MORETTO

EMPOWERING PLASTICS

OTX Series Hoppers

OTX drying hopper

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OTX (Original Thermal Exchanger) hoppers are sold with SX dryers:

- Optimized mass flow of materials for highly predictable resin drying.
- Each pellet is uniformly exposed to drying air and achieves full residence time in the hopper.
- Reduced size compared to competitive models, for space savings and energy reduction.
- Mechanical features assure long life, easy access, easy cleaning and safety.
- Viewer control provides temperature readout, and status indicator.

OTX drying hopper

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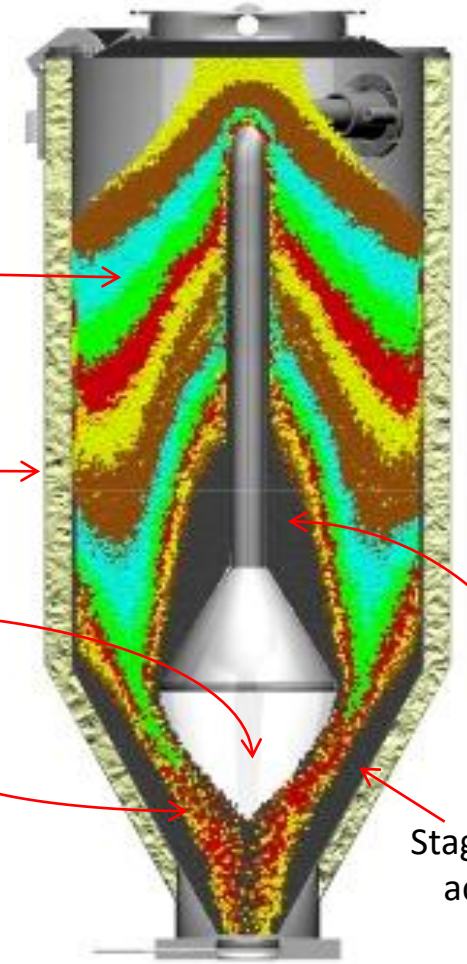
Why OTX?

Traditional/competitive hoppers:

- Poor length-over-diameter (L/D) design prevents mass flow of resin through the hopper.
- Fragile exterior suffers from dents and sufficient safety is not provided for access and cleaning.
- Air distribution system does not allow drying air to the cone section.
- Resin moves unevenly, creating stagnant resin pockets and preventing full residence time of some resin.



