

KUIPERS

FOOD PROCESSING MACHINERY

The worldwide specialist in processing potatoes,
snacks, savouries, nuts and seeds



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Helping you deliver the tastiest snacks on the market

As a producer of snacks, savouries, nuts or seeds you are constantly striving for the best possible product quality. At the same time, the continuity of your production process is also high on your priority list. Deploying a quality system from Kuipers Food Processing Machinery helps you to achieve both.

Kuipers Food Processing Machinery was founded in 1985. The choice to concentrate on food processing systems was a deliberate one. That's because these processes are so specific that only experience and in-depth knowledge can result in the best possible quality of technology and processes.

Quality guaranteed

Quality and efficiency are at the core of everything we do. We are continuously working to improve our processes and machines. Most components originate in the Netherlands, from partners who share our quality standards.



Worldwide presence

The technology and processes by Kuipers Food Processing Machinery are used in over 60 countries by both, starters and multinationals. A list of references is available on request. Kuipers Food Processing Machinery's team includes highly skilled engineers, technicians and salespeople with an average of ten years' experience each. Our team puts great emphasis on continuous development, innovation and relationship building.



TANKS AFNEMEN VOOR TRANSPORT

Created through technology, driven by innovation

Sustainable production

In a growing number of countries worldwide, governments and companies are increasingly focusing on more sustainable production processes. Our knowledge and experience, combined with today's high demands and expectations, have helped us design and manufacture some of the most sustainable snack factories.



One example of producing sustainably is the special process for water treatment. This results in a 300% reduction in water consumption, and less wastewater. Not only do you save on costs for water consumption and the drainage of wastewater, but also comply with the local guidelines and contribute to a better future for our environment.

Continuous improvement is in our DNA. And you benefit from this as a client. Our coating machine is the only one in the world which is fully automatic. Kuipers new deep fryer ensures an exceptionally long lifecycle for the fryer oil, which results in low production costs and longer shelf life for your product.



Since its establishment in 1985, Kuipers Food Processing Machinery has grown its expertise in the production and frying of snacks, savouries, nuts and seeds. A deliberate choice, because we believe you can only become really good at something if you're specialized.



We offer our clients custom engineered solutions according to their local demand and product characteristics. From small frying systems to large turnkey projects for processing thousands of kilograms per hour.



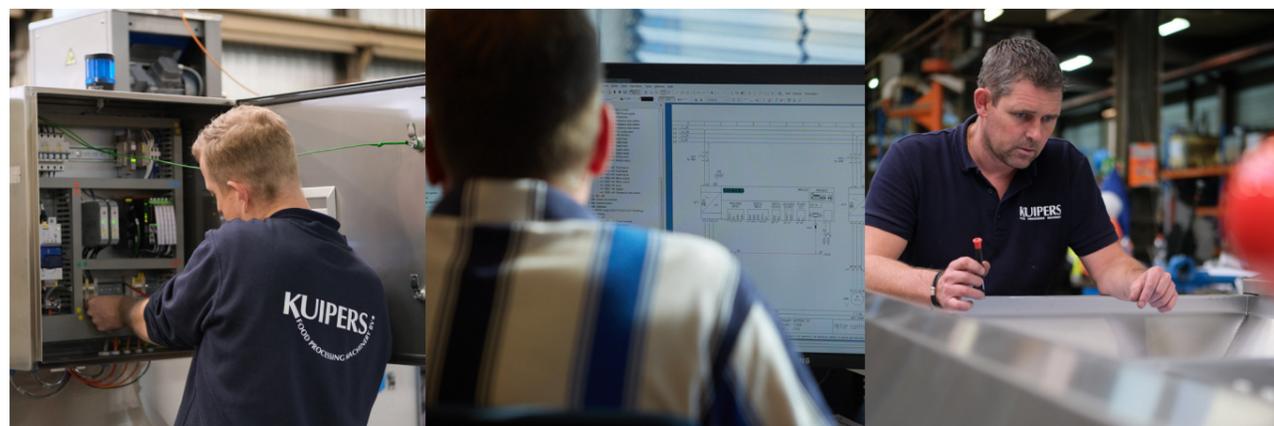
We care for our environment and acknowledge the importance of working together towards a better future. Our machinery presents the most energy efficient solutions with the lowest water and frying oil usage in the industry.



