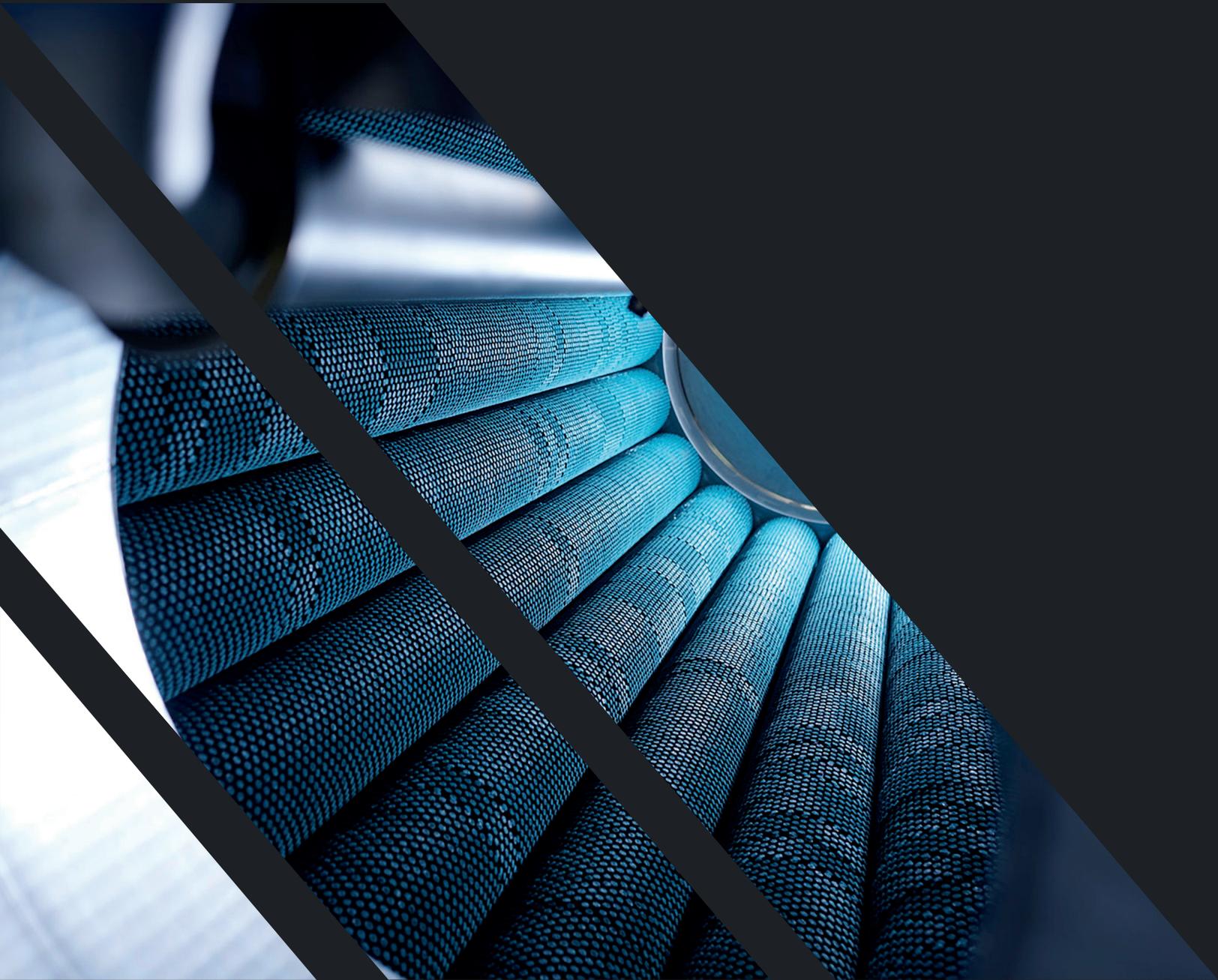


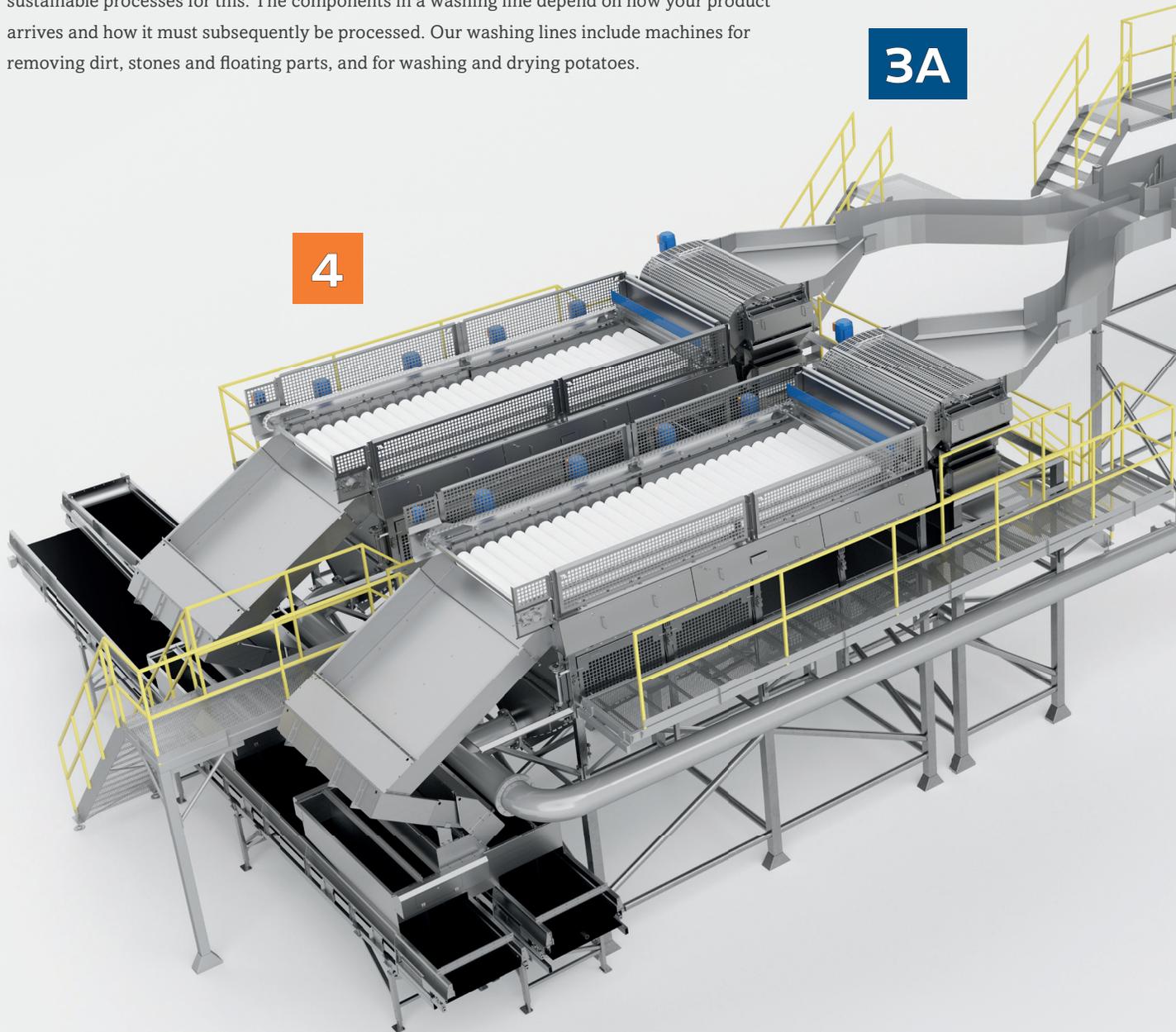


# WASHING LINE



# THE WASHING PROCESS

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 dirt, stones and floating parts, and for washing and drying potatoes.

