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Infrared Rapid Dryer

For Crystallization and Drying of PET

Photo: Infrared Rapid Dryer IR 50/80-6 for small quantities 10-80 kg/h.

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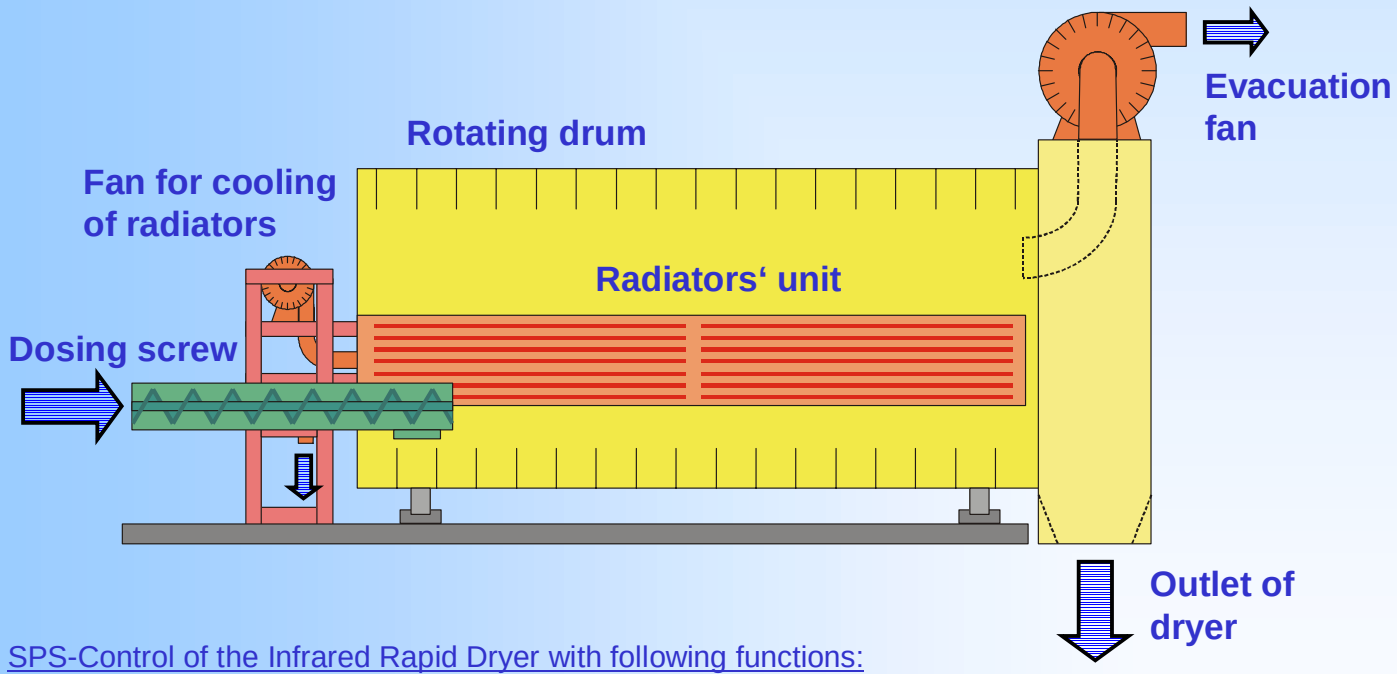
Sizes, technical datas

Type	Drum dimensions [mm]	Installed capacity [kW]	Total length approx. [mm] 1)
IR 50/80-6	∅ 50 × 80	6	1750
IR 90/180-36	∅ 90 × 180	36	2800+1900
IR 120/340-56	∅ 120 × 340	56	4800+3700
IR 120/340-98	∅ 120 × 340	98	4800+3700
IR 160/340-114	∅ 160 × 340	114	4800+3700
IR 160/520-152	∅ 160 × 520	152	7600+7000
IR 160/550-216	∅ 160 × 550	216	7900+7100

1) Length dryer + axially needed space for the driving out of the radiators‘ unit

Intermediate sizes on request.



SPS-Control of the Infrared Rapid Dryer with following functions:

- Adjustment of the dosing screw (throughput capacity)
- Adjustment of the drum speed (residence time in the dryer)
- Adjustment of the radiators‘ capacity
- Control of the material temperature
- Control of the exhaust air temperature
- Level control by means of light barrier

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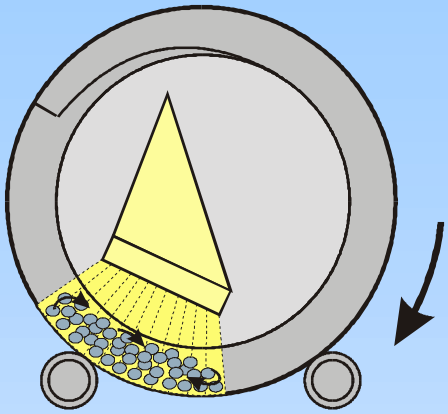
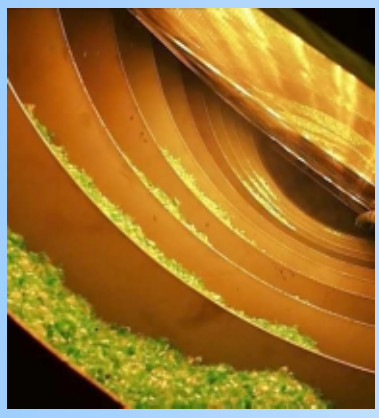
Process description, function

The product to be dried is dosed from one side of the drum. It is longitudinallyconveyed through the rotating drum by means of an interior screw spiral. Hereby the residense time is determined by the speed. Brakers, which are especially adapted to the product, ensure a constant circulation and mixing (see sketch right side).



