

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



Chill Roll

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 length to be adjusted between **0.5 and 10 mm** during processing. The adjustable clamping pressure also enables gentle and precise processing of delicate granulate.

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. Depending on the process requirements, the device can be equipped with a container for laboratory or batch granulation or with a hopper for continuous granulation.

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 length 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 length	0.5–10 mm
Speed	0–15 m/s
Motor	Servo motor, 400 W
Control	Touch-Panel/HMI

PELLETIZER ECO

The ECO granulator can be used to process strands into granulate. The cutting length is determined by the rotary knife.

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 device to be placed in an isolator or in a laboratory environment with limited space. It is operated via the input unit of the frequency converter.

The DN 89 granulator includes a strand guide centring device for a maximum of 5 strands of 5 mm each.



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

APPLICATION AREAS



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TECHNICAL DATA

	DN 59	DN 89
Voltage Frequency	220–240 VAC 50/60 Hz	
Dimensions	Length ≈ 350 mm, width ≈ 500 mm, height ≈ 230 mm	Height ≈ 510 mm, width ≈ 300 mm, length ≈ 255 mm
Granule length	1, 2, 3, 4 or 5 mm	1 to 10 mm
Speed	0–15 m/min	
Motor	AC motor, 250 W	AC motor, 370 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

APPLICATION AREAS



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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

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

APPLICATION AREAS



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TECHNICAL DATA

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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TECHNICAL DATA

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

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

Voltage Frequency	100–240 VAC 50/60 Hz
Dimensions	Length $\approx$ 495 mm, width $\approx$ 425 mm, height $\approx$ 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

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

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

CHILL ROLL

The chill roll is suitable for the efficient and continuous cooling of extrudates from approx. **3 kg/h to approx. 100 kg/h**. The chill roll picks up the product from the extruder die, distributes it over almost the entire belt width and cools the material reliably and quickly in direct metal contact. Thanks to our unique concept with the extra large wrap angle of the belt on the chill roll, even extrudates with a very high heat capacity or particularly high throughputs can be cooled many times more efficiently and with a comparably small device. After cooling, the cooled and brittle product is broken into flakes by a conveyor and breaker screw and discharged through the outlet pipe (continuous process).

The chill roll can be controlled directly via the Three-Tec extruder's control system or can also be operated as a stand-alone device according to customer requirements.

- Conveyor belt material: Silicone or PTFE
- Integrated or external control
- Belt speed: 0 to 10 m/min
- Max. product temperature: 230 °C



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TECHNICAL DATA

Voltage Frequency	400 VAC 50/60 Hz
Dimensions	Depth ≈ 1700 mm , Breite ≈ 1500 mm , Höhe ≈ 1500 mm
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 230 °C can be processed by rapid cooling of the strand after the die
Control	Integration into the extruder control system or HMI panel
Belt speed	0-10 m/min