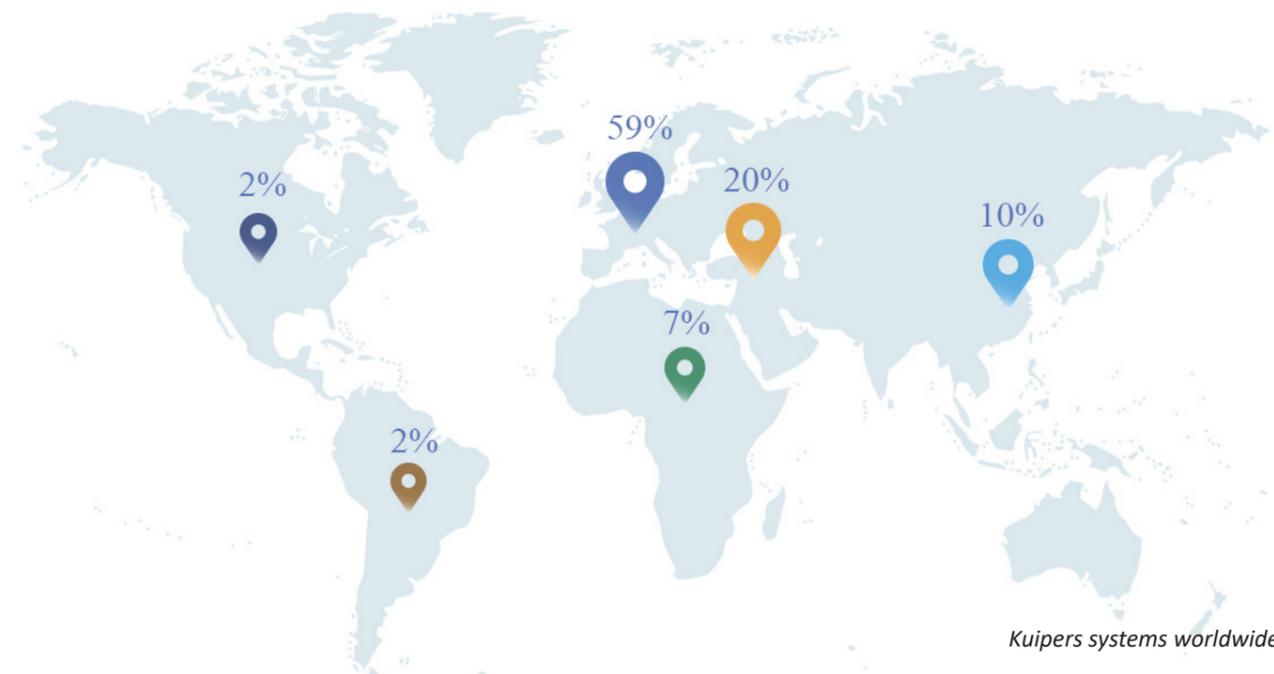
Dutch origins worldwide. Our systems are developed with Dutch engineering expertise, manufactured in The Netherlands and delivered worldwide. Highest quality technology guaranteed.

A global footprint built on long-term relationships

Good maintenance is essential to ensure optimal production at all times. For continuous value analysis, Kuipers's service department offers the opportunity to maintain your system throughout its lifetime. A regular inspection carried out by our service engineers will offer you an insight into the quality of your production line. If necessary, our experts will advise you on possible updates and improvements on how to bring your line to its optimal state. In addition, our remote assistant service can provide advice and make the necessary adjustments from a distance. This way we ensure our customers can produce optimally, save time and money and most important maintain long-term relationships.



Our service department will be available to assist you with queries such as spare parts and/or material supply, start-up services, site visits, sub-supplier issues, etc. Kuipers commissioning engineers and sub-suppliers have direct contact with our aftermarket division to ensure maximum efficiency at all stages.