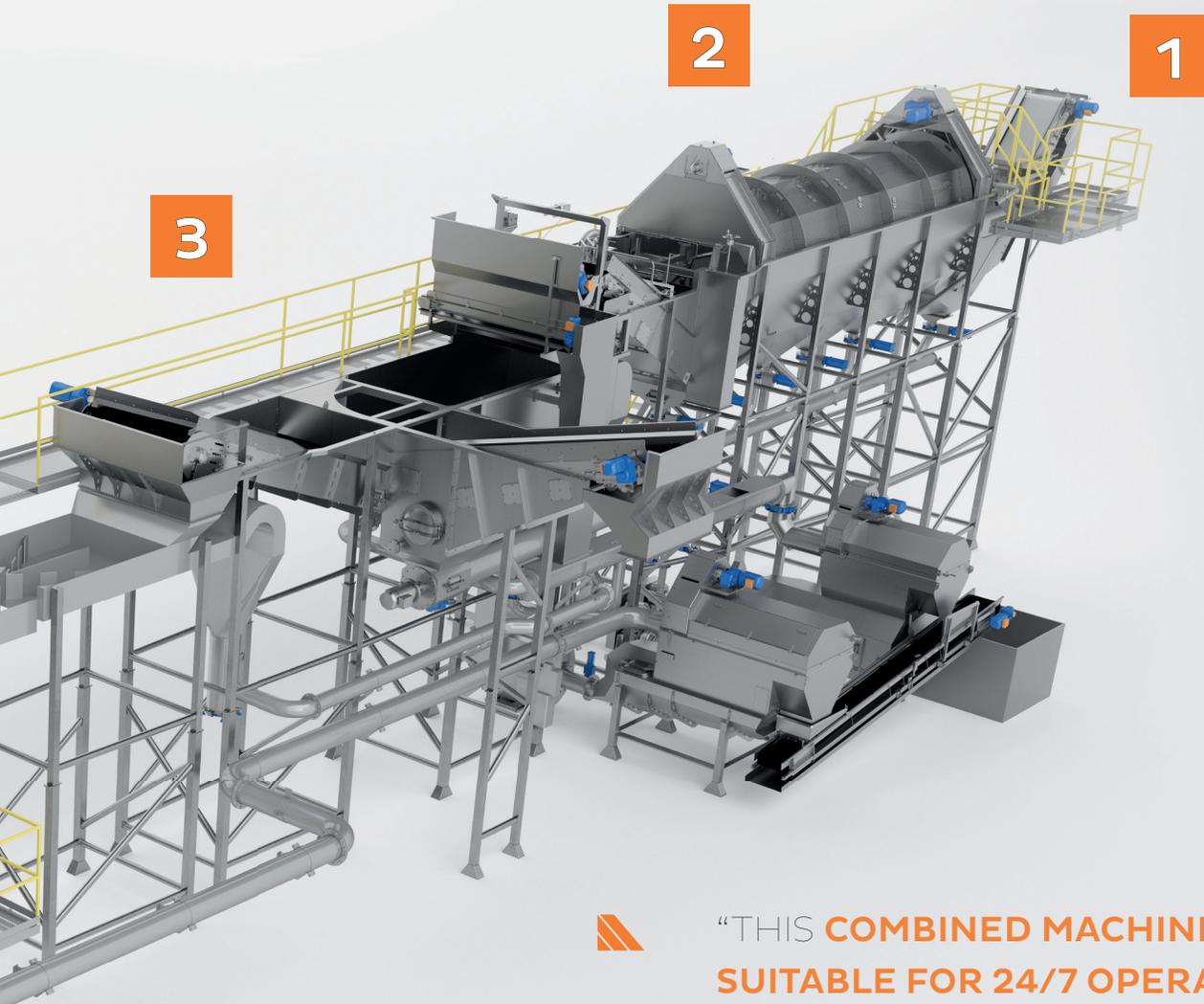


## STEP 1: DESTONING

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 cleaned final product. We often reduce the burden on this system by removing heavy soiling beforehand. Once the potatoes enter the system, upward water flow 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 rotating 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 without damaging the product.



“THIS **COMBINED MACHINE IS SUITABLE FOR 24/7 OPERATION,** AND GUARANTEES YOU A PERFECTLY **CLEANED FINAL PRODUCT**”

### STEP 3: SEPARATING FLOATING PARTS

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

### 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 underneath the dryer rolls. This machine is designed that potatoes can be transported at high speed while being dried without incurring any damage.

