

## P-USG

High-performance underwater strand pelletizing systems for cost-effective production



The P-USG underwater strand pelletizing systems made by Maag Automatik have been particularly designed for both the production of virgin polymers with lower throughput rates and for recycling applications. The simple design of the machine stands for engineering reduced to the essentials while heading for high process stability and pellet quality.

### Your benefits

- Consistent outstanding pellet quality
- Simple operation
- Automatic strand lacing on start-up and during production
- Operating speeds up to 250 m/min
- Excellent quality of the feed tools and cutting tools

# P-USG

High strand velocity for high production efficiency

Processes and machines and systems made by Maag Automatik stand for cost-effectiveness, flexibility, and reliability worldwide. With over six decades of experience and an installed base of currently more than 8,000 pelletizing systems, the company helps its customers to achieve the maximum level of profitability.



## Range of applications

P-USG underwater strand pelletizing systems are mainly used for recycling applications with throughput rates of up to 6,000 kg/h. The P-USG systems are also suitable for processing filled compounds.

Recyclates made from:

- Polyesters, e.g. PET, PBT
- Polyamides, e.g. PA 6.6
- Polycarbonates, e.g. PC

Thermoplastics and bulk plastics with fillers:

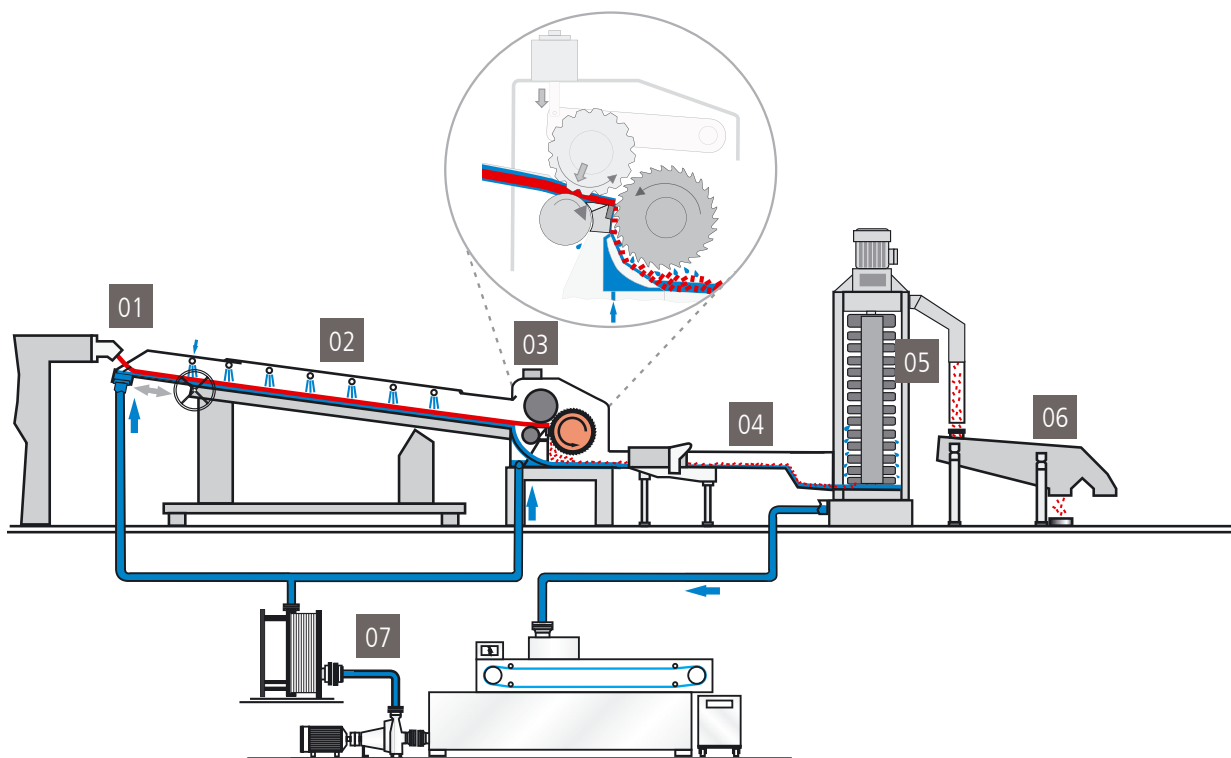
- PP, PE + 20-60% talcum, carbon black, or TiO<sub>2</sub>
- Other polymers upon request

## Functioning of the P-USG system

Polymer strands discharging from a die head **01** are passed to the strand guide section **02**, which is positioned manually for start-up. From here the strands are transported with water to the pelletizer. The water cools the strands during transport.

At the pelletizer **03** the polymer strands are grasped by the intake device, fed to the cutting device, and cut into pellets under water. The slurry of pellets in water moves through an aftercooling line **04**. Here the pellets are cooled to the required pellet temperature.

In the dryer **05** the pellets are separated from the water and dried. The pellets can be classified and conveyed in subsequent operations **06**. The process water is filtered and temperature controlled in the water treatment unit **07** and then recirculated.



# P-USG

## System components

Based on experience for many decades in the field of underwater strand pelletizing systems, Maag Automatik provides the appropriate solution for your individual requirements. P-USG underwater pelletizing systems feature high operating speed resulting in high throughput rates per strand thus providing outstanding efficiency, which is highly appreciated for recycling applications in particular. The system is characterized by a very simple start-up process and produces cylindrical pellets of excellent quality. One of the main advantages of the P-USG is enhanced availability as all the system components such as die head, guide section, aftercooling line, dryer, and classifier are to meet both your exact processing requirements and top quality standards in terms of pellet quality and process reliability.



