

Process equipment



In our process equipment range, our customers will find a wide selection of peripherals to cover all their needs. All products are manufactured at our site in Seon. This allows us to guarantee the highest quality and to respond to customer requests individually and promptly.



Pelletizer HMI



Pelletizer ECO



Hot cutter



Spheronizer



Conveyor belt laboratory



Cooling conveyor belt



Film roller



Filament winder



Cooling bath



Calender



Stuffing feeding device



Side feeding device

PELLETIZER HMI

With the HMI pelletizer, strands can be processed into granules. The speed of the feed roller and the cutter can be adjusted independently of each other. This allows the extrudate feed to be perfectly matched to the extrudate and the granule size to be adjusted between **0.5 and 10 mm** during processing.

The pelletizer HMI has an integrated control incl. touch panel for user-friendly operation or can be integrated into a higher-level system via an interface. Depending on the application, rotary knives with different numbers of blades or different materials are used. The design of the cutting edge enables problem-free granulation of both soft and hard extrudates.

The compact design allows the unit to be placed in an isolator or in a laboratory environment where space is limited.



- > Compact design
- > User friendly operation
- > Customized rotary knives can be produced
- > Granule size 0.5 to 10 mm
- > Suitable for soft and hard extrudates
- > Control via touch panel or external control



APPLICATION AREAS



Food



Pharma



Laboratory



Research
& Development

TECHNICAL DATA

| | |
|---------------------|--|
| Voltage Frequency | 100–240 VAC 50/60 Hz |
| Dimensions | Length ≈ 350 mm, width ≈ 500 mm, height ≈ 230 mm |
| Granule size | 0.5–10 mm |
| Speed | 0–15 m/s |
| Motor | Servo motor, 400 W |
| Control | Touch-Panel/HMI |

PELLETIZER ECO

With the ECO pelletizer, strands can be processed into granules. The speed of the feed roller and the cutter can be adjusted independently of each other. This allows the extrudate feed to be perfectly matched to the extrudate and the granule size to be set to **1, 2, 3, 4 or 5 mm** during processing.

Depending on the application, rotary knives with different numbers of blades or different materials are used. The design of the cutting edge enables easy granulation of both soft and hard extrudates.

The compact design allows the unit to be placed in an isolator or in a laboratory environment with limited space



- Compact design
- User friendly operation
- Customized rotary knives can be produced
- Granule size 1, 2, 3, 4 or 5 mm
- Suitable for soft and hard extrudates



APPLICATION AREAS



Food



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Laboratory



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TECHNICAL DATA

| | |
|---------------------|--|
| Voltage Frequency | 220–240 VAC 50/60 Hz |
| Dimensions | Length ≈ 350 mm, width ≈ 500 mm, height ≈ 230 mm |
| Granule size | 1, 2, 3, 4 or 5 mm |
| Speed | 0–15 m/s |
| Motor | AC motor, 250 W |
| Control | Frequency converter |

HOT CUTTER

With the hot cutter, the extrudate can be reliably processed into granules with one or more knives in direct contact with the die plate. Both wet and melt extrudates can be processed. The number of knives used and the speed setting allow the production of granule sizes between **0.5 and 5 mm**.

The hot cutter is controlled by means of an integrated potentiometer or optionally directly via the control of the Three-Tec extruder. An optional housing is available for the hot cutter.



- Compact design
- Granule size 0.5 to 5 mm
- Retrofittable
- Very brittle extrudates can be cut, as the extrudate strand is still warm and therefore plastic and too short to break
- Since the cut extrudates are still plastic, they can be directly formed into perfect spherical extrudates

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TECHNICAL DATA

| | |
|---------------------|----------------------------|
| Voltage Frequency | 100–240 VAC 50/60 Hz |
| Dimensions | depending on the execution |
| Granule size | 0.5–5 mm |
| Speed | 0–500 rpm |
| Motor | Stepper motor |
| Control | Potentiometer |

SPHERONIZER

The Spheronizer is used for reducing the length and rounding of fine extrudate strands. The desired geometry of the end product is influenced by the batch size, the speed and the surface structure of the friction disc. The modular concept of Three-Tec's Spheronizers offers the customer the possibility to use friction discs with different surface structures or to combine different container sizes for different batch sizes with the same drive unit.

Equipped with an electric heater and connections for a temperature control unit, the container can be heated or cooled if required. The Spheronizer is controlled by an integrated touch panel or by a frequency converter. The speed of the friction disc can be continuously adjusted between **200 and 4,000 revolutions per minute**. Depending on the container size, a batch quantity of **5 to 2,000 grams** can be processed.

