



M-USG

Underwater strand pelletizing systems for production capacities up to 20,000 kg/h



Maximum availability, operating speeds up to 350 m/min

M-USG – strand pelletizing for virgin polymers

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.

Successfully used by thousands of customers, the M-USG underwater strand pelletizing systems are especially designed for medium up to the highest production capacities. They produce cylindrical pellets of excellent quality, ideally suited for further processing. The systems are available in various configurations to meet the exact processing requirements of any virgin polymer, e.g. crystallization of PET integrated directly into the production process.

APPLICATION AREA

M-USG systems are used for pelletizing of technical thermoplastics such as:

- Polyester, e.g. PET, PBT, PEN, PTT
- Polyamide, e.g. PA 6 n.e., PA 6.6, PA 11, PA 12
- Polycarbonate, e.g. PC
- Acrylic resin, e.g. PMMA, PAN
- Polyacetal, e.g. POM
- Styrene polymer, e.g. HIPS, GPPS, ABS, SAN, SB
- Liquid crystal polymer

The systems are available in both horizontal (H) and vertical (V) configurations and in different operating capacities, with throughputs ranging up to 20,000 kg/h.

Other polymers available on request:
info@automatikgroup.com

FUNCTIONING OF M-USG SYSTEMS

Polymer strands discharging from a die head **1** are passed by an automatic start-up device to the strand guide section **2** where they are transported and cooled with water.

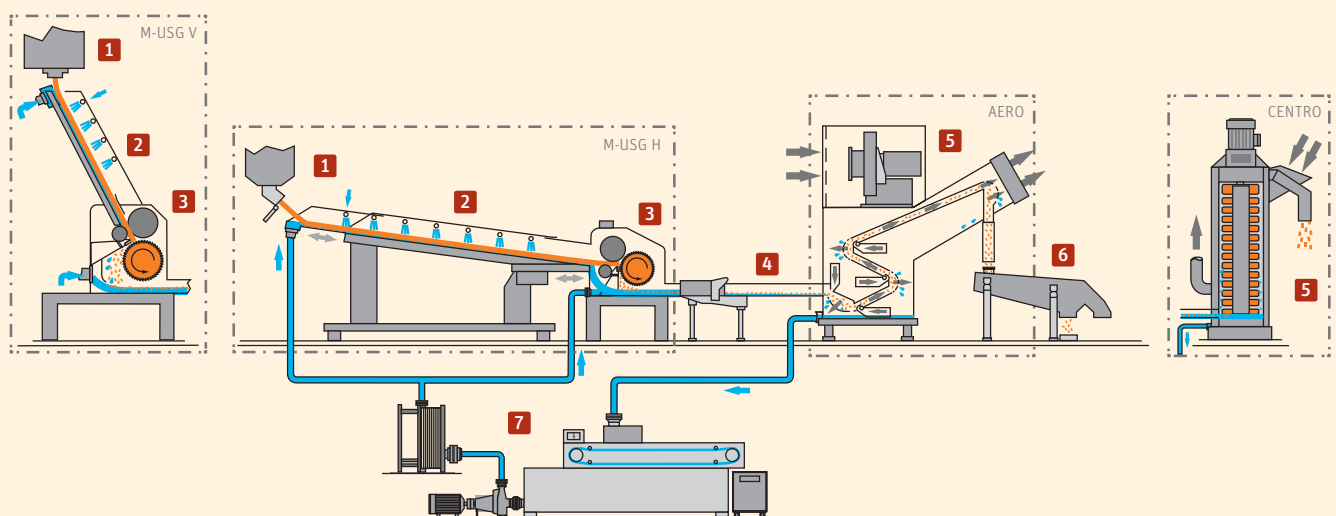
At the pelletizer **3** the polymer strands are grasped by the intake device, fed to the cutting device and cut into pellets under water.

The slurry of pellets in water moves through an after cooling line **4**. Here the pellets are cooled to the required 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 M-USG 1200 H cutting head



Virgin polymer pellets

**YOUR BENEFITS WITH M-USG**

- Operating speeds up to 350 m/min
- Automatic strand lacing on start-up and during production
- Quick exchange of cutting head in approx. 5 minutes (for both horizontal and vertical machines), assuring maximum availability and thus contributing to the lowest total cost of ownership
- Low manpower requirement 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

M-USG system components

As your most competent system supplier for M-USG 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.

