



## SPHERO®

Underwater pelletizing systems for highly efficient and flexible production up to 18,000 kg/h



## Outstanding product quality, low production costs

### SPHERO® – flexible and efficient underwater pelletizing systems

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.

SPHERO® is an underwater pelletizing system designed for all kinds of thermoplastic materials, characterized by high flexibility and a small footprint. The system produces spherical pellets of superb quality, ideally suited for further processing, with throughputs up to 18,000 kg/h.

#### APPLICATION AREA

SPHERO® systems serve for the manufacture of compounds, blends, recycling material and virgin polymers based on:

- Polyolefins, e.g. LDPE, HDPE, PP
- Styrene polymers, e.g. PS, SAN, ABS
- Acrylic resins, e.g. PMMA, PAN
- Polyacetals, e.g. POM
- Polycarbonates, e.g. PC
- Polyesters, e.g. PET, PBT, PEN
- Polyamides, e.g. PA 6, PA 6.6, PA 11
- Thermoplastic elastomers, e.g. TPE-S, TPE-O, TPE-E
- Polyurethanes, e.g. TPU
- Hot melt adhesives

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

#### FUNCTIONING OF SPHERO® SYSTEM

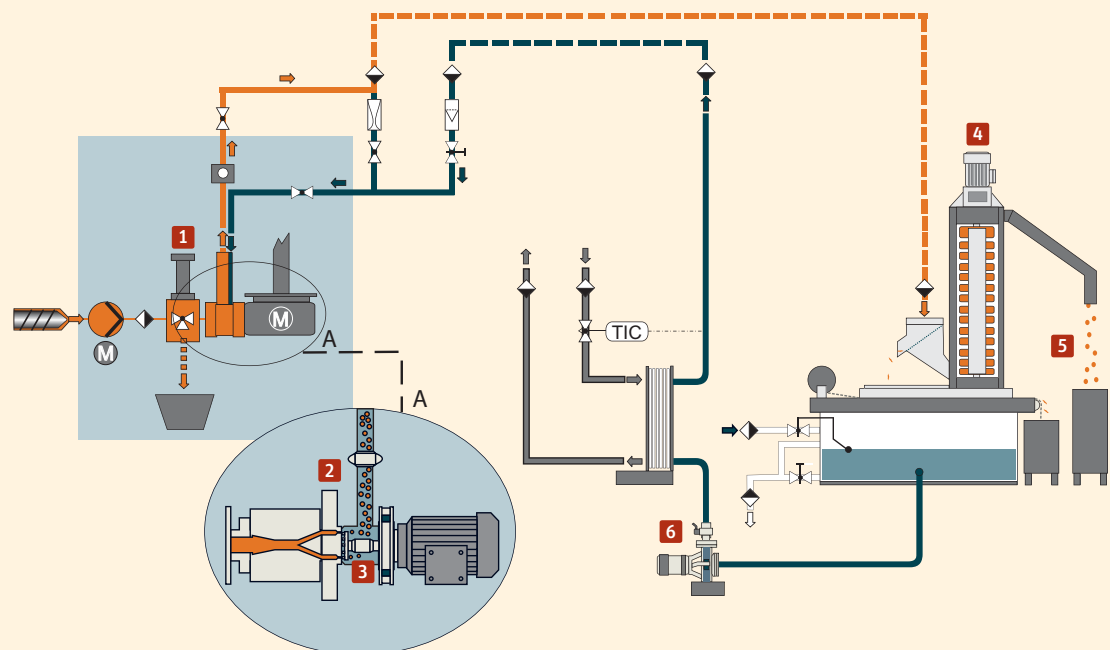
The plastic melt is conveyed to the die plate via the start-up valve **1**.

In the die plate **2**, the melt is channeled into holes arranged in a ring shape and extruded into the cutting chamber **3**, which is flooded with process water.