Applications



Nut snacks

- Peanuts
- Cashews
- Macademia
- Coated nuts
- Battered nuts



Pellets

- Pellet snacks
- Extruded snacks
- Crackers
- Pork rinds



Potato products

- Chips
- Kettle style chips
- French fries
- Mash potato snacks



Other snacks

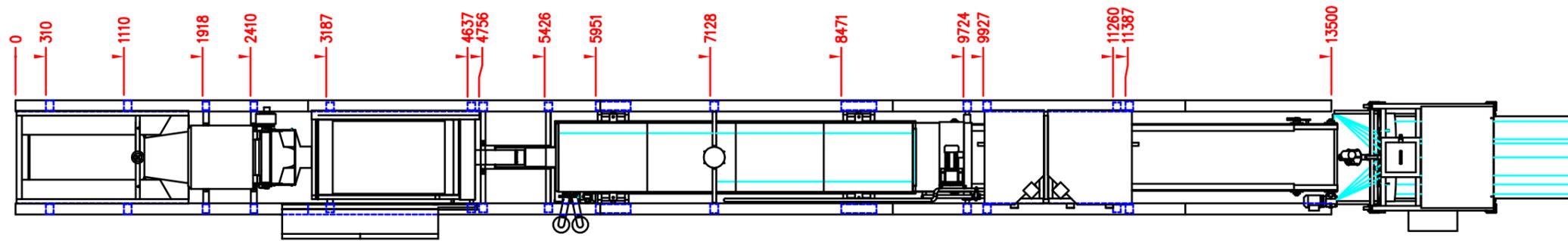
- Corn kernels
- Mini croutons
- Coated onions
- Seeds

Main advantages

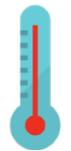
- Custom-built technology
- Fully controlled heat treatment
- Unique dirt removal system
- Frying oil that lasts from days to weeks without the use of any chemicals
- Fully tested lines prior to delivery
- Turnkey delivery worldwide
- Remote assistance
- Service and aftermarket