- Suitable for product development as well as smaller production batches
- Different container sizes with the same drive unit
- Friction discs with different surface structures
- Very easy disassembly, emptying and cleaning of the container and the friction disc
- Heatable container by means of electric heating
- Connections for liquid temperature control (heating or cooling)
- Batch quantities up to 2'000 grams can be processed (larger batch quantities also possible on request)
- Rotational speed of the friction disk 200 to 4'000 revolutions per minute
- Control via touch panel or frequency converter



TECHNICAL DATA

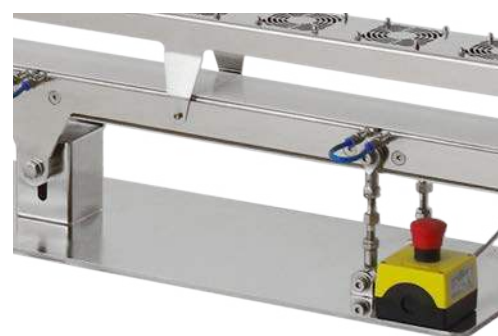
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| Voltage Frequency | 220–240 VAC 50/60 Hz |
| Dimensions | Length ≈ 450 mm, width ≈ 300 mm, height ≈ 450 mm |
| Batch size | 5–2'000 g (larger batch quantities on request) |
| Friction disc | Ø 114/150/200 mm |
| Groove | according to customer requirements |
| Rotational speed | 200–4'000 rpm (higher rotational speeds possible) |
| Temperature | 20–200 °C |
| Heating | 300–500 W or liquid temperature control |
| Motor | AC motor, 120–370 W |
| Control (with electric heating) | Simatic Touch-Panel |
| Control (with double-walled container) | Frequency converter |

CONVEYOR BELT LABORATORY

The conveyor belt is suitable for gentle removal and cooling of the extrudate. To achieve more efficient cooling of the extrudate, a cooling tank on which the belt rests and is continuously cooled or an air cooling system can optionally be integrated. This allows the haul-off of extrudates with a temperature of **up to 300 °C**.

The belt speed can be variably adjusted between **0 and 15 m/min**. The conveyor belt is controlled by means of an integrated potentiometer or optionally directly via the control of the Three-Tec extruder. The height and the belt angle are adjustable.

- Conveyor belt material: silicone or PTFE
- Integrated or external control
- Belt speed: 0 to 15 m/min
- Max. product temperature: 300 °C
- Height and belt angle adjustable
- Optionally with cooling tank (water/air)



Conveyor belt with air cooling

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TECHNICAL DATA

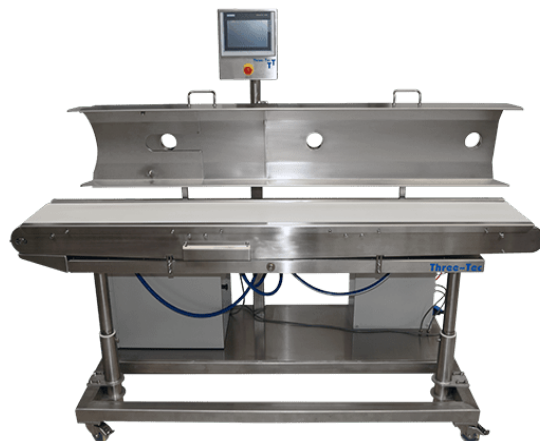
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| Voltage Frequency | 100–240 VAC 50/60 Hz |
| Dimensions | Length ≈ 500/1'000/2'000 mm, width ≈ 100 mm, height ≈ 160–200 mm (adjustable) |
| Angle | Manually adjustable |
| Belt structure | Multilayer |
| Belt surface | Silicone or PTFE |
| Temperature resistance | Continuous operation: -30 to 150 °C, short operation: -50 to 180 °C, extrudates up to 300 °C can be processed by rapid cooling of the strand after the die |
| Control | Potentiometer or external control via 0-20 mA signal |
| Belt speed | 0-15 m/min infinitely variable, other speeds according to customer requirements |

COOLING CONVEYOR BELT

With the cooling conveyor, extrudates and pellets can be efficiently cooled and gently transported away. The conveyor belt rests on actively cooled cooling elements and is permanently cooled during operation.

Air connections in the cover of the cooling conveyor allow additional air cooling of the product. The belt speed can be variably adjusted between **0 and 20 m/min**. The conveyor belt is controlled by means of an integrated frequency converter or optionally directly via the control system of the Three-Tec extruder.

- Conveyor belt material: Silicone or PTFE
- Integrated or external control
- Belt speed: 0 to 20 m/min
- Max. product temperature: 300 °C
- Height and belt angle adjustable
- Active belt cooling
- Connections for air cooling



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| Voltage Frequency | 220–240 VAC 50/60 Hz |
| Motor | 0.46 kW |
| Dimensions | Length ≈ 2'000 mm, width ≈ 300 mm, height ≈ 600–900 mm (adjustable) or according to customer requirements |
| Cooling capacity | 1.2 kW |
| Flow rate cooling | 35 l/min |
| Max. cooling | -40 to 80 °C |
| Belt surface | Silicone or PTFE |
| Temperature resistance | Continuous operation: -30 to 150 °C, short operation: -50 to 180 °C, max. product temperature 300 °C |
| Control | Touch-Panel |
| Belt speed | 0–20 m/min or according to customer requirement |

FILM ROLLER

The film roller from Three-Tec enables the calibration of flat extrudates. Furthermore, round extrudates can also be rolled out to a film with defined thickness. Afterwards, the product can optionally be wound evenly onto a spool.