POLYMER VALVE

- Controlled shut-off of polymer melt in the reactor and melt pipe, for both batch and continuous operation
- Vacuum-tight piston with metal seal
- Shut-off pressure up to 160 bar

DIE HEAD

- Liquid, electric or steam heating
- Absolutely uniform melt distribution
- Compact design, short product channels, no dead space, small volume

- Rheologically optimized product channels
- Fast change of die plate via pre-heating chamber
- Automated closure of die plate for batch operation via slide or freeze technology
- Scraper device for efficient production start-up

PELLETIZER WITH STRAND GUIDE SECTION

- Stationary assembly, no rail system required, minimum installation effort
- Pneumatically operated start-up device for convenient access to the die head
- Height-adjustable strand guide section for simple adjustment to process parameters
- Moveable intake device provides full access to the cutting head
- Quick exchange of cutting head
- Optimal shape of cutting head prevents uncontrolled deposit of pellets



Polymer valve and die head



SG 900 die head in operation



Scraper device for die head



M-USG 1200 V: Strand guide section showing individual strand guide



M-USG 900 V: Cutting head in changing position



M-USG 1200 V: Quick exchange of cutting head

- Highly constant cutting gap due to sturdy gap-free knife holder
- All bearings in cutting head area are sealed against moisture and maintenance-free
- Feed roll bearings outside of the cutting chamber
- Cutting tools optimized for the application
- Integrated water distribution
- Individual strand guide provided with vertical configurations
- Simple cleaning and adjustment

AFTER COOLING LINE

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



M-USG 1200 H start-up device



M-USG 1200 H: Strand guide section with spray bars which can be easily removed



M-USG 900 H: Strand pelletizing system with strand guide section, cutting head, agglomerate separator and AERO pellet dryer



Feed roll bearings outside of the cutting chamber



Adjustment of cutting gap

Everything from a single source

M-USG system components

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-drainage stage
- 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

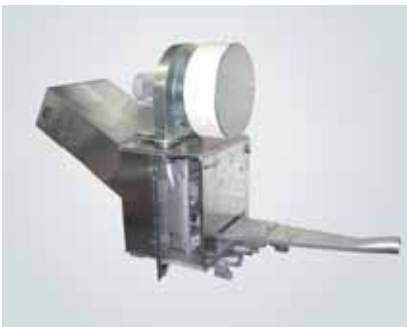
- Continuous filtration of the return water e.g. via band filter
- Cooling via plate heat exchanger
- Process water conveyed via centrifugal pump
- Water tank with refill level control

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



AERO 800 impact dryer



CENTRO 2200 centrifugal dryer



Part of the process water treatment: Band filter unit



Compact band filter unit



Classifier



Machine controls (PLC version)

Technical data

Underwater strand pelletizing systems M-USG

HORIZONTAL SYSTEMS	M-USG 300 H	M-USG 600 H	M-USG 900 H	M-USG 1200 H
Operating width	300 mm	600 mm	900 mm	1,200 mm
Power of pelletizer motors	11 + 5.5 kW	18.5 + 5.5 kW	30 + 5.5 kW	37 + 5.5 kW
Line speed	80 - 350 m/min			
Number of strands (depending on pellet weight, size and material)	33 - 40	66 - 80	100 - 120	127 - 152
Cooling length	3,000 - 8,000 mm			
Water consumption	20 m ³ /h	35 m ³ /h	45 m ³ /h	55 m ³ /h

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

Product	Average pellet weight				
PET / PBT	30 - 40 mg	5,500	11,000	16,000	20,000
PA 6.6	20 - 25 mg	4,200	8,400	12,600	14,500
PA 6 n.e.	10 - 15 mg	2,200	4,500	6,700	8,600
PC	20 - 25 mg	3,000	6,000	9,000	12,000

VERTICAL SYSTEMS	M-USG 300 V	M-USG 600 V	M-USG 900 V	M-USG 1200 V
Operating width	300 mm	600 mm	900 mm	1,200 mm
Power of pelletizer motors	11 + 5.5 kW	18.5 + 5.5 kW	30 + 5.5 kW	37 + 5.5 kW
Line speed	80 - 350 m/min			
Number of strands (depending on pellet weight, size and material)	33 - 60	66 - 120	100 - 180	127 - 228
Cooling length	800 - 2,200 mm			
Water consumption	15 m ³ /h	30 m ³ /h	40 m ³ /h	50 m ³ /h

Throughput in kg/h (further products on request)

Product	Average pellet weight				
PET / PBT	17 mg	4,200	8,300	12,500	16,000
PA 6.6	20 - 25 mg	3,300	6,600	10,000	13,000
GPSS, HIPS, SAN, ABS	10 - 15 mg	3,000	6,000	9,000	12,000
PMMA	20 - 25 mg	2,500	5,000	7,500	10,000



SPHERO® pellets



Cylinders



Droplets

Your systems supplier for all pellet shapes

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