Crystallization

Drying

Crystallizers LAK

Special features:

- ✓ crystallizer hoppers made from stainless steel, fully insulated
- ✓ enforced lid carrying a strong gear motor for the agitator
- ✓ stainless rotors especially designed for operation around the clock
- ✓ process air blower with frequency controlled 3phase motor
- ✓ process air heater directly connected to the crystallizing hopper
- ✓ temperature resistant level control sensors
- ✓ touch screen control unit with Ethernet plug for teleservice support

Options:

- energy saving mode in combination with cooling hopper
- best quality dry air generators for online drying process
- various combinations with customized pneumatic loaders

crystallization plant LAK with cooling hopper
huge energy savings as contribution to reduce global warming

Special features:

- ✓ cooling hoppers in stainless steel or aluminium, fully insulated
- ✓ lids prepared for Lanco hopper loaders
- ✓ temperature resistant level control sensors
- ✓ modular flanged piping system for process air between cooling hopper and crystallizer
- ✓ process air filter as stainless steel permanent filter in metal housing and controlled by pressure difference

Options:

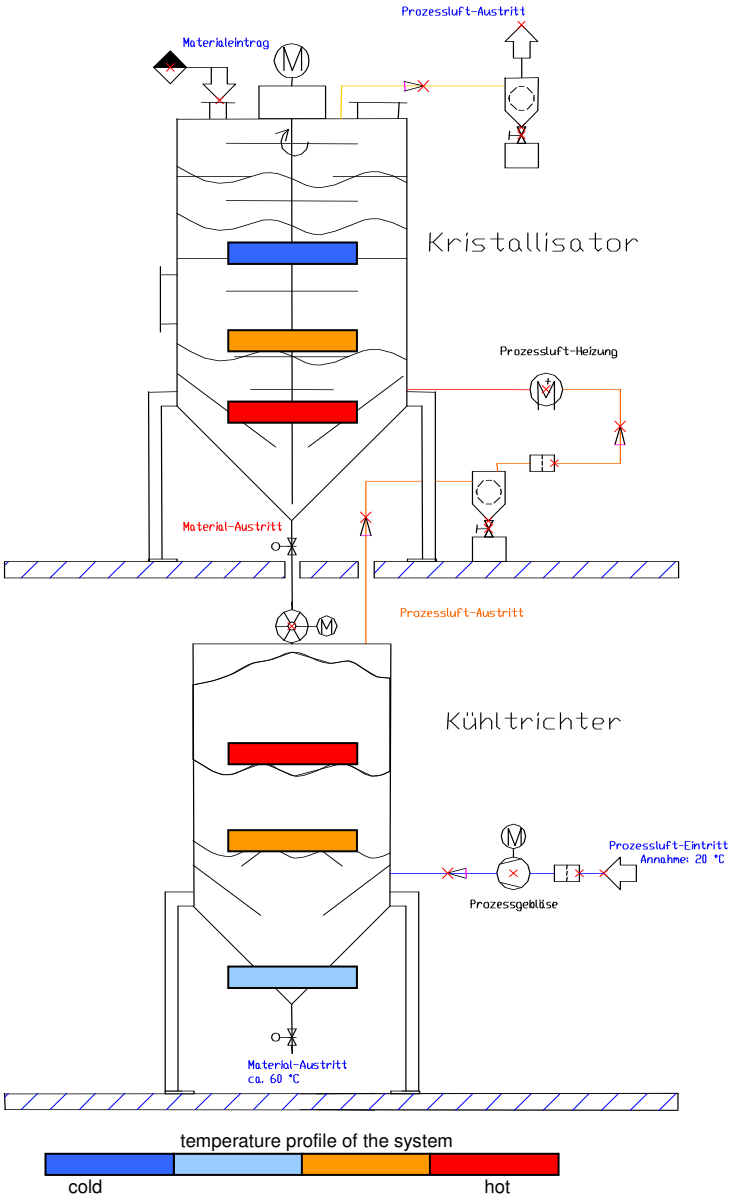
- waste air filtration of larger particles by cyclone separator
- additional insulations against heat losses