TOP VIEW

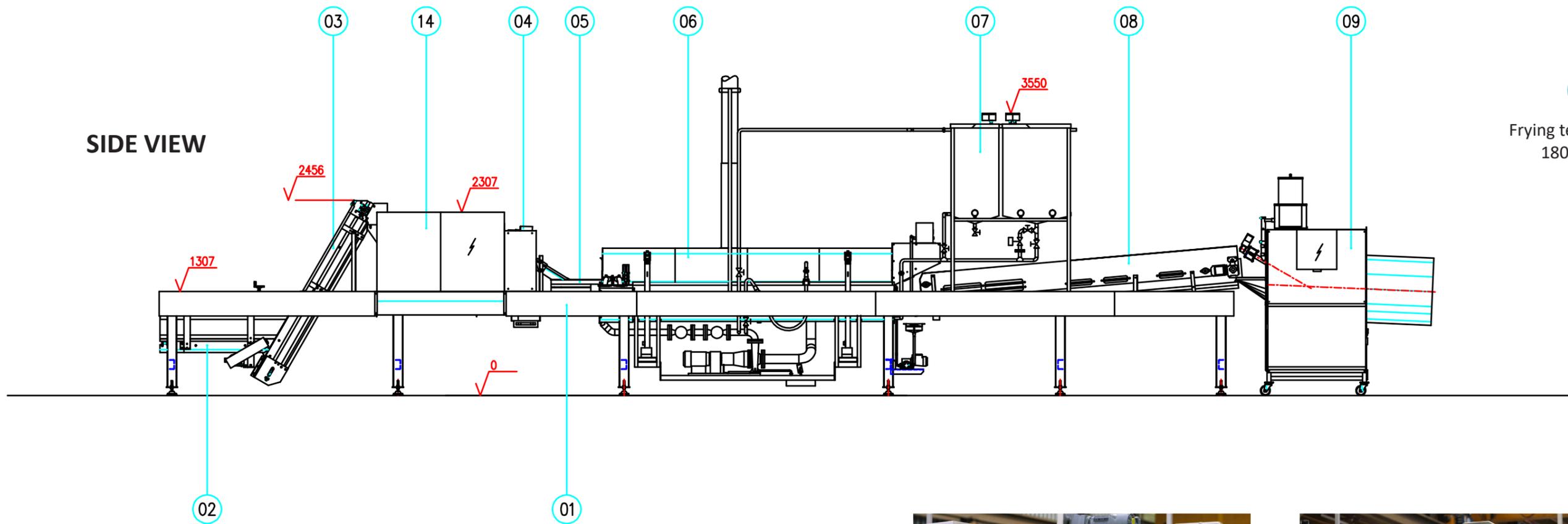


Frying time:
12 - 45 seconds



Frying temperature:
180 - 210°C

SIDE VIEW



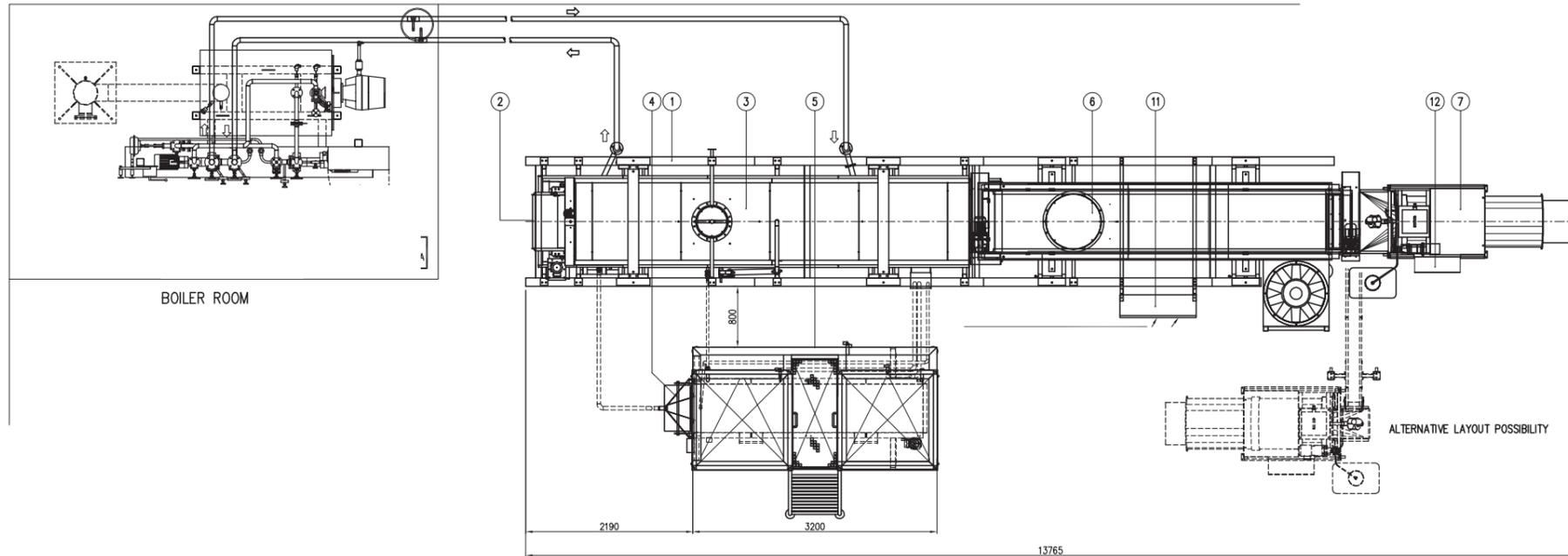
SAMPLE PELLET LINE

- | | |
|------------------------------|---------------------------------|
| 1: MAIN SUPPORT FRAME | 6: OIL TANKS (USED + FRESH OIL) |
| 2: INFEEED CHUTE | 7: DEFATTING BELT |
| 3: ROTATING DOSING SYSTEM | 8: ROTATING FLAVORING DRUM |
| 4: VIBRATORY PELLET SPREADER | 9: ELECTRIC CONTROL PANEL |
| 5: UNIVERSAL PELLET FRYER | |

Note: this is a sample pellet line heated by electrical elements. Other lines may differ depending on their capacity, product's size, shape, composition and other customer specifications.