OTX drying hopper

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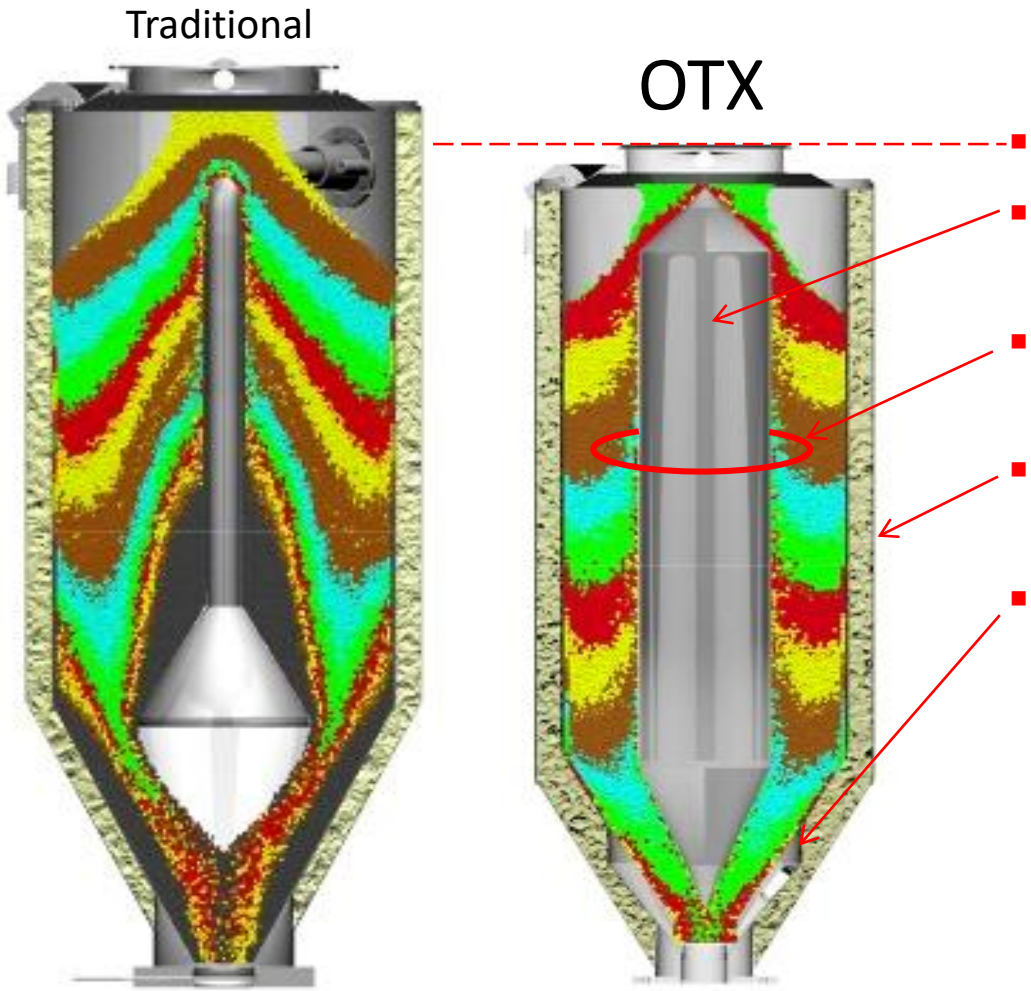
Why OTX?



- More compact.
- Center core smooths resin movement for mass flow.
- Resin moves smoothly down a cylindrical, not a tank shape.
- Innovative and tough Spyro exterior rejects damage.
- Air delivery is located low for improved cone drying.