### STEP 3A: RINSING AND DISTRIBUTION (OPTIONAL)

To enhance product flow, this example showcases an effective solution using a Flume Dividing System together with a Delta Roller Spreader. This solution efficiently removes any residual clay or salt that may be adhering to the product by use of the Flume System. This is followed by dewatering and removing any remaining small foliage and foreign objects with the Delta Roller Spreader. This approach not only ensures the improved quality of the product but also preserves the longevity and functionality of the roller bed within the roller dryer. Additionally, the Delta Roller Spreader provides an even distribution of the product on the roller bed, resulting in superior dried potatoes and a more seamless product flow.

# DESTONER/ WASHER

Our stainless steel Destoner/Washer is considered a true showpiece in our washing technology product range. The destoning and washing process are combined in one single high-capacity machine, which is suitable for 24/7 use. This versatile solution can destone and wash up to 353.000 LBS per hour and can even be set up to separate floating parts from your product.



## MULTIPLE PROCESSES

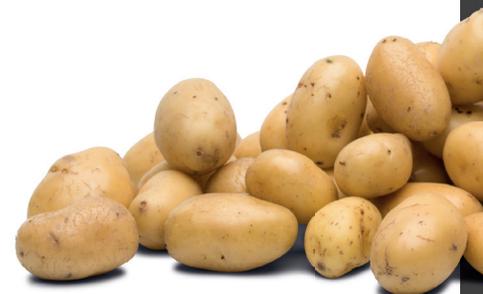
Due to three process operations in one compact machine, this solution belongs to our most popular products. Before entering the washing drum, the product is pushed upwards by a waterflow so clods and stones sink to the bottom. The water-filled hexagonal drum thereafter causes the products to rub against each other, by which they are cleaned thoroughly but gently. Finally, an optional floating parts remover separates floating contaminants so that a perfectly clean product remains.

## ADJUSTABLE WASHING INTENSITY

Due to several features, this machine's washing intensity is completely adjustable to your requirements. A mechanically operated valve at the discharge side of the drum allows you to control the water level, which causes the products to rub less or more intensively against each other. At the end of the drum the product passes over an adjustable slide, whereby the product's staying time and thus the washing result can be determined.



“DUE TO SEVERAL FEATURES, **THIS MACHINE'S WASHING INTENSITY IS COMPLETELY ADJUSTABLE TO YOUR REQUIREMENTS**”



## MAINTENANCE FRIENDLY

The industrial Destoner/Washer unit is characterized by its robust, simple design in which the product can be washed and de-stoned under an adjustable water level. The drum is suspended in a maintenance-free, direct driven belt construction that places all rotating parts well above the water level.

## PERFECT PERFORMANCES

To ensure perfect performances in any condition, many options can be added to the Destoner/Washer. Depending on the placement of the machine, the stone outfeed can be mounted on either the right or left side, or even backwards. In addition an optional hood can be mounted over the drum, to improve hygiene and operator safety.

## BENEFITS

- Combined functionality
- Adjustable washing intensity
- Robust, simple design
- Very high capacities
- Gentle handling for fresh pack