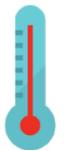
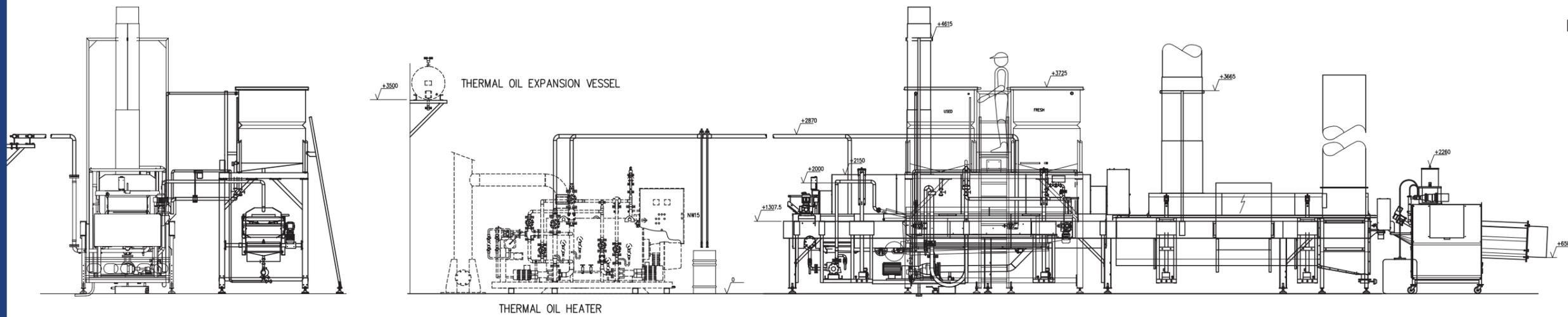