The film roll consists of an adjustable and temperature-controllable pair of rolls, an adjustable pair of draw rolls and a winder or spool. The tension of the tension rollers and the rewinder spool is adjustable. This is ensured by a magnetic coupling.

The film roll is controlled by means of an integrated control panel. Optionally, the unit can be integrated into a higher-level system via an interface.



- Simple operation
- Adjustable traction force between film rollers, draw rollers and reel
- Integrated or external control

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TECHNICAL DATA

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|-------------------------------------|---|
| Voltage Frequency | 220–240 VAC 50/60 Hz |
| Dimensions | Length ≈ 560 mm, width ≈ 450 mm, height ≈ 470 mm |
| Material tension roller pair | 1st pair: hard chrome plated and grinded, 2nd pair: FDA rubber |
| Material additional temperable roll | 316L |
| Material winding shaft | 316L for different additional winding spools |
| Temperature resistance * | 120 °C (higher temperature resistance according to customer requirements) |
| Temperature | 20–160 °C |
| Motor | AC or servo motor |
| Control | Integrated touch panel |
| Speed | up to 20 m/min (depending on gear ratio), higher speeds on request |

* 1st pair of tension rollers and additional temperature-controlled rollers

FILAMENT WINDER

The rewinder from Three-Tec is suitable for winding the extrudate onto a spool. The tensile force between the take-off roller and the spool is adjustable, which enables very uniform winding. In addition to round strands, the rewinder can also be used to wind ribbon-shaped extrudates onto a spool.

The rewinder is controlled by means of an integrated potentiometer. Optionally, the device can be integrated into a higher-level system via an interface.



- Compact design
- Easy operation
- Adjustable tension between take-off roller and spool
- Integrated or external control

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TECHNICAL DATA

| | |
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| Voltage Frequency | 100–240 VAC 50/60 Hz |
| Dimensions | Length ≈ 495 mm, width ≈ 425 mm, height ≈ 335 mm |
| Speed | 0–500 rpm |
| Motor | Stepper motor |
| Control | Potentiometer |

COOLING BATH

The cooling bath in different lengths and designs is used for efficient cooling of various extrudates before further processing with a winder or pelletizer. It is equipped with holding-down bars or holding-down rollers and a scraper brush and is mounted on damping elements. The water can be drained via a valve. For larger cooling baths, a cooling unit can be connected and the water level is adjustable.



TECHNICAL DATA

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| Dimensions | according to customer requirements |
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CALENDER

The calender from Three-Tec is a versatile laboratory device which, in combination with a hot melt extruder, can be used to continuously produce tablets directly from the still hot extrudate. Since only a short preparation time is required and the process can be started with the input of a few parameters, the production of **10,000 tablets within one day**, for example, is possible.

The two counter-rotating calender rolls feature high dimensional accuracy, surface quality and hardness.

The compact design allows the device to be placed in an isolator or in a laboratory environment with limited space.



- Compact design
- Easy operation
- Integrated or external control



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TECHNICAL DATA

| | |
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| Voltage Frequency | 220–240 VAC 50/60 Hz |
| Dimensions | Length ≈ 410 mm, width ≈ 360 mm, height ≈ 260 mm |
| Tablet shapes | According to customer requirements |
| Speed | 3–65 rpm |
| Motor | AC motor, 120 W |

STUFFING FEEDING DEVICE

Stuffing feeding devices are used for the reliable feeding of very poorly feedable or very cohesive and very light products into an extruder. With the stuffing feeding device, products are pressed into the barrel of the extruder from above. This can improve the product quality and increase the feeding consistency and throughput of the extruder.

Thanks to quick-release clamps, the stuffing feeding device can be easily and quickly disassembled and cleaned. Three-Tec manufactures stuffing feeding devices for all extruder sizes and throughput ranges.



- Feeding of products that are very difficult to feed
- Improved product quality
- Increased throughput of the extruder
- High feeding consistency
- Quick release clamps for easy and fast disassembly and cleaning

TECHNICAL DATA

| | |
|---------------------|--|
| Voltage Frequency | 100–240 VAC 50/60 Hz |
| Dimensions | Execution according to customer requirements |
| Speed | 10–500 rpm |
| Motor | Stepper motor |
| Control | Potentiometer |

SIDE FEEDING DEVICE

Side feeding devices are used for the forced feeding of powders, granules or fibers into an extruder. This allows the product quality to be improved and the throughput of the extruder to be increased, as well as additives to be processed gently

Thanks to quick-release clamps, the side feeding device can be easily and quickly disassembled and cleaned. Three-Tec manufactures side feeding devices for all extruder sizes and throughput ranges.



- Feeding of powders, granules or fibers
- Gentle processing of additives
- Improved product quality
- Increased throughput of the extruder
- Quick release clamps for easy and fast disassembly and cleaning