## MODEL

KW-320-1x2.5-L/R

KW-450-1.3x3.65-L/R/A

KW-450-1.3x4.8-L/R/A

KW-600-1.65x3.75-L/R

KW-600-1.65x5-L/R

KW-700-2x5-L/R/A

KW-700-2X6.25-L/R/A

KW-700-2X6.25-L/R/A\*

KW-800-2.4x6.2-A

## CAPACITY x 1000

11 - 33 LBS/hr

44 - 66.1 LBS/hr

55.1 - 99.2 LBS/hr

77.2 - 121.3 LBS/hr

99.2 - 143.3 LBS/hr

143.3 - 198.4 LBS/hr

176.4 - 242.5 LBS/hr

66.1 - 88.2 LBS/hr

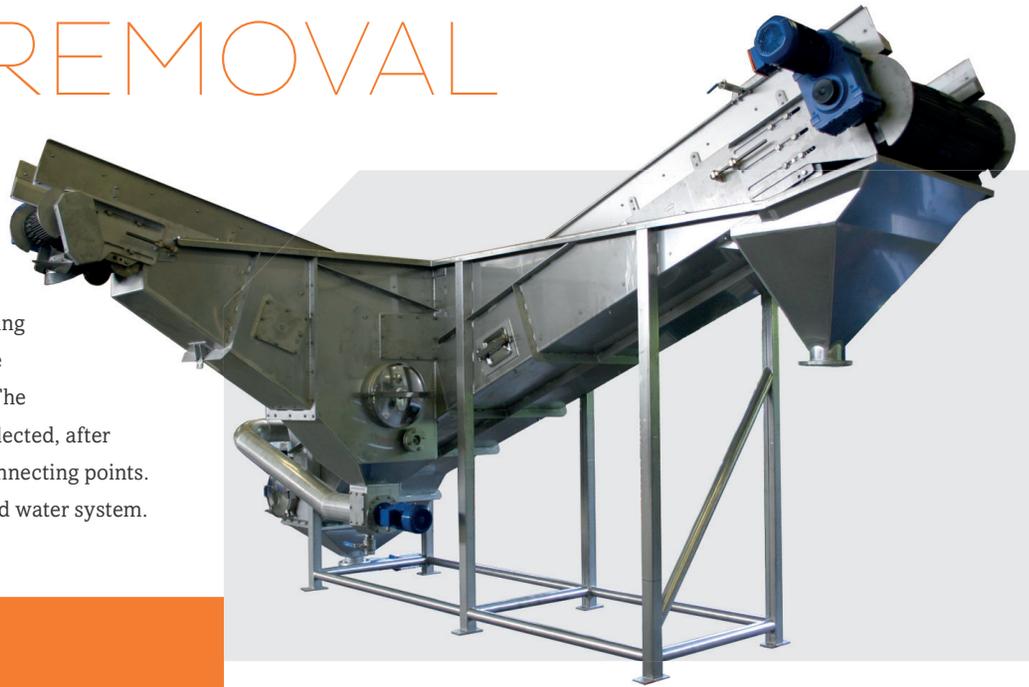
198.4 - 353 LBS/hr

\* Washer for carrots and cassava



# FLOATING PARTS REMOVAL

When digging up field crops, contamination may be present in the form of corn cobs, foliage, plastic and woods. Tummers floating parts removal systems efficiently separate these foreign objects from your product. The contamination will be de-watered and collected, after which the purified water returns to the connecting points. This circulation provides you with a closed water system.



## CLAY BATH/BRINE SEPARATOR

Tummers has two solutions to remove hollow heart and glassy floating potatoes: A Clay Bath or a Brine Separator. Both machines have the same design, but it's the mixture inside what sets them apart.

The density of the mixture influences the buoyancy of the products. The ratio of the mixture is the most important parameter for a successful separation process. The process for separating floating objects is based on the difference in upward force between good products like potatoes and unwanted floating objects, such as foliage and stalks but mainly glassy floating potatoes.

Our Clay Bath contains a mixture of water and clay and is built with 304 stainless steel. This mixture is easy to process afterwards and even reusable for some other processes.

The Brine Separator contains a mixture of water and salt and is also built with 304 stainless steel and can be built with 316 stainless steel on specification. The process in the Brine Separator is done at lower operational costs and doesn't need to be in a constant motion.

## ADJUSTABLE SEPERATING

During the process, good potatoes will sink and unwanted products will float. By adjusting the proportions, it is possible to separate potatoes which have a too low density for your production purpose. An upward flow thrusts the floating objects to an outfeed conveyor belt, while a belt at the bottom of the bath transports good potatoes to the outfeed for further process. Due to the difference in underwater weight, this very accurate solution is suitable for separating low density potatoes.

## BENEFITS CLAY BATH

- Adjustable separating on density
- Extremely accurate
- Water is easy to process

## BENEFITS BRINE SEPARATOR

- Lower operational costs
- No constant motion
- Extremely accurate
- Adjustable separating

### CLAY BATH

KB-320-T

KB-450-L/R

KB-600-L/R

KB-700-L/R

### BRINE SEPARATOR

ZB-320T

ZB-450-L/R

ZB-600-L/R

ZB-700-L/R

### CAPACITY

44,000 LBS/hr

88,200 LBS/hr

132,300 LBS/hr

220,500 LBS/hr



“TUMMERS **FLOATING PARTS REMOVAL SYSTEMS** EFFICIENTLY **SEPARATE** THESE **FOREIGN OBJECTS** FROM YOUR **PRODUCT**.”