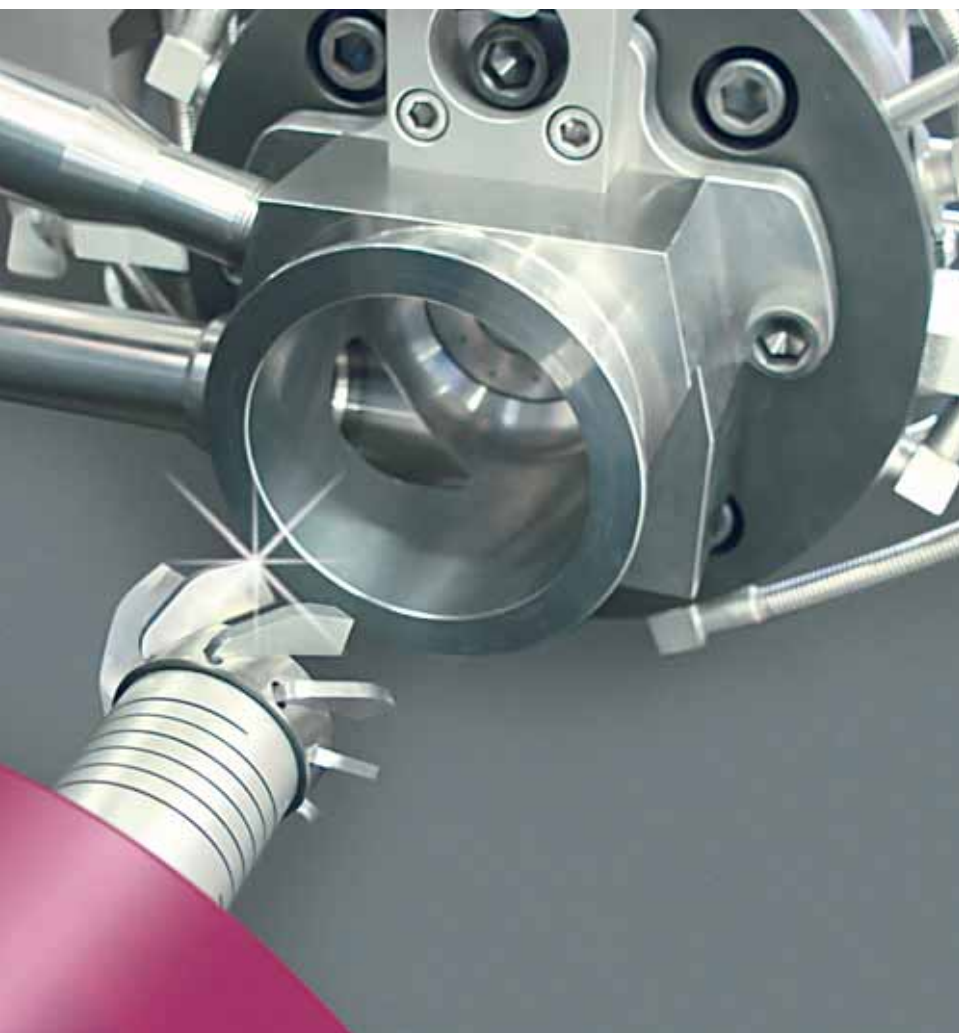
The polymer is cut into pellets between the die plate and the knives of the cutting head, and then conveyed to the dryer **4** by process water.

In the dryer the pellets are separated from the water and conveyed onward for subsequent processing **5**.

The process water is filtered, tempered and then returned to the cutting chamber **6**.



SPHERO® 70 knife head and cutting chamber



SPHERO® pellets



- YOUR BENEFITS WITH SPHERO®**
- Outstanding pellet quality due to unique knife head design and optimized water flow within the cutting chamber
  - Automatic regrinding of the knife edges during production assures high system availability
  - Fast product changeover – cleaning, assembly and start-up are kept to a minimum
  - Unrivalled long lifetime of the cutting tools

- Accessibility is maximized through an innovative suspension system for all components in a joined rack frame (no installation of floor rails necessary)
- Liquid-heated die plate available (energy savings > 20 %)
- Regrinding feature optionally available, enabling die plate to be reground without disassembly

## From start-up valve to classifier – customized solutions for your require

### SPHERO® system components

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

#### START-UP VALVE

The start-up valve is used to isolate melt processing from the pelletizing operation. It enables immediate availability of the melt to the cutting chamber upon start-up, while preventing run-on of the melt during shutdown.