TOP VIEW



Frying time:
250 - 300 seconds

SIDE VIEW



Frying temperature:
140 - 180°C

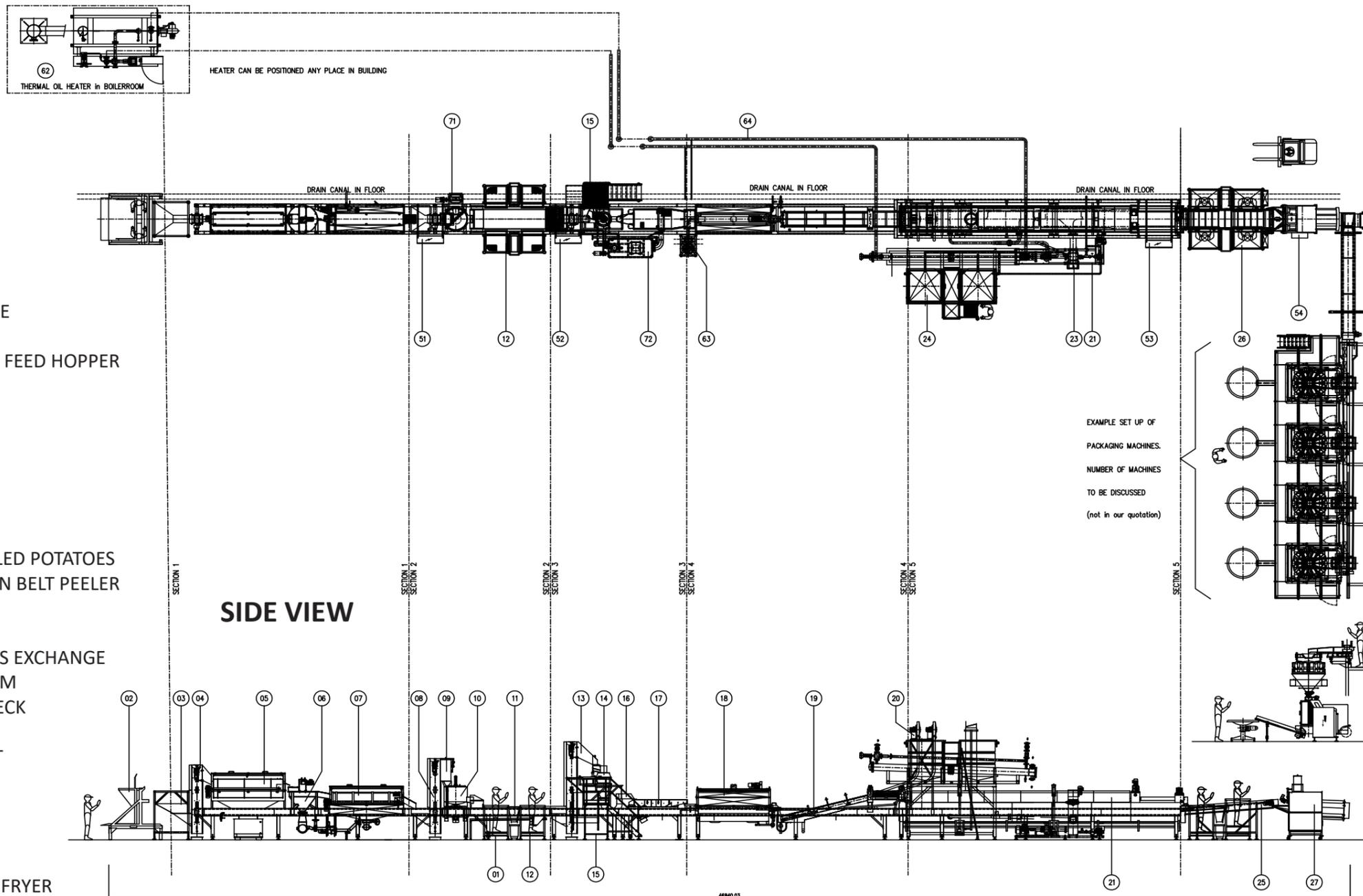
SAMPLE PEANUT LINE

- 1: MAINFRAME OF TOTAL PLANT
- 2: INFEED HOPPER
- 3: AUTOMATIC CONTINUOUS FRYER
- 4: PAPERFILTER
- 5: FRYING OIL TANKS, FRESH AND USED OIL
- 6: AMBIENT AIR COOLING TUNNEL
- 7: FLAVOURING / GLAZING / SALTING UNIT
- 11: CENTRAL, ELECTRIC CONTROL PANEL FOR THE WHOLE PROCESS
- 12: CONTROL PANEL FOR FLAVOURING / SALTING UNIT

Note: this is a sample nuts line heated by thermal oil. Other lines may differ depending on their capacity, product's size, shape, composition and other customer specifications.



TOP VIEW



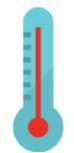
SIDE VIEW

- 01: MAIN SUPPORT FRAME
- 02: CRATE TIPPER
- 03: POTATO COLLECT AND FEED HOPPER
- 04: DOSING ELEVATOR
- 05: DRY CLEANING CAGE
- 06: DE-STONER
- 07: POTATO ROD WASHER
- 08: ELEVATOR
- 09: DOSING HOPPER
- 10: ABRASIVE PEELER
- 11: INSPECTION BELT PEELED POTATOES
- 12: PLATFORM INSPECTION BELT PEELER
- 13: DOSING ELEVATOR
- 14: SLICER
- 15: PLATFORM FOR KNIVES EXCHANGE
- 16: SLICE WASHING SYSTEM
- 17: VIBRATORY SCREEN DECK
- 18: BLANCHER
- 19: SLICE SPREADING BELT
- 20: AIR KNIVES
- 21: POTATO CHIPS/STICKS FRYER
- 22: FRYING OIL CIRCULATION
- 23: FRYING OIL FILTER
- 24: OIL TANKS
- 25: INSPECTION BELT END PRODUCT
- 26: PLATFORM INSPECTION END PRODUCT
- 27: FLAVOURING UNIT
- 71: WATER TREATMENT PEELING WASHER
- 72: WATER TREATMENT SLICE WASHER

- 51: CONTROL PANEL
- 52: CONTROL PANEL
- 53: CONTROL PANEL
- 54: CONTROL PANEL
- 61 : THERMAL OIL HEATER
- 62: HEAT EXCHANGER
- 63: STEAMBOILER
- 64: PIPING THERMAL OIL



Frying time:
120 - 150 seconds



Frying temperature:
140 - 180°C

EXAMPLE SET UP OF
PACKAGING MACHINES.
NUMBER OF MACHINES
TO BE DISCUSSED
(not in our quotation)

PACKAGING FEED AND
DISTRIBUTION SYSTEM
(not in our quotation)



Note: this is a sample chips line heated by thermal oil. Other lines may differ depending on their capacity, product's size, shape, composition and other customer specifications.

The main support frame

In KFPM designs, the processing units are all installed in one long support frame with two sidebars. The electric control cabinets for all sections will be installed on these sidebars as well, either at the left or the right-hand side of the plant, depending on the factory layout. This design principle enables us to use the special shape of the sidebars as cable trays and mounting brackets for electric wiring, pneumatic air supply pipes for i.e. water. All internal electric wiring between the control panels and users in the plant will be installed inside these sidebars, which after installation and testing will be closed with stainless steel covers. All cabling is safely and hygienically hidden. Technicians however can easily reach all systems by removing the bolted covers.

