

RIETER

SPHERO®



**Underwater
Pelletizing System**

SPHERO® - Pelletizing in Tight Space Conditions

Automatic Underwater Cutting

SPHERO® is the underwater pelletizing system from Rieter-Automatik for outstanding product quality with high flexibility and a low space requirement.

Application area

SPHERO® pelletizing systems are particularly suitable for use in compounding, recycling and the production of raw materials.

With this system you can achieve **throughputs up to 18,000 kg/h** for all materials with thermoplastic behavior.

Your benefits with SPHERO®

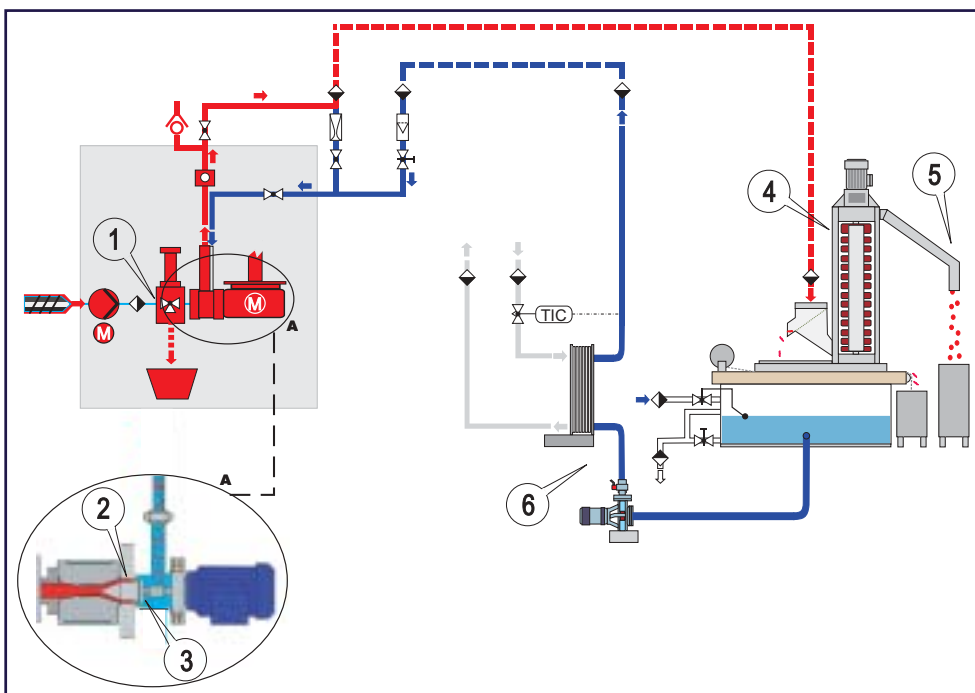
- Excellent accessibility due to new suspension of all system components in a joint rack frame
- No installation of floor rails
- Fast assembly, commissioning and cleaning
- Fast discharge of pellets with gentle product handling due to optimized flow conditions in the cutting chamber
- Increased service life through gentle knife contact pressure via controlled pneumatic displacement of entire motor shaft



Underwater pelletizing system SPHERO®

Process Sequence and Materials

Functioning of SPHERO® System



Materials application area:

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, TPE-A
 Polyurethanes, e.g. TPU
 Compounds
 Polymer blends

Other polymers available on request:
sales.pm@rieter-automatik.de

- 1** The plastic melt is conveyed into the die head via the start-up valve.
- 2** In the die head the flow of melt is divided up between the dies of the perforated plate arranged in a ring shape and continuously forced into the cutting chamber flooded with process water.
- 3** The polymer is cut into pellets between the die plate and the knives of the knife head and then conveyed to the dryer by the process water.
- 4** In the dryer the pellets are separated from the water.
- 5** The dry pellets are transferred to downstream units.
- 6** The process water is filtered and tempered and then returned to the cutting chamber.

SPHERO® System Components

From Start-up Valve to Classifier ...



Start-up valve



Cutting chamber

Unmatched by the competition!

- New suspension of pelletizer with optimum access to all system components
- Floor rails not required due to mobility of system components in suspension of supporting frame
- Simplified system alignment

Start-up valve - for separation of melt processing and pelletizing operation. On start-up it permits immediate access of the melt to the cutting chamber and prevents run-on of the melt during shutdown.

- Hydraulic activation
- Integrated into system control

Die plate - melt is distributed and fed to the cutting chamber

- Die geometry tailored to material properties and pellet weight
- With wear protection
- Electric 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.

- Optimum cooling and conveying of pellets due to special design of cutting chamber
- Flexible mounting of knife head for ideal adaptation to die plate
- Pneumatic displacement of knife shaft with cutting power control

Fixed frame, 4 pillar design



SPHERO® attached to the ceiling



Movable frame, 3 pillar design

... Our Pelletizing System to Benefit You!



Process water piping - integrated in supporting frame, used to supply cooling water to and remove pellet/water slurry from the cutting chamber. A bypass routes the flow of process water aside the cutting chamber if it is not in production position.

- Easily detachable connections to cutting chamber
- Automatic cutting chamber extraction on switch-off
- No floor drain required

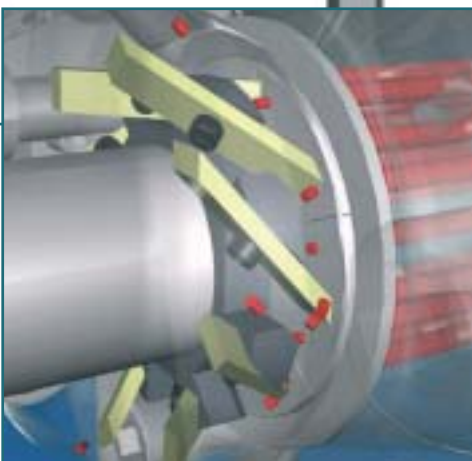
Control - with operator panel fixed to support frame in joint housing - responsible for control and monitoring of all system components and process sequences.