OTX drying hopper

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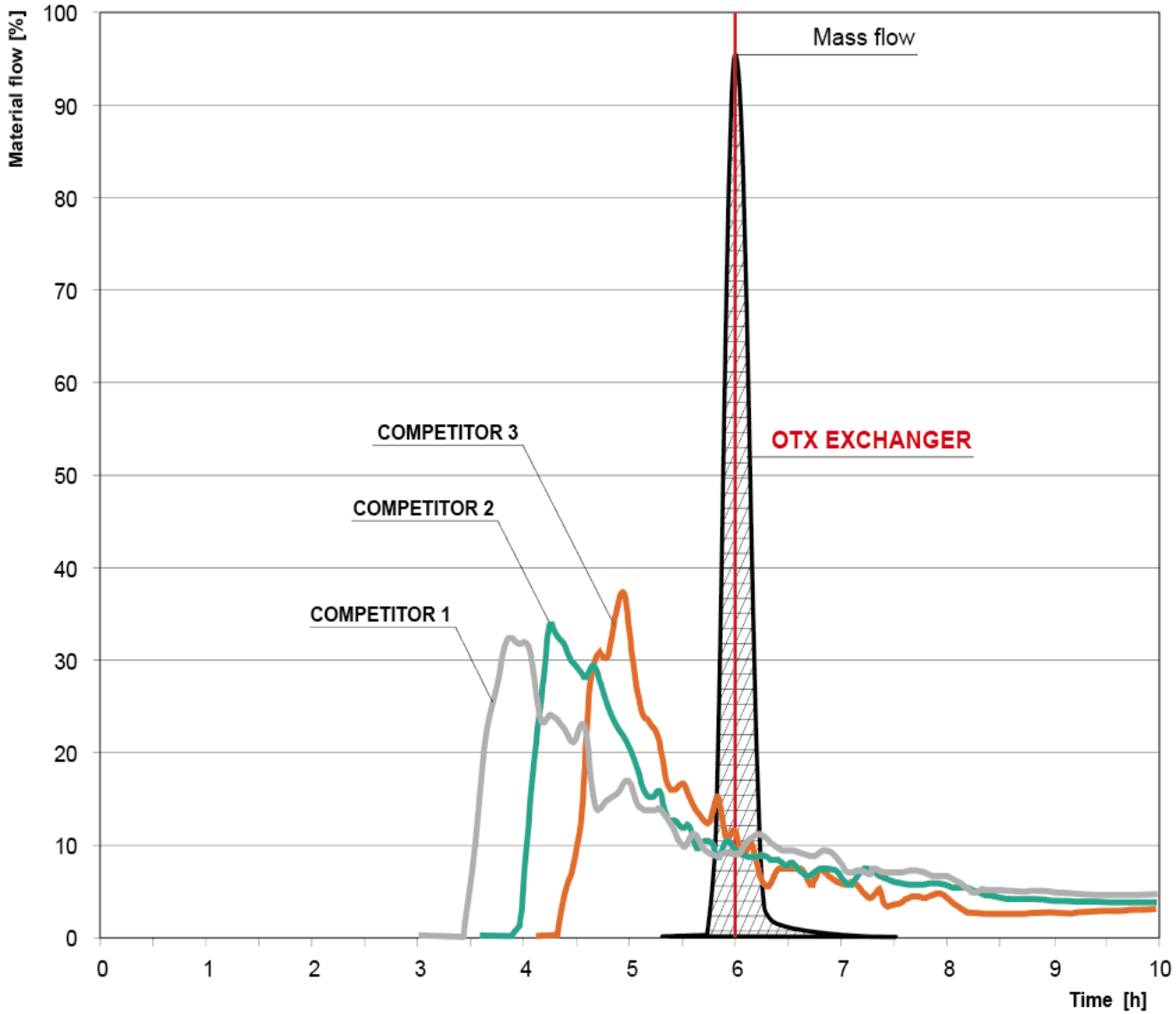
Mass flow efficiency in drying hoppers:

- OTX vs competitive hoppers



OTX drying hopper

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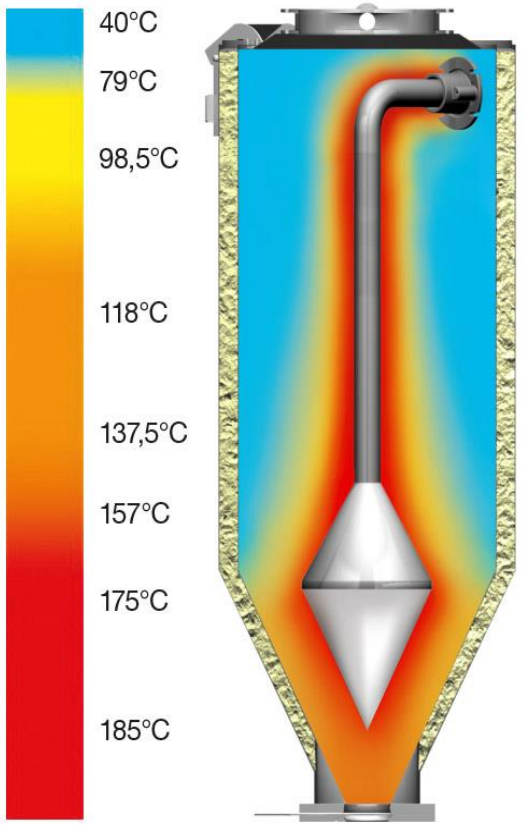
Designing for uniform heat transfer

