



## P-USG

Underwater strand pelletizing systems for cost-effective production



Your systems supplier for all pellet shapes

## High product quality, low operating costs

### P-USG – strand pelletizing systems for plastics production and recycling applications

Machines from Automatik Plastics Machinery are well-known for economical production, flexibility, and outstanding reliability. With over six decades of experience and an installed base of more than 8,000 pelletizing systems, the company helps its customers achieve the maximum level of profitability.

P-USG is the underwater strand pelletizing system from Automatik Plastics Machinery that is especially designed for plastics production and recycling applications. The system is characterized by a very simple start-up process and produces cylindrical pellets of excellent quality, ideally suited for further processing. P-USG is available in various configurations to meet your exact processing requirements, e.g. crystallization of PET integrated directly into the production process.

#### APPLICATION AREA

P-USG systems are used for applications such as re-pelletizing of PET, PA, and other technical thermoplastics with throughputs of up to 6,000 kg/h. P-USG systems are suitable for processing almost all technical thermoplastics and many commodity resins – with or without fillers – including:

- Polyesters, e.g. PET
- Polyamides, e.g. PA 6.6, PA 6 n.e.
- Polycarbonates, e.g. PC
- Polyolefins, e.g. PP, PE

Other polymers available on request  
[info@automatikgroup.com](mailto:info@automatikgroup.com)

#### FUNCTIONING OF P-USG SYSTEM

Polymer strands discharging from a die head **1** are passed to the strand guide section **2** where they are transported and cooled with water.

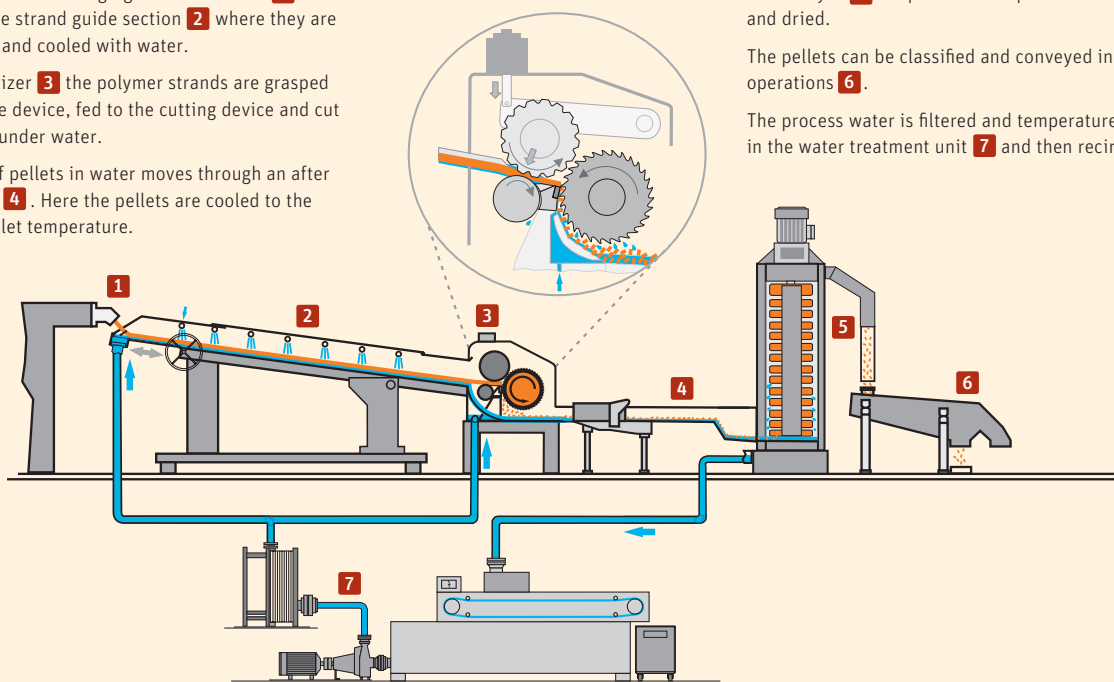
At the pelletizer **3** the polymer strands are grasped by the intake device, fed to the cutting device and cut into pellets under water.

The slurry of pellets in water moves through an after cooling line **4**. Here the pellets are cooled to the required pellet temperature.