LAK without cooling hopper

crystallizer	**LAK150**	**LAK300**	**LAK600**	**LAK1200**	**LAK1600**	**LAK2600**	**LAK4200**
Item #	**1440.08**	**1441.08**	**1442.08**	**2620.08**	**2621.08**	**1445.08**	**1446.08**
throughput	[kg/h]	[kg/h]	[kg/h]	[kg/h]	[kg/h]	[kg/h]	[kg/h]
granulates	100	260	410	530	810	1240	2000
bottle flakes	120	320	510	710	1080	1490	2000
film scrap	80	250	380	490	740	1050	1400
Technical Data*:							
air amount* [m³/h]	200	450	700	1000	1500	2400	3600
heating power [kW]	12	24	36	48	72	96	130
blower power [kW]	0,75	1,1	3,0	6,5	6,5	7,5	15
agitator motor power [kW]	1,1	1,5	1,5	2,2	2,2	7,5	7,5
crystallizer	**LAK150**	**LAK300**	**LAK600**	**LAK1200**	**LAK1600**	**LAK2600**	**LAK4200**
Item #	**1440.08**	**1441.08**	**1442.08**	**2620.08**	**2621.08**	**1445.08**	**1446.08**
cooling hopper	**KT200**	**KT300**	**KT600**	**KT1200**	**KT1600**	**KT2600**	**KT4200**
item #	**1447.08**	**1448.08**	**1449.08**	**1450.08**	**1451.08**	**1452.08**	**2323.05**
throughput	[kg/h]	[kg/h]	[kg/h]	[kg/h]	[kg/h]	[kg/h]	[kg/h]
granulates	100	260	410	530	810	1240	2000
bottle flakes	120	320	510	710	1080	1490	2000
film scrap	80	250	380	490	740	1050	1400
Technical Data*:							
air amount* [m³/h]	200	450	700	1000	1500	2400	3600
heating power [kW]	12	24	36	48	72	96	130
blower power [kW]	1,5	3,0	4,0	6,5	7,5	11	20
agitator motor power [kW]	1,1	1,5	1,5	2,2	2,2	7,5	7,5
crystallisation hopper							
volume [dm³]	150	300	600	1200	1600	2600	4200
cooling hopper							
volume [dm³]	150	300	600	1200	1600	2600	4200

LAK with cooling hopper

LAK crystallization process with cooling hopper KT



*process parameter optimizations are off course possible

principal function:

material flow
cold material is loaded into the crystallizer and then heated up to the process gas temperature. The hot material then is discharged from the crystallizer into the cooling hopper where the material is cooled by incoming process air at 20°C.

process air
the process air blower sucks in filtered ambient air and blows it into the cooling hopper. The heat coming with the material from the crystallizer is transferred to the process air as the material cools down.
The preheated process air then passes filters before it goes to the heating chamber where the air is brought up to the specific crystallizing temperature. After the process air went through the crystallizer where it transfers its heat load to the incoming cold material and is finally released in cool condition back to the environment.

By pre warming the process air in the cooling hopper the process air heater has only to generate the energy difference from the air temperature leaving the cooling hopper to the specific crystallizing temperature.

Energy Savings Potential:
up to 60%

Description of the crystallizing process - "Crystallization"

In the plastic processing industries crystallizers are mainly used where bulk materials (granulates or regrinds) after an extrusion process and sharp cooling phases remain partly or complete in amorphous condition and the transfer of molecules from amorphous to partly crystalline structures happens during solid condition of the resins. This goes along with a glass transition which sets free energy that weakens temporarily the material. The most common applications for this kind of crystallization can be found where PET (Polyehylenterephtalat) and PLA (Polyactid) is processed. PLA is a degradable plastic material based on lactic acid.
Crystallization in an exothermic reaction which has an impact on the flowing characteristics of the bulk materials that may stick together temporarily . The glass transition temperatures of PET vary in the range of 72 to 110°C. Higher grades of crystallization are typically reached at drying temperatures of 160 to 180C. But this does not lead any more to significant changes of the product characteristics. The crystallization process as such happens typically in a time window of a few minutes. Depending on the composition of different plastic materials the sticking phases may vary remarkably.

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