Kuipers pre-installs all internal electric wiring of the plant and tests all electric connections in the workshop, before shipment. All required internal pipework for water, frying oil (fresh and used), compressed air, etc. is also be completely installed in our workshop before shipment so that the plant will be ready for start-up when it arrives at the location. This saves many days, even weeks, on commissioning of the plant consequently saving costs.



Frying oil turnover

In each plant, there is a fixed relation between the total oil content of the frying plant and the rated capacity - frying oil turnover time. This is the number of hours of constant production at rated capacity during which the total oil volume of the complete frying installation has been replaced once, picked up by the product. The figure is used by the frying plant manufacturer for the design of the plant. It must always be as short as possible to assure stabilization of the frying oil quality during production at an acceptable level. Kuipers guarantees the lowest turnover times within the industry, especially when processing nuts. This is important as it allows the snack producers to save costs, time and energy on stopping production to change the oil.

Note: running the plant at lower capacities than the rated capacity makes the frying oil turnover time longer. This may lead to a higher FFA percentage, thus decreased shelf life for the end product. It is advised to run fewer hours per day or fewer days per week at full capacity than run low capacities continuously.

Frying and frying oil heating

When it comes to the frying process, maintaining frying oil quality is one of the most important factors. This is achieved via a good design and process. Heating is one of the first steps. A fryer must deliver the exact heat load needed to fry a product. Meanwhile, taking into consideration many factors such as heat losses from transportation, product size and tendency to float, as well as temperature recovery time.

Kuipers fryers are designed with a frying oil heating system that uses circulating thermal oil as a heat carrier. In continuous industrial fryers, heating by means of thermal oil systems consists of a thermal fluid boiler and a heat exchanger. Thermal oil heating is applied to obtain an accurate, modulating temperature control while heating the frying oil. This is considered a better alternative to direct-fired systems as it avoids direct contact of extremely high temperatures to the frying oil.



The thermal fluid boilers are also the more energy-efficient and economical alternative. This is especially important when frying products that require high thermal power such as chips. If required, Kuipers can alternatively provide frying oil heating through internal electrical heating elements immersed in the oil. This option is possible for smaller lines that require less energy.

Kuipers fryer contains different oil inlets and outlets called **multi-flow injection points** to inject the hot frying oil at different locations in the fryer. There is one oil injection point at the inlet of the fryer. The remaining oil injection and oil outlet points are divided according to the overall length of the fryer and as per the thermodynamic heat transfer requirement or temperature profile requirement in the fryer. These multi-flow injection inlets provide the balance and freedom to fully control the temperature over the whole width and length of the fryer. This helps in creating an even frying process and maintaining the optimum quality of the product.

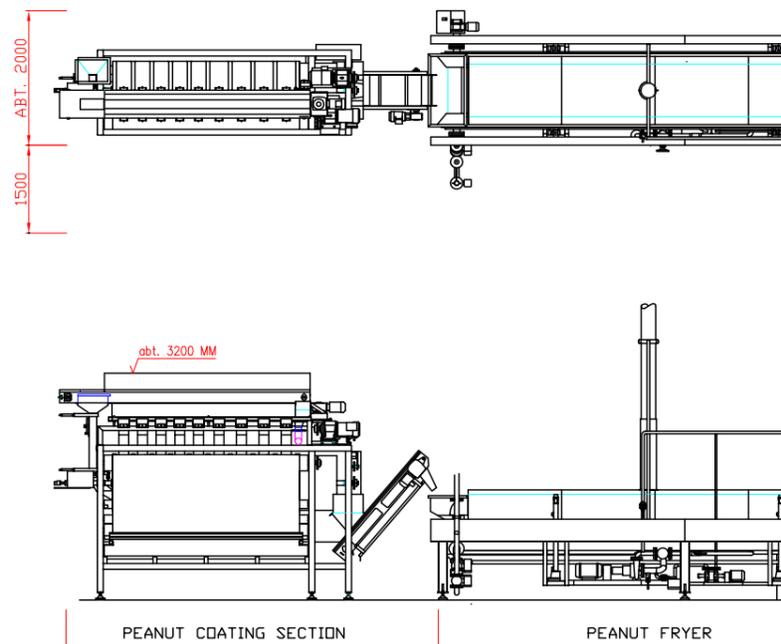
Product transportation and efficient frying oil filtration are also key for maintaining the oil quality high. Kuipers fryer design presents an innovative approach to product transportation which ensures each piece is evenly fried while using extremely low volumes of oil within the system. This combined with our unique automatic paper filter ensure the quality of the frying oil remains high as the oil is replenished rapidly and the production continues for as long as possible.