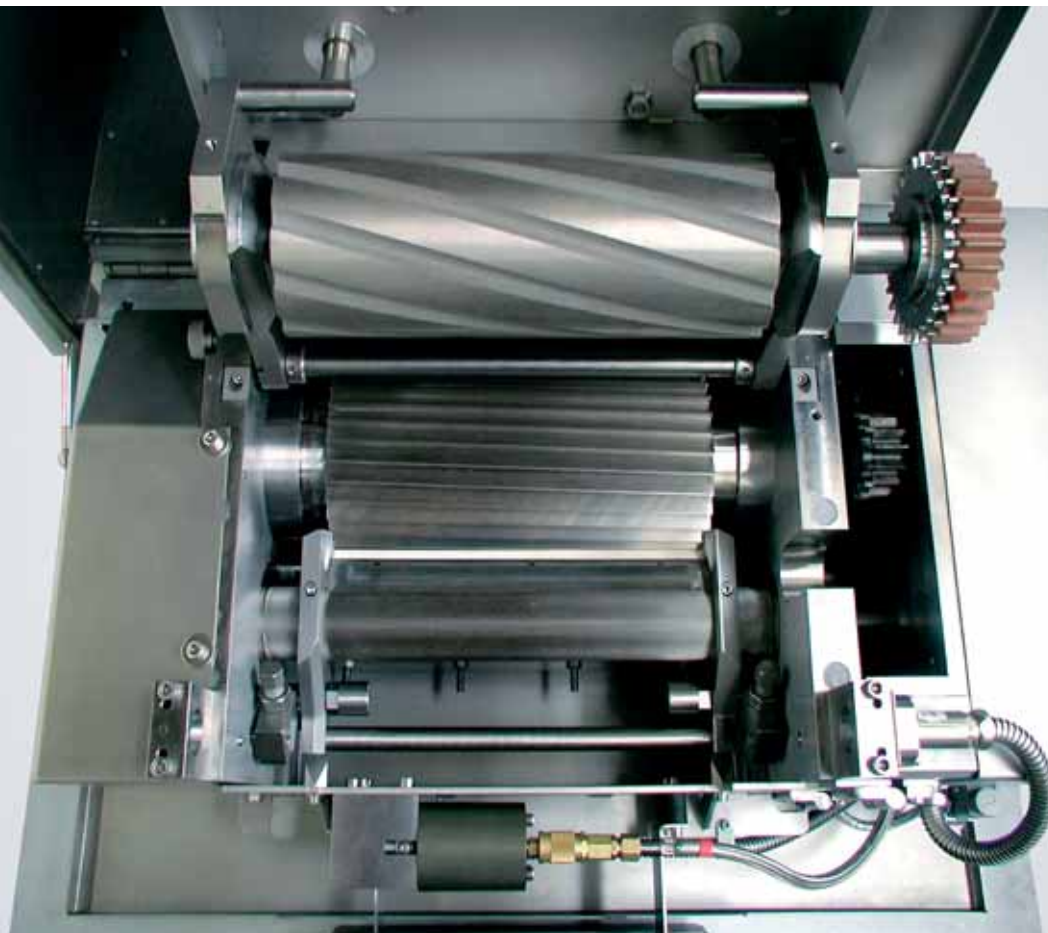
In the dryer **5** the pellets are separated from the water and dried.

The pellets can be classified and conveyed in subsequent operations **6**.

The process water is filtered and temperature controlled in the water treatment unit **7** and then recirculated.



View of P-USG 300 cutting head



Virgin polymer pellets

**YOUR BENEFITS WITH P-USG**

High productivity in a reliable process through:

- Operating speeds up to 250 m/min
- Automatic strand lacing on start-up and during production
- Exchange of cutting head in approx. 10 minutes
- Simple efficient cleaning for fast product changeover

Profitable production due to:

- Automatic operation
- Very high machine availability thanks to wear-resistant cutting tools and minimal maintenance requirements
- Consistent pellet quality

## From die head to classifier – customized solutions for your requirements

### P-USG system components

As your most competent system supplier for pelletizing machinery, Automatik Plastics Machinery provides sophisticated components for your production – all of them including multiple options. In close cooperation with you we find solutions to increase the efficiency of your pelletizing process – either with specific system components or with complete production lines.

