time
- Low maintenance costs

MODEL	CAPACITY
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TR-S-W-0600	33,000 LBS/hr
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TR-S-W-0700	55,100 LBS/hr
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TR-S-W-0800	88,200 LBS/hr
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TR-S-W-0900	110,200 LBS/hr
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TR-S-W-1000	132,300 LBS/hr
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DRUM WASHER

The industrial drum washer is specially designed for the potato industry. Due to the rotating movement of the drum the potatoes will rub to each other and the drum wall, which together with water ensures a perfectly clean end product. For an additional cleaning effect, the Drum Washer can be equipped with an extra internal brush.

BENEFITS

- Very high capacities available
- Robust, simple and slip-free drive
- Easy to operate and maintenance friendly
- Adjustable wash intensity

MODEL	CAPACITY
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TW-D-320	33,000 LBS/hr
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TW-D-450	66,100 LBS/hr
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Other capacities upon request.



“THIS MACHINE IS
**EXTREMELY EFFICIENT
AND RELIABLE”**

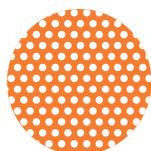
OPTIONS

Due to years of experience and in-depth knowledge about peeling lines, Tummers can help you with setting up your complete turn-key peeling line. The specific options within your line all depend on the requirements for your final product. We are able to create your perfect peeling line, including integration of extra components such as:



STEAM ACCUMULATORS

Operate as a 'buffer barrel' between your boiler and steam peeler. Steam accumulators ensure that your peeling process can always rely on the availability of steam at the right pressure. Next to that, steam accumulators will save energy by reducing the peak loads at your boiler and can even improve its lifetime.



DEWATER DRUM SIEVE

Reduces water consumption by filtering the water from the washing system and removing any debris from the water. As we developed a wide range of dewatering drum sieves, we can supply this solution for all requested capacities.



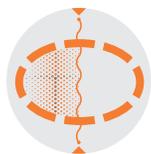
OPTICAL SORTING MACHINES

Used to quickly identify and sort foreign materials and B-grade potatoes with abnormalities like bumps and notches, skin discoloration and defects like mechanical damage. This ensures you of a perfect quality end product. Tummers has a deep knowledge about the various optical sorting machines available in the market and can help you to select the right machine for your process.



RE-PEELING SYSTEM

Together with optical sorting machines, these systems redirect B-grade potatoes to mechanically re-peel and remove imperfections. Re-peeling systems therefore contribute to a sustainable end product.



PEF TREATMENT UNITS

Pulsed Electric Field (PEF) units are used to pre-treat the potatoes for better cutting results in the next step of the process. Tummers has installed many PEF systems in the last years and can support you in selecting and integrating the right type of PEF system.



AUTOMATED CONTROL SYSTEMS

Automated Control Systems (ACS's) transform processing lines into turn-key systems by regulating the process with a minimum of human involvement. Automated Control Systems can be integrated in each Tummers processing line.



PEEL SCANNERS

Scan remaining skins on the surface of peeled potatoes after steam peeling to determine if the steam time was adequate. If not, the scanning system automatically controls the steam peeler to achieve the perfect steam time for your peel removal. Reducing the 'over peeling' of your potatoes can offer substantial savings.



PLATFORMS

High-grade stainless steel platforms used to reach different sections of your processing line for inspection, service and maintenance. Designed for optimum access, safety and sanitation design.



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