Coating

Kuipers offers snack producers the latest coating machine design for automatic and continuous coating. The equipment presents the finest covering of peanuts by gradually adding the powder mix in 9 steps. Our unit can be customized for various powder mixes and adapted to the local market's requirements.

From the peanut dosing system, a pre-set volume of raw or predried nuts are supplied into the first compartment of the coating unit. Good rotation of the product is essential to form the coating layer, therefore, instead of sliding, the peanuts are forced to rotate inside.



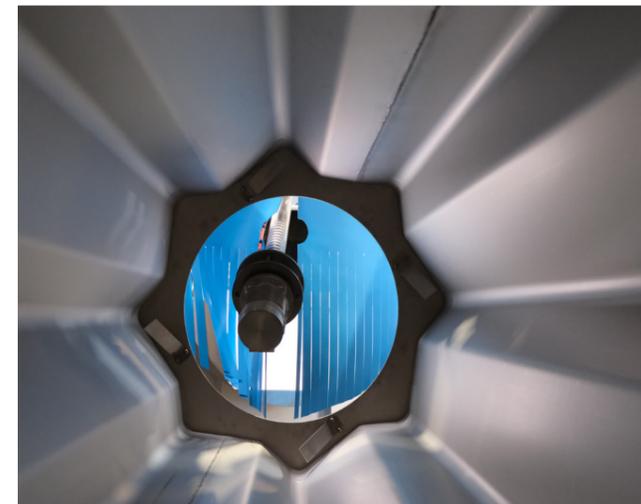
The product is transported compartment by compartment allowing gradual development of the layer. Each compartment has individual water spray and powder supplies with adjustable intervals. The time interval between the transfers as well as the water spray and powder supplies are controlled. Consequently, the PLC controls the interchange of the water spray and the powder supply in relation to each other. This forms an even, fine coating.

Kuipers coating machine is unique as it allows automatic and continuous coating. It is important to note that when coated the peanuts become buoyant, thus the fryer design needs to be carefully checked.

Flavouring

To obtain the desired flavour, spreading and even surface coverage all around the product, we apply our special shape mixing drum, combined with an accurately controlled dosing system for salt and/or flavour. Inside the rotating drum, a high-speed spreading system spreads the flavour in a cloud over the product. Electrically the flavouring system has its control board.

A direct electrical connection will be made to the production plant so that the centralised computer system assures proper functioning and adjustments during processing. All these systems are mounted in one single mainframe on wheels.



The water treatment system

Worldwide there is growing pressure from local governments to reduce water consumption and reduce waste from factories into the official sewage systems. In most countries today, factories have to pay both for the supply of freshwater as well as the drainage of wastewater. The cost price strongly depends on the type and quantity of the wastes in the water. It is quite obvious that in such cases the maximum reduction of water consumption and drainage is a very important cost factor. We have, therefore, developed one combined overall process water system for the complete plant. In our chips line, freshwater is only supplied for a last cleaning action to the slices just before they enter into the fryer. Then the same water is cleaned and re-used backward in the previous processing sections in different steps, each section having its own cleaning system.

Slicer section

As mentioned above freshwater is only added via the freshwater spray nozzles located above the spreading belt to clean the slices for one final time. The collected fresh water at this point moves to the water collection tank which is placed under the slicer section and vibrating screen deck. Water from this tank is sent to four cyclones which remove 90-92% starch. Clean water is re-circulated back to this water collection tank. Then this clean water is sent back to the slicers.

Peeler section

Treated water from the water collection tank installed under the slicer is fed to the peeler section. Water moves via installed cyclones and removes the brown slurry from the peeled potatoes. A bypass line is installed here between the slicer water collection tank and the peeler section water collection tank.

Compared to conventional systems Kuipers uses on average up to 60% less water in its potato processing plants.



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