#### DIE HEAD

- Electric, liquid or steam heating
- Absolutely uniform melt distribution
- For abrasive products, die plate with wear protection
- Swivel joint for fast access to extruder screws

#### PELLETIZER WITH STRAND GUIDE SECTION

- Simple system start-up
- Automatic take-up and transfer of torn polymer strands

- Cooling optimized by individually replaceable spray tubes and nozzles
- Integrated water distribution
- 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
- Height-adjustable strand guide section for simple adjustment to process parameters
- Swiveling strand inlet for fast cutting head access
- Fast exchange of cutting head in approx. 10 minutes
- Cutting tools optimized to the exact application to guarantee maximum useful life
- All bearings in cutting head area are sealed against moisture and maintenance-free
- Simple cleaning and adjustment



P-USG 200: View of strand guide section and cutting head



P-USG 300 underwater strand pelletizing system



SG 400 die head



Strand guide section with replaceable spray tubes



Swiveling strand inlet

### AFTER COOLING LINE

- May be adapted according to available floor space in production facility
- Agglomerate separator sorts out start-up material and longs

### PELLET DRYER

- Pellets may be dried with the AERO impact dryer or alternatively with the CENTRO centrifugal dryer
- Significant amount of process water is separated off by gravity in a pre-dewatering zone
- Energy savings through efficient use of residual heat from pellets
- Surface moisture of pellets less than 0.1 % depending on polymer and hygroscopy
- Very gentle drying of pellets in AERO impact dryer due to absence of moving machine parts
- Energy-optimized pellet drying in CENTRO centrifugal dryer

### PROCESS WATER TREATMENT

- Continuous filtration of the return water via dual filter, drawer filter or band filter
- Cooling via plate heat exchanger
- Process water conveyed via centrifugal pump
- Water tank with refill level control



AERO 500 impact dryer



Band filter unit and plate heat exchanger – components of the process water treatment



CENTRO 300 centrifugal dryer



CENTRO centrifugal dryer:  
Pre-dewatering zone and rotor



After cooling line with agglomerate separator

## Everything from a single source

### P-USG system components



CC-PET® vibrating conveyor

#### CLASSIFIER

- Single decker for screening out overlengths
- Double decker for screening out fines and overlengths
- Reliable function with very low vertical acceleration – oversized particles slide smoothly on the deck surface
- Fast replacement of sieve insert

#### MACHINE CONTROLS

- All controls for the system components can be integrated into the controls of the pelletizer (e.g. melt pump, classifier, process water circuit)
- Data exchange with higher-level control systems
- Available in relay logic version (basic) as well as sophisticated process visualization versions

#### DIRECT CRYSTALLIZATION WITH CC-PET®

By combining P-USG with the Combi-Crystal-PET® process – for short, CC-PET® – the three production stages of pelletizing, drying and crystallization are integrated into a single operation. This reduces investment costs and saves energy.



Classifier



CC-PET® ΔQ-crystallizer

## Technical data

### Underwater strand pelletizing systems P-USG

	P-USG 100	P-USG 200	P-USG 300	P-USG 400
Operating width	100 mm	200 mm	300 mm	400 mm
Power of pelletizer motor	3 - 5.5 kW	5.5 - 11 kW	7.5 - 15 kW	11 - 18.5 kW
Line speed	60 - 250 m/min			
Number of strands	10	20	30	40
Water flow rate	7 m <sup>3</sup> /h	10 m <sup>3</sup> /h	15 m <sup>3</sup> /h	20 m <sup>3</sup> /h
Cooling length	3,000 - 6,000 mm			
Centrifugal dryer	CENTRO 150	CENTRO 300	CENTRO 800	CENTRO 800
Impact dryer	AERO 500			
Process water system	PWA 20			PWA 30
Process water flow rate	15 - 20 m <sup>3</sup> /min			20 - 30 m <sup>3</sup> /min

#### Throughput rates in kg/h (further products on request)

Product	Average pellet weight				
PET, PA 6.6	35 mg	1,500	3,000	4,500	6,000
PA 6 n.e.	13 mg	550	1,100	1,700	2,200
PC	20 mg	850	1,700	2,500	3,400
PP, PE	12 mg	300	600	900	1,200
PP, PE + 20 - 60% fillers	14 mg	400	800	1,200	1,600

#### LABORATORY FOR TRIALS AND DEVELOPMENT AVAILABLE

Automatik Plastics Machinery has the largest and best-equipped pelletizing lab in the world. With several lines spread over 2,000 m<sup>2</sup>, we can replicate the production conditions specific to any compounding process and optimize the machine configuration. We even have the only drop pelletizer available in any laboratory environment. Let us take the guesswork out of your process.



Part of the laboratory with three extrusion lines



SPHERO® pellets



Cylinders



Droplets

## Your systems supplier for all pellet shapes

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