## PINTLE BELT

After washing, the Pintle belt can remove haulm and vines from the product. The belt is provided with a special crop conveyor belt with pintle profile, to which the foliage adheres. The angle of the pintle belt can be adjusted manually or even fully automatic. Different types are available depending on the width of the outfeed of the previous machine.

## BENEFITS

- Simple robust construction
- Open system, easy to inspect
- Low maintenance

## FLOATING PARTS REMOVER

The Floating Parts Remover eliminates floating foreign objects by generating a surface current which thrusts floating parts to an overflow channel. Sprayed water from a pipeline fitted with a spraying nozzle directs the water to the side of the machine. The washed product can optionally be cleaned again by a sprinkler hose on the discharge belt. In addition, this machine can be used to rinse products that have been through the Clay bath or Brine separator.

## BENEFITS

- Multi-purpose
- Simple construction and operation
- High capacity capability
- Long-life tires and wheels

## MODEL

VB-1000x3500T-L/R

VB-1600x3500T-L/R

## CAPACITY

33,000 LBS/hr

53,000 LBS/hr



# DRYING AND DISTRIBUTION

## DELTA-ROLLER SPREADER

The Tummers Delta-Roller Spreader is designed to smoothly distribute your product, transitioning it from a narrow to a wider flow. This machine is commonly used to transfer potatoes from the discharge end of a screw conveyor to a wide sorting system. However, its versatility extends to a wide range of food products and process transitions, including dewatering or removing small parts. Ensuring a consistent supply to the sorter maximizes its capacity and optimizes the handling of subsequent machines.



## EFFICIENT DISTRIBUTION

The Tummers Delta-Roller Spreader is small, compact and makes distribution much more efficient. Due to the gap distance and material it's also a clean, food-safe and a hygienic way to deliver the product to the next process. A versatile machine which can handle many applications next to potatoes. It has 7 rollers and its capacity depends on the width of the machine, which is available from 35.5 up to 106.3 inch.



“THE TUMMERS DELTA-ROLLER SPREADER IS SMALL, COMPACT AND MAKES DISTRIBUTION MUCH MORE EFFICIENT”

## BENEFITS

- Gentle handling of your product, with less bouncing
- A constant gap distance prevents foreign objects getting jammed
- Quick distribution
- Easy emptying of the roller bed by increasing the speed



## ROLLER DRYER

After the destoning, washing, rinsing and polishing process, the products still contain adherent moisture. For further processing it is ideal if the product is thoroughly dry, that is why we have developed the Tummers Roller Dryer. This machine contains rotating felt rollers that absorb the adherent moisture without affecting the product characteristics.

## NO PRODUCT DAMAGE

The Tummers roller dryer is designed in such a way that your product can be introduced and distributed across the drying rollers at high speed and without damage. The entry side is provided with rubber rollers, which gently slow the product down and spread it across the width of the machine. The rotating felt rollers then transport the product and absorb the water, while pressure rollers underneath them drain off the water.

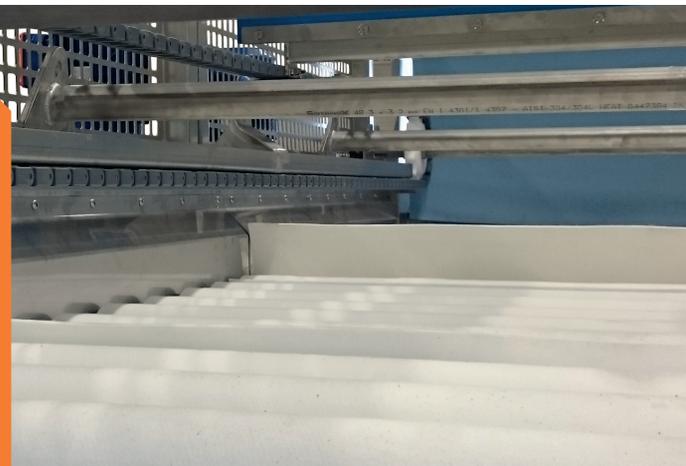


## EASY MAINTENANCE

The industrial Roller dryer is suitable for 24/7 use. This machine is designed and constructed to deliver the best possible performance, even in the toughest conditions. The simplicity of its design allows for an easy change of the moist-absorbing felt and minimizes overall maintenance.