- Hydraulic activation
- High process reliability



Start-up valve



Knife head SPHERO® 30-1



Process water piping



SPHERO® 70 die plate



SPHERO® 100 with bayonet lock



SPHERO® systems provide suspension of all components for optimum access

#### DIE PLATE

The die plate distributes the melt and feeds it to the cutting chamber.

- Die geometry tailored to material properties and pellet weight
- Protected against wear
- Electric or liquid heating

#### CUTTING CHAMBER

The discharged polymer is cut into pellets by rotating knives directly at the die plate. The cut pellets are conveyed out from the cutting chamber by the process water.

- Cutting chamber designed to optimize cooling and conveying of pellets
- Flexible mounting of knife head to allow for dynamic re-positioning relative to die plate
- Pneumatic displacement of knife shaft to control cutting power

## ments

The heart of each SPHERO® system is the suspended pelletizer. Automatik Plastics Machinery offers a full range of sophisticated systems, available in numerous assembly options to meet your exact requirements:

- SPHERO® 30-1 and SPHERO® 50 for small production lots of masterbatches or compounds as well as for laboratory applications – also for micro pellets or reinforced compounds
- SPHERO® 70, SPHERO® 100 and SPHERO® 140 for medium throughput rates up to 8,600 kg/h – also for micro pellets or reinforced compounds
- SPHERO® 220 and SPHERO® 350 for virgin polymer production and throughput rates up to 18,000 kg/h

### PROCESS WATER PIPING

The process water piping is used for both forwarding cooling water and removal of the pellet/water slurry from the cutting chamber. It is directly integrated into the supporting frame. A bypass redirects the process water around the cutting chamber when it is not in operation.

- Easily detachable connections to cutting chamber
- Automatic drainage of cutting chamber upon shutdown
- No floor drain required



Assembly variants: fixed 4-pillar frame



Movable 3-pillar frame



SPHERO® mounted from ceiling



SPHERO® 30-1 or SPHERO® 50: Rugged design, with all components (including process water treatment unit and pellet dryer) arranged on a common supporting frame



Quick and easy opening of the cutting chamber



Disassembly of the knife head with minimal hand movements

## Everything from a single source

### SPHERO® system components



CENTRO 150 with process water treatment PWS 25



Drawer filter

#### PELLET DRYER

- Pellets may be dried with the AERO impact dryer, or alternatively with the CENTRO centrifugal dryer or DURO belt dryer
- Energy savings through efficient use of residual heat from pellets
- Agglomerate separator for process stabilization
- Wear-protected equipment and specialized materials available
- Very gentle drying of pellets in AERO impact dryer due to absence of moving machine parts
- Energy-optimized pellet drying in centrifugal dryer CENTRO
- Specialized DURO belt dryer for abrasive and sensitive compounds

#### PROCESS WATER TREATMENT

- Continuous filtration and temperature control of the process water before return to the SPHERO® pelletizer
- Various filtration options available depending on water quantity as well as specific requirements, e.g. drawer filter, curved sieve, bag filter, band filter or vibration filter sieve
- Process water cooling via heat exchanger
- Electrical or steam-based temperature control in water tank

#### 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
- Flexible machine configuration with standardized user interface



Curved sieve



Centrifugal dryer CENTRO 2200



Machine controls (PLC version)