- LCD-monitor for process data, settings and trend graphics
- Input via low-profile keys possible with gloves
- Function of other system components can be integrated in control of pelletizer (e. g. extruder control, melt pump, classifier, process water circuit etc.)

Data exchange with other system controls also available as an option.



Process water piping (detail)



Function principle of SPHERO® cutting chamber



Control panel

Other Components

... Everything from a Single Source!

Pellet dryer - application-related centrifugal dryer CENTRO or impact dryer AERO - separates pellets from process water and reduces them to a very low residual moisture level. The pellets are conveyed upwards by angled rotor blades in a spiral shape. The water is separated out through the perforated sidewalls by centrifugal force.

- Good accessibility for cleaning
- Agglomerate separator for process stabilization
- Wear protection equipment and special materials possible

Water treatment - filters and tempers process water, returning it to the SPHERO® pelletizer.

- Drawer-type filter for low dust levels and medium water volumes
- Band filter for high filtration requirements and large water volumes
- Process water cooling via plate heat exchanger
- Tempering via heating elements in water tank



Dryer



Drawer filter (opened)

Underwater Pelletizing System SPHERO®

Technical Data

	SPHERO® 30	SPHERO® 70	SPHERO® 100	SPHERO® 140	SPHERO® 200	SPHERO® 280
Diverter valve, type	DV-25	DV-040	DV-040	DV-050	DV-080	DV-080A
Motor hydraulic aggregate	4 kW	11 kW	11 kW	11 kW	15 kW	15 kW
Heater*	4 kW	10 kW	11 kW	11 kW	15 kW	17 kW
Pelletizer, type	SPHERO® 30	SPHERO® 70	SPHERO® 100	SPHERO® 140	SPHERO® 200	SPHERO® 280
Drive motor	2.2 kW	5.5 kW	7.5 kW	15 kW	30 kW	45 kW
Speed range with converter	500 - 5,500 min ⁻¹	500 - 5,500 min ⁻¹	500 - 4,500 min ⁻¹	500 - 4,000 min ⁻¹	500 - 3,500 min ⁻¹	500 - 3,000 min ⁻¹
Electr. heating of die plate ¹	3 kW	8 kW	10 kW	12 kW	16 kW	18 kW
Diameter of holes	1.8 - 3.2 mm	1.8 - 3.2 mm	1.8 - 3.2 mm	1.8 - 3.2 mm	1.8 - 3.2 mm	1.8 - 3.2 mm
Number of holes	10	6 - 30	12 - 72	24 - 108	24 - 144	24 - 216
Process water system	PWS 8	PWS 25	PWS 30	PWS 45	BFS 70	BFS 100
Process water quantity	5 - 8 m ³ /h	15 - 25 m ³ /h	20 - 30 m ³ /h	25 - 45 m ³ /h	30 - 70 m ³ /h	40 - 100 m ³ /h
Process water pump	2.2 kW	4 kW	5.5 kW	7.5 kW	15 kW	22 kW
Plate heat exchanger	50 kW	250 kW	500 kW	1,000 kW	1,500 kW	1,850 kW
Process water heating (option)	9 kW	18 kW	27 kW	36 kW	45 kW	90 kW
Filter, type	Drawer filter	Drawer filter Option: band filter	Drawer filter Option: band filter	Drawer filter Option: band filter	Band filter	Band filter

*Liquid or vapor heating optionally available

Throughput rates in kg/h (further on request)

Material	Pellet weight in mg	SPHERO® 30	SPHERO® 70	SPHERO® 100	SPHERO® 140	SPHERO® 200	SPHERO® 280
PA6 n.e.	13.5	200	650	1,800	4,000	8,000	14,000
PET	17	250	750	2,200	5,000	9,000	16,000
PP, PE, PS, PC, SAN, PMMA, polymer blends	20	300	900	2,500	6,000	10,000	18,000
Polyolefins, Polyamide + 15 % fillers	20	300	900	2,500	6,000	-	-
Polyolefins, Polyamide + 30 % fillers	22	350	1,000	2,800	6,800	-	-
Polyolefins, Polyamide + 60 % fillers	28	450	1,300	3,600	8,600	-	-

Centrifugal dryer, type	CENTRO 200	CENTRO 300	CENTRO 400	CENTRO 500	CENTRO 600
Capacity*	1,400 kg/h	1,700 kg/h	4,800 kg/h	16,000 kg/h	24,000 kg/h
Drive motor	1.5 kW	1.5 kW	4.0 kW	7.5 kW	11 kW
Exhaust fan rating	2 m ³ /min; 0.12 kW	30 m ³ /min; 1.32 kW	41 m ³ /min; 2.2 kW	80 m ³ /min; 5.5 kW	95 m ³ /min; 7.5 kW

Impact dryer, type	AERO 500	AERO 500	AERO 800	AERO 1000
Capacity*	2,500 kg/h	5,000 kg/h	9,000 kg/h	15,000 kg/h
Exhaust fan rating	45 m ³ /min; 11 kW	90 m ³ /min; 18.5 kW	100 m ³ /min; 30 kW	180 m ³ /min; 37 kW

*depends on product density

For research testing and product development an efficient and well-equipped tech-center is available in Grossostheim.
And when can we welcome you there?

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**COMFORT
THANKS
TO RIETER**