## MANY OPTIONS POSSIBLE

Due to many possible options, this very durable solution will always meet your needs. If you would like to process different kinds of product we offer the possibility of a run-empty system, which allows for a quick change-over of your production. To disinfect the water and felt rollers, we can also equip the machine with a UV-C light bar to substantially reduce bacterial cross-contamination. These are just a few examples, so please talk to your Tummers contact person if you would like more information about different applications!



## BENEFITS

- No product damage
- Designed for 24/7 industrial use
- Easy maintenance
- Many options possible

## MODEL

## CAPACITY

RD-450-1200-20R	55,000 LBS/hr
RD-450-1500-20R	77,200 LBS/hr
RD-450-2000-20R	99,200 LBS/hr
RD-450-1500-28R	110,200 LBS/hr
RD-600-2000-28R	143,300 LBS/hr



# POLISHING

## OPTIONAL

### POLISHER

Consumers are becoming increasingly critical when it comes to food. Therefore, the Tummers Polisher guarantees a clean and tasty appearance of the potatoes after the washing process. The specially designed brush drum ensures a final, thorough and intense cleaning of the potato surface, resulting in a perfect finish and an extended shelf-life for your product. This machine consists of 18 brushes mounted in a circle, collectively forming a drum. Positioning the machine at an angle will allow gravity to pass the products over the length of the brushes.

### FOOD-SAFE

This Polisher is the first on the market to be made entirely of stainless steel and is suitable for 24/7 use. The brushes in this machine boast food-safe bristles and are designed with a larger diameter and greater bristle volume. This means they offer 10% more brush surface area, which ultimately leads to a longer service life compared to similar machines. The brushes' direction of rotation is reversible to extend their lifespan.

### VARIOUS SUPPLY OPTIONS

The brushes come in a variety of rigidity, depending on the finish you require for your finished product. A spray section in the machine cleans the products continuously. Various options exist to tailor these to your situation, including the addition of a flume, screw, conveyor belt or vibration technology.

### STRAIGHTFORWARD MAINTENANCE

The brush rolls consist of various segments and are easy to replace through hatches on the side of the machine. The brush rolls meet the CE standards for safety and contactless safety switches monitor their position. In addition, the machine has a jog function, which rotates the drum slightly and moves the brush roll you wish to replace into the right position in front of the hatch.



### BENEFITS

- Suitable for 24/7 production
- Perfect appearance for sales to consumers
- Food-safe brushes with long lifespan
- Minimal loss of product
- Straightforward maintenance

### PRODUCT

Potatoes

### CAPACITY

55,100 LBS/hr



“THE BRUSHES COME IN A **VARIETY OF RIGIDITY,** DEPENDING ON **THE FINISH YOU REQUIRE** FOR YOUR FINISHED **PRODUCT.”**

# OPTIONS

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



## DRY SOIL REMOVER

In case of very heavy contamination, the burden to the Destoner/Washer can be reduced by removing heavy soiling before the product enters the machine. Our Dry Soil Remover specially serves this purpose. This machine contains a bed of special star rubbers that are placed very closely to each other, allowing loose dirt to pass through. All rollers are driven separately to minimize the required amount of maintenance. As the separated dirt can be removed in a dry state, the exposure of your washing installation and water to dirt is limited as much as possible.



## AUTOMATED CONTROL SYSTEMS

Automated Control Systems (ACSs) transform processing lines into turn-key systems by allowing the process to be managed with a minimum of human intervention. These systems can be integrated into any Tummers processing line.



## FLUME SYSTEMS

Flume systems transport product and/or water to other processes, while also gently washing product. Flumes are ideal for transporting over longer distances in any direction, depending on the production facility. Different configurations are possible with open and closed flumes for a custom fit.



## DEWATERING SOLUTIONS

The dewatering of your product flow is an important step in obtaining a perfect end product. The ideal solution depends on various factors, including the configuration of your process line and your wishes for the end product. We offer tailor-made dewatering solutions, including bar strainers, sieve bends etc.



## PLATFORMS

Our high-grade stainless steel platforms are used to reach different sections of your processing line for inspection, service and maintenance. These platforms are specially designed for optimum access and safety.





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