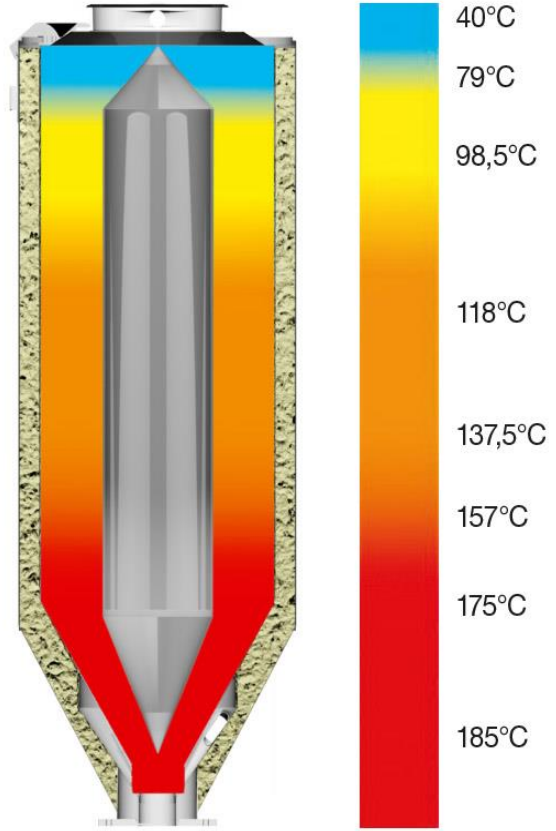
Super-computer drying hopper thermodynamics analysis:

Conventional



Conventional hoppers:
Un-even thermal distribution

oTx



OTX: Consistent thermal gradient for even heating

OTX drying hopper

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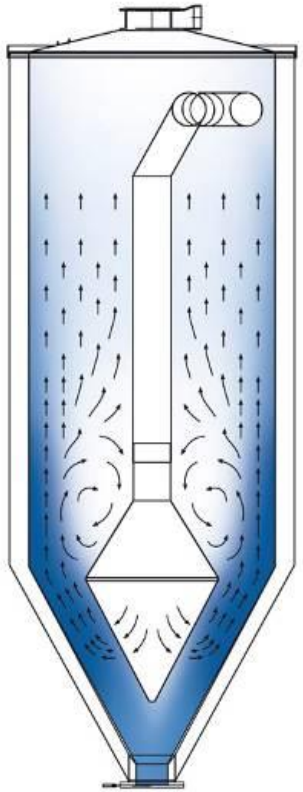
Designing for uniform air distribution

Super-computer drying hopper air flow distribution analysis:

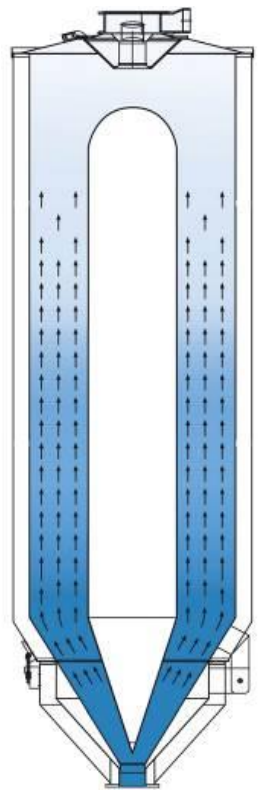
Non-homogenous airflow:

- Uneven drying performance

Conventional



OTX



Homogeneous airflow:

- Even drying of every pellet

OTX drying hopper

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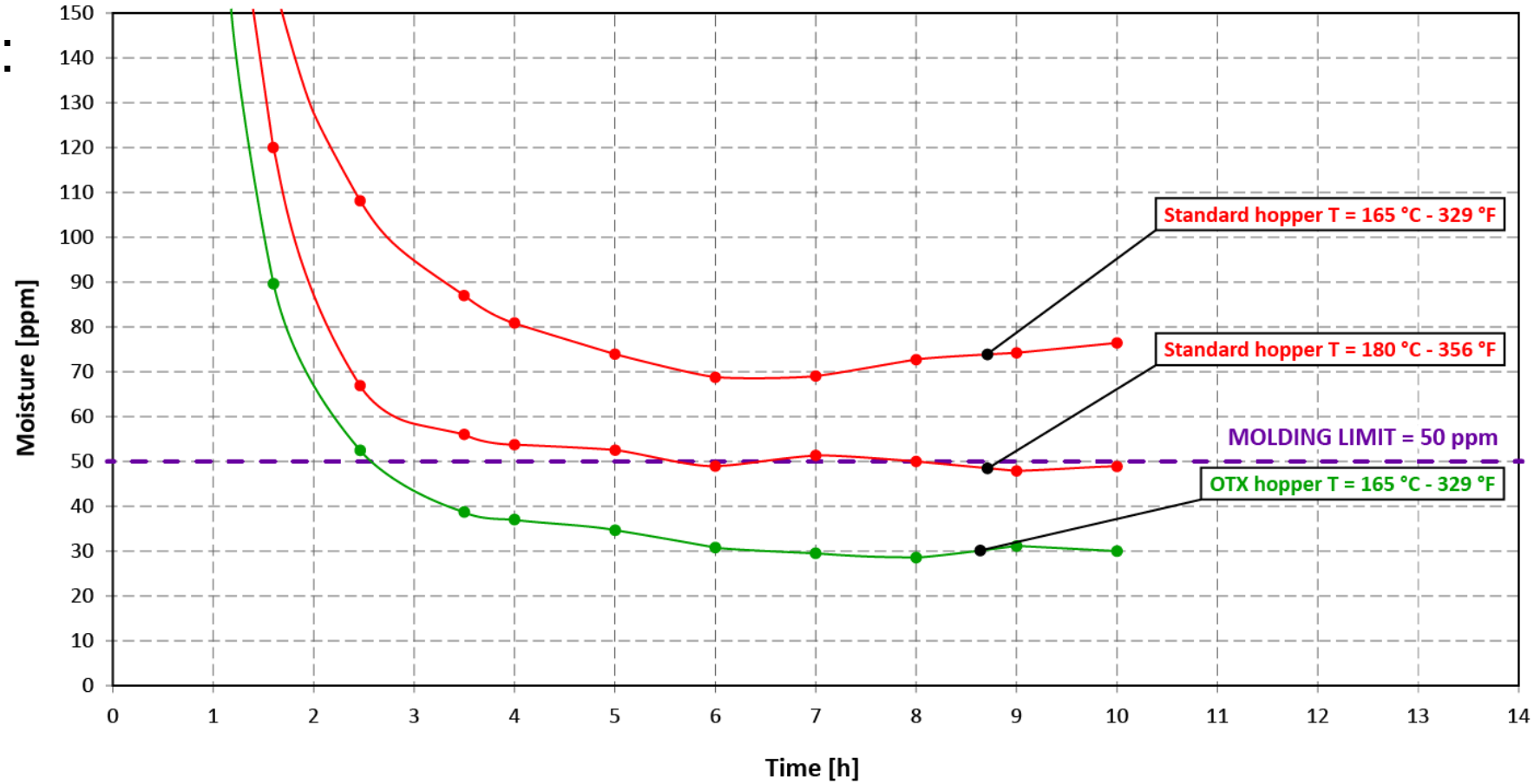
PET* Drying:

- OTX Hopper vs. Standard Hoppers



*PET example used only to illustrate OTX capabilities. XD Series dryers not currently offered in the US for high temperature applications.

- Dries Faster: Less pre-drying and shorter residence time
- Dries More Effectively: Lower ending moisture content
- Dries More Efficiently: Lower drying temperature

OTX drying hopper

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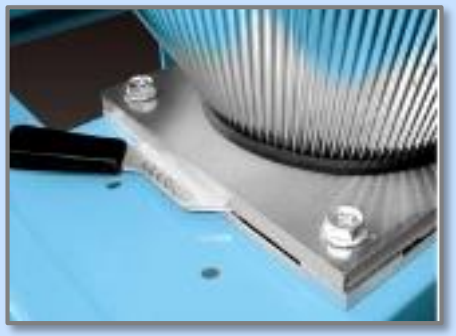
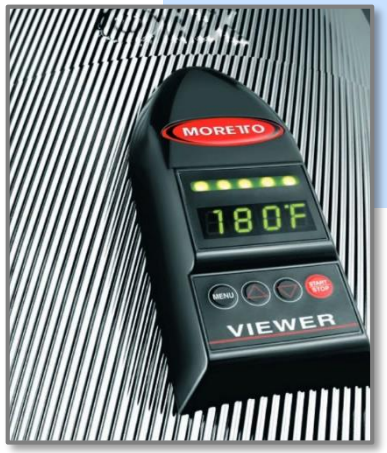
Features:

- Shock-proof Spyro exterior.
- Large access door with smooth interior.
- Hinged or removable lid.
- Filter-screened air outlet.
- Jam-free shut-off gate.
- Viewer controls are located on each hopper.
- Viewer provides drying status and temperature readout.





Features vary by hopper size.

Drying hopper Do's and Don'ts

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DO: Keep hopper full.

Do not dry with a reduced level in the hopper:

- Some suppliers allow/encourage reduced hopper levels for drying smaller throughputs.
- Less than full conditions changes mass flow of hopper.
- Thorough drying is at risk!

DON'T: Reduce heat when through-put is reduced.

Process protection should change airflow; not temp.

- Some set-back temperature features reduce heat.
- If heat is reduced; drying suffers.
- Resin is no longer in line with processing temperature.

DO: Reduce dryer air-flow when through-put is reduced.

Moretto Anti-stress feature alters air flow, not temperature.

- Reduced air-flow also reduces electrical consumption.
- Drying temperature is always maintained for optimum processing!

Strip sight-glass with height adjustable sensor. (Conair)

XD & OTX Anti-stress (over-drying protection) system

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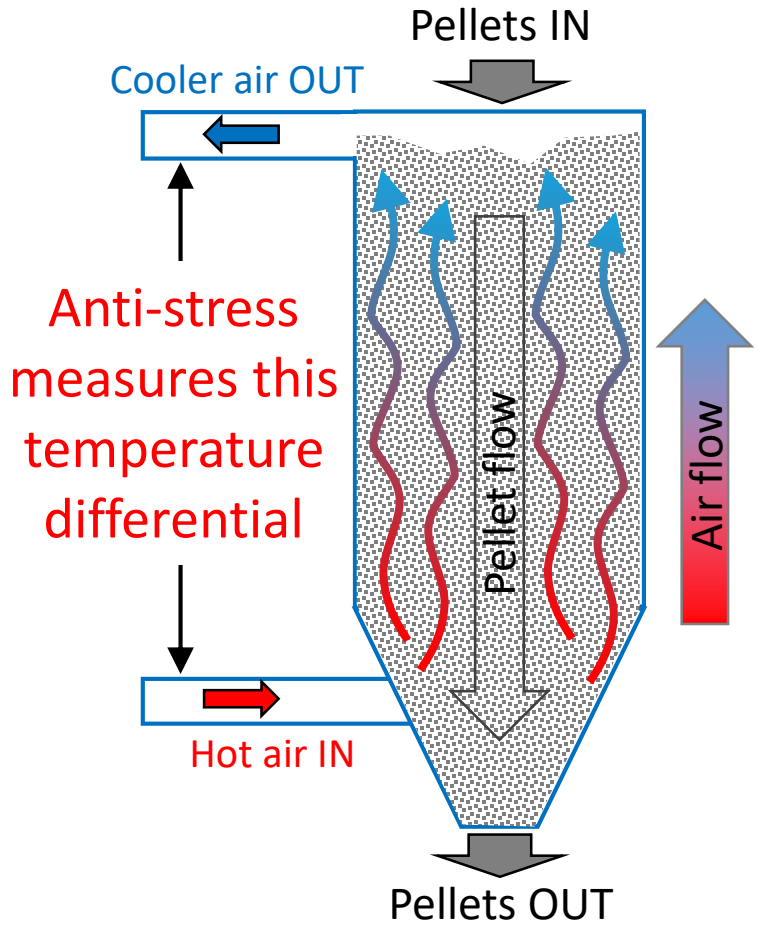
How it works:

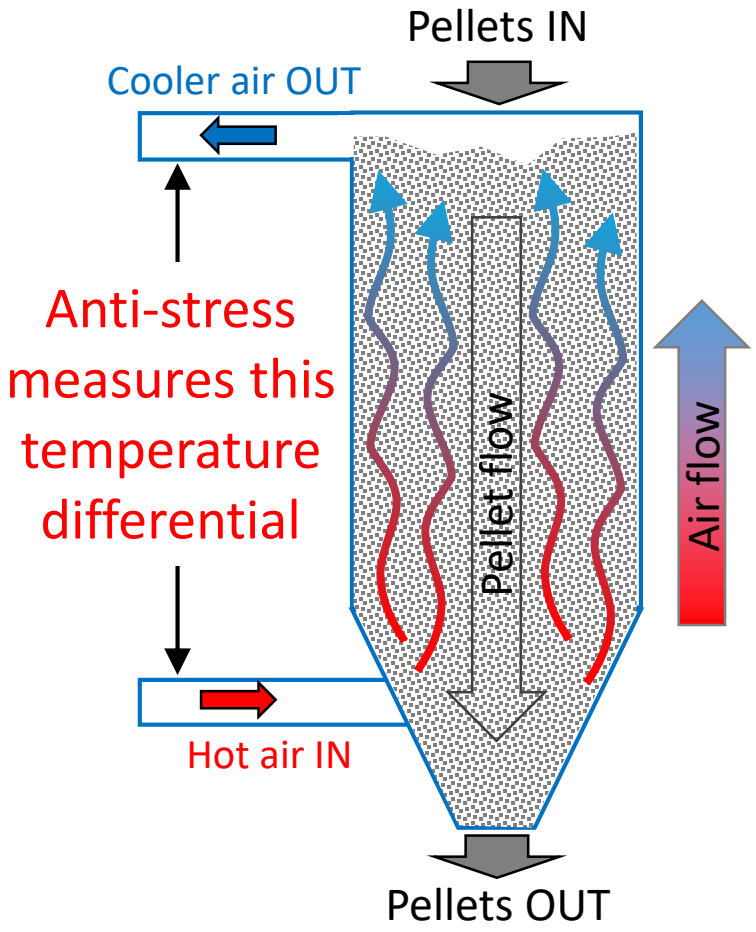
- A temperature sensor on the top of the drying hopper monitors the return air temperature.
- A return air temperature approaching the drying temperature is an indication of excess heat and air being delivered to the material.
- This condition means the material is being subjected to over-drying stress.
- The anti-stress system automatically reduces air flow to prevent over-drying.
- Drying temperature is maintained while airflow is reduced.



XD & OTX Anti-stress (over-drying protection) system

EMPOWERING PLASTICS

- Upon start-up, the dryer provides 100% air flow, for maximum drying capability.
- If the return air temperature comes within 20˚ of the drying temperature, air flow is reduced 12.5% by a step-inverter, built into the dryer*.
- If the return temperature continues to rise, air flow is reduced another 12.5%.
- The step-inverter provides up to four, 12.5% reductions.
- The system monitors temperatures constantly and automatically elevates air flow as thru-put increases, which naturally decreases the return temperature.



Many Moretto dryers utilize VFD's to allow fully variable blower speeds for anti-stress operation.