Quick-change spray tubes for simple maintenance during operation

### P-USG

The size of the system is defined through the thermal properties of the polymer to be processed and through the desired throughput rate.

- Length of the cooling section: 2,000-6,000 mm

Strand speeds up to 250 m/min and thus high throughput rates per strand provide excellent system efficiency despite reduced operating width.

- Operating widths: 100-200-300-400 mm

The system is highly flexible as the extruder can be adjusted in height. With a low extruder height, the slurry is transported to the dryer by means of a water jet pump.



P-USG 300 strand pelletizing system

# P-USG

## System components

The optimal selection of all system components – from the die head and the P-USG to the dryer and the related process water treatment system – guarantees high product quality and process stability. Easy access allows comfortable operation and maintenance of the system.

### Die head

- Electric, liquid, or steam heating
- Absolutely uniform melt distribution (uniform strands, no agglomerates)
- Compact design, short product channels, no dead spots, low volume
- Swivel joint for fast access to extruder screws



SG 400 die head

### Strand guide section

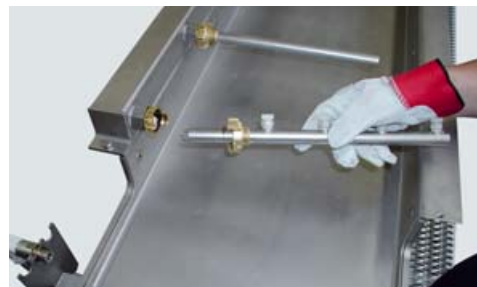
- Height-adjustable strand guide section for simple adjustment to process parameters
- Automatic strand intake on start-up and during production
- Simple start-up process due to comfortable manual repositioning of the strand guide section
- Optimized cooling due to a variable number of spray tubes
- Quick-change spray nozzles – optional
- Optional automatic retracting of the strand guide section on production stop
- Strand monitoring – optional
- Integrated pre-draining before pelletizing
- Swiveling strand inlet for easy access to the die head



Swiveling strand inlet



Strand guide section



Replaceable spray tubes



Strand guide section – manually moveable

# P-USG

## System components

### Pelletizer

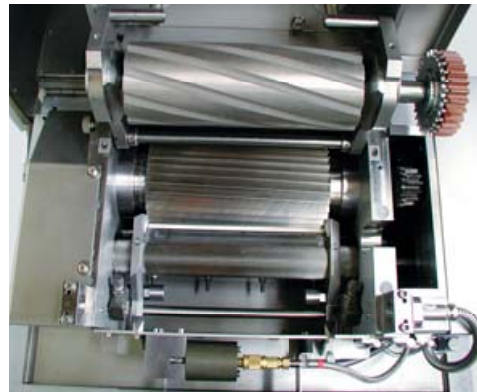
- Troublefree strand intake during start-up due to driven feed rolls
- Steady strand feeding to the cutter due to short distance between intake unit and cutting tool
- High cutting consistency due to massive seamless knife fixture
- Maintenance-free moisture-tight cutting head bearings
- Highly reliable process – clumping is avoided by passing the entire volume of process water through the cutting head so that the strands and pellets are constantly in contact with water
- No pellet residues due to the optimized cutting head design
- Simple cleaning and adjustment
- Comfortable and quick replacement of cutting tools
- Quick-change cutting head feature optional
- Pelletizing noise level below 85 dB(A)

### Water distribution

- Clearly arranged and easy to operate
- Compact design below strand guide section

### Aftercooling line

- Adaptable to specific floor space in production facility
- Agglomerate separator sorts out start-up material and longs



Optimized cutting head design



High-quality cutting tools



Agglomerate separator



Replacing the cutting head

# P-USG

## System components



CENTRO centrifugal dryer

### CENTRO centrifugal dryer for energy-efficient drying

- Compact design with good access for cleaning and maintenance
- Integrated water separator
- Easily replaceable wear parts such as rotor blades
- Agglomerate separator to stabilize the process – optional
- Pellet guide at dryer outlet – optional
- Self-cleaning system

### Classifier

- Process-adapted selection of classifiers
- Single-decker to screen out overlengths
- Double-decker to screen out fines and overlengths
- Simple cleaning due to quickly replaceable sieve insert



PWS process water treatment system

### PWS water treatment system

- Application-adapted components
- Large range of filtration available
- Easy access to the water tank with automatic water level control and water intake
- Heated process water – optional
- Plate heat exchanger or tube-bundle heat exchanger



Operator panel

### System controls

- Relay logic design
- Operator panel positioned directly at pelletizer – optional
- All controls of the system components can be integrated into the controls of the pelletizer
- Data exchange with higher-level control systems

# P-USG

## Technical data

Technical data:	P-USG 100	P-USG 200	P-USG 300	P-USG 400
<b>Operating width:</b>	100 mm	200 mm	300 mm	400 mm
<b>Power of pelletizer motor:</b>	3-5.5 kW	5.5-11 kW	7.5-15 kW	11-18.5 kW
<b>Line speed:</b>	60-250 m/min			
<b>Cooling length:</b>	2,000/3,000/4,000/6,000/8,000 mm			
<b>Process water system:</b>	PWS 15	PWS 25	PWS 35	PWS 45
<b>Process water flow rate:</b>	7 m <sup>3</sup> /h	10 m <sup>3</sup> /h	15 m <sup>3</sup> /h	20 m <sup>3</sup> /h
<b>Centrifugal dryer:</b>	CENTRO 150	CENTRO 300	CENTRO 800	CENTRO 800

Maximum throughput rates [kg/h*]:	P-USG 100	P-USG 200	P-USG 300	P-USG 400
	1,500	3,000	4,500	6,000

\* depending on pellet weight and polymer