## Technical Data

### Underwater pelletizing systems SPHERO®

	SPHERO® 30-1	SPHERO® 50	SPHERO® 70	SPHERO® 100	SPHERO® 140	SPHERO® 220	SPHERO® 350
Start-up valve, type	DV-033	DV-033	DV-040	DV-040	DV-050	DV-080	DV-080 A
Hydraulic motor power	4 kW	4 kW	11 kW	11 kW	11 kW	15 kW	15 kW
Heater*	4.4 kW	4.4 kW	10 kW	11 kW	11 kW	15 kW	17 kW
Pelletizer unit	SPHERO® 30-1	SPHERO® 50	SPHERO® 70	SPHERO® 100	SPHERO® 140	SPHERO® 220	SPHERO® 350
Drive motor	2.2 kW	5.5 kW	5.5 kW	7.5 kW	11 kW	30 kW	45 kW
Speed range with converter	500 - 5,500 min <sup>-1</sup>	500 - 5,500 min <sup>-1</sup>	500 - 5,500 min <sup>-1</sup>	500 - 4,500 min <sup>-1</sup>	500 - 4,000 min <sup>-1</sup>	500 - 3,500 min <sup>-1</sup>	500 - 3,000 min <sup>-1</sup>
Electrical heating of die plate*	5.1 kW	5.1 kW	10 kW	12 kW	14 kW	22 kW	24 kW
Diameter of holes**	0.4 - 3.2 mm	0.4 - 3.2 mm	0.4 - 3.2 mm	0.4 - 3.2 mm	0.4 - 3.2 mm	0.4 - 3.2 mm	0.4 - 3.2 mm
Number of holes**	4 - 12	6 - 24	6 - 30	12 - 72	24 - 108	24 - 180	24 - 270
Process water system	PWS 13	PWS 13	PWS 25	PWS 35	PWS 45	PWS 80	PWS 120
Process water flow rate	8 - 13 m <sup>3</sup> /h	8 - 13 m <sup>3</sup> /h	15 - 25 m <sup>3</sup> /h	20 - 35 m <sup>3</sup> /h	25 - 45 m <sup>3</sup> /h	30 - 80 m <sup>3</sup> /h	40 - 120 m <sup>3</sup> /h
Process water pump	3.1 kW	3.1 kW	4 kW	5.5 kW	7.5 kW	15 kW	22 kW
Heat exchanger	30 kW	50 kW	250 kW	500 kW	1,000 kW	1,500 kW	1,850 kW
Process water heating (Option)	9 kW	9 kW	18 kW	27 kW	36 kW	45 kW	90 kW
Standard filter type <i>Options:</i>	Drawer filter	Drawer filter	Drawer filter <i>Bag filter</i> <i>Band filter</i> <i>Curved sieve</i> <i>Vibration filter sieve</i>	Drawer filter <i>Bag filter</i> <i>Band filter</i> <i>Curved sieve</i> <i>Vibration filter sieve</i>	Drawer filter <i>Bag filter</i> <i>Band filter</i> <i>Curved sieve</i> <i>Vibration filter sieve</i>	Band filter <i>Curved sieve</i> <i>Vibration filter sieve</i>	Band filter <i>Curved sieve</i> <i>Vibration filter sieve</i>

\*Liquid heating optionally available

\*\*Depending on pellet weight

#### Throughput rates in kg/h (other materials on request)

Material	Pellet weight in mg	SPHERO® 30-1	SPHERO® 50	SPHERO® 70	SPHERO® 100	SPHERO® 140	SPHERO® 220	SPHERO® 350
PA 6 n. e.	13.5	200	260	650	1,800	4,000	8,000	14,000
PET	17	250	350	750	2,200	5,000	9,000	16,000
PP, PE, PS, PC, SAN, PMMA, polymer blends	20	300	400	900	2,500	6,000	10,000	18,000
Polyolefins, polyamide + 15 % fillers	20	300	400	900	2,500	6,000	-	-
Polyolefins, polyamide + 30 % fillers	22	350	450	1,000	2,800	6,800	-	-
Polyolefins, polyamide + 60 % fillers	28	450	600	1,300	3,600	8,600	-	-



SPHERO® pellets



Cylinders



Droplets

## Your systems supplier for all pellet shapes

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