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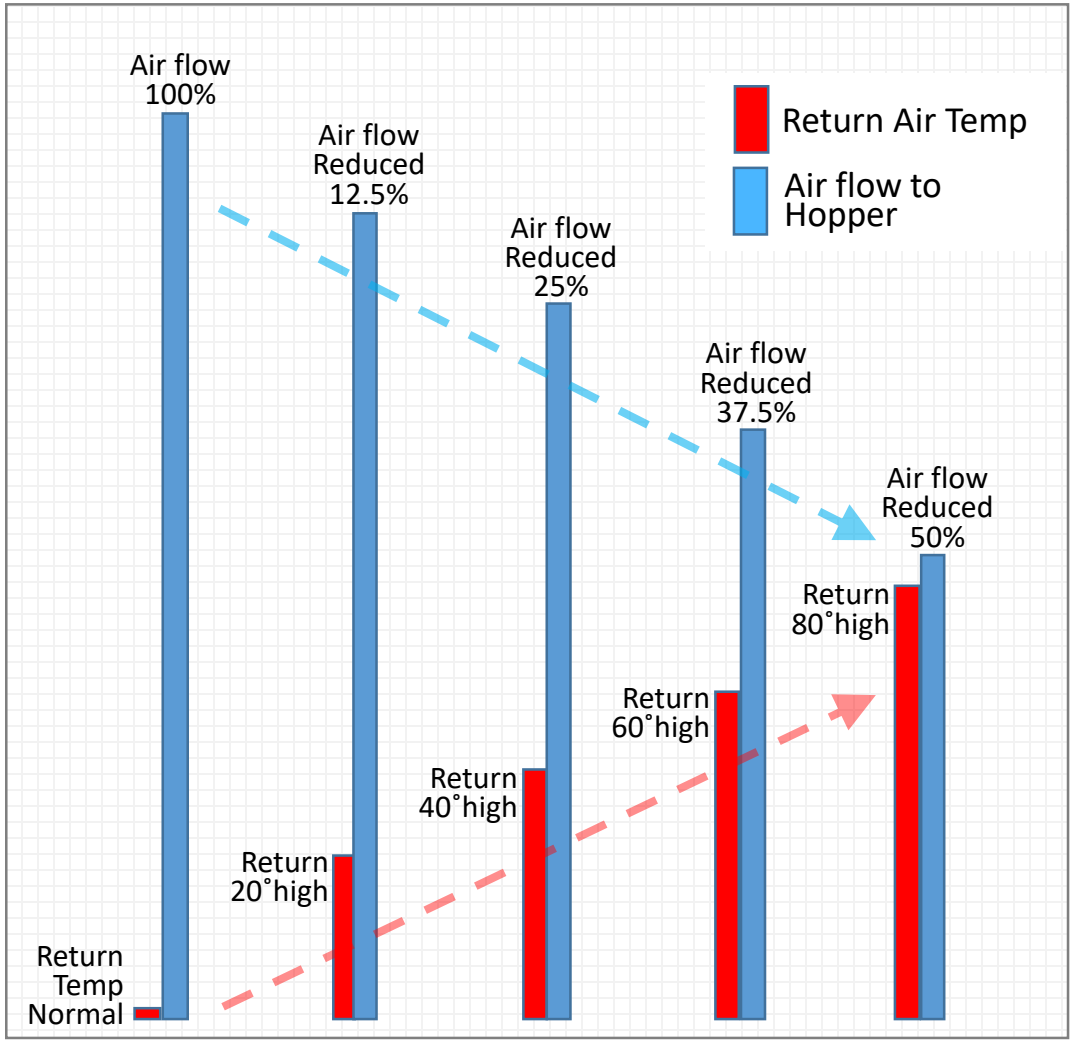
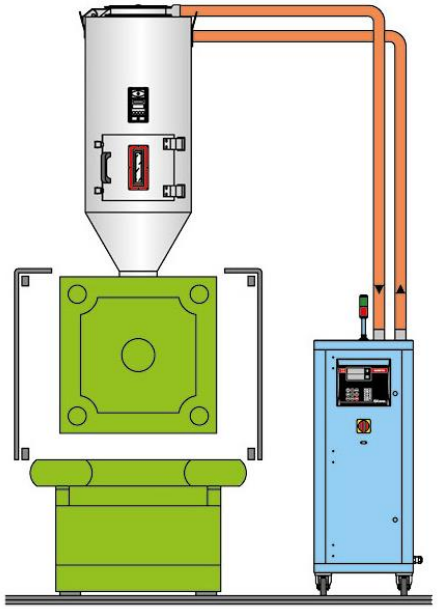