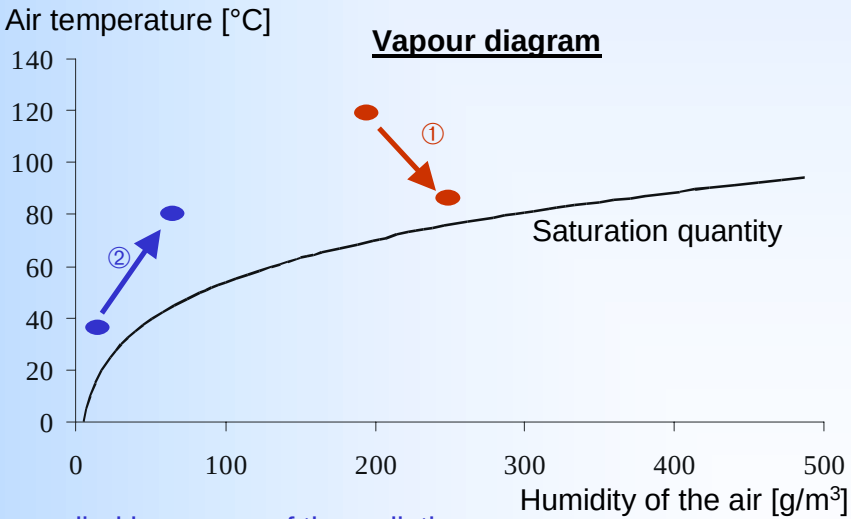


View into the interior of the dryer.

For maintenance purposes radiators‘ unit driven out of the rotating drum.

The wavelength of the infrared rays is adapted to the process task. The radiation is hardly absorbed by the air, but directly heats up the PET and volatilizes the water on the surface and in the interior of the plastics.

With hot- and dry air dryers the drying gas serves for the heat supply and for the transportation of the free-coming humidity. When coming into contact with the drying good the air cools down and absorbs at the same time humidity (see graphic ①).
There is the danger of exceeding the dew point. Therefore in the technology it is worked with a big volume flow and with predried air.



With the Infrared Rapid Dryer the heat is supplied by means of the radiation.
The suctioned space air is heated up in the dryer and also absorbs here the humidity out of the product (see graphic ②). There is no danger of falling below the dew point. No predried air is required.

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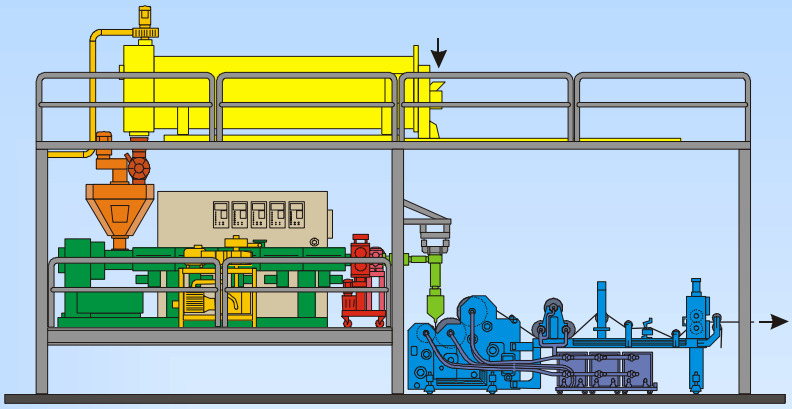
Fields of application

Crystallization and drying of PET bottle groundstock

- in front of a Kreyenborg-Recycling line (regranulation)
- in front of a thermoform film line (inline process)
- in front of a staple fiber line (inline process)
- in front of compounding lines

Infrared Rapid Dryer

installed in a line for the inline manufacturing of **PET thermo-forming film** out of bottle ground stock.



Crystallization and drying of PET

- Granulate
- Film flakes
- Fibres
- Mixes of different components

Crystallization in front of hot air dryers

- of PET granulate
- of PET bottle ground stock
- of PET film flakes

Continuous crystallization of recyclate after the pelletizing of a Kreyenborg Recycling line

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Advantages in comparison to conventional drying systems

- crystallization and drying in one process step
- reducing of the drying time from hours to minutes
- fully continuous process
- smooth material handling
- no separation of products with different bulk densities
- high efficiency, reduced energy consumption
- no additional drying aids necessary
- simple handling and installation

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Questionnairy form for the design of a Infrared Rapid Dryer

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Product

- ❑ A-PET
- ❑ G-PET
- ❑ modified PET
- ❑ fillers _____

- ❑ virgin material
- ❑ production wastes
- ❑ Post-consumer material

- ❑ granulate
- ❑ bottle ground stock
- ❑ ground thermoform film
- ❑ film flakes
- ❑ fibers

bulk density _____ kg/dm³
max. length _____ mm
thickness _____ µm
viscosity _____ dl/g
moisture _____ %

Process task

Throughput capacity _____ kg/h
expected residual moist. _____ ppm

- ❑ only crystallization

Options

- ❑ dosing
- ❑ SPS control
- ❑ accessable platform

Sender

_____
_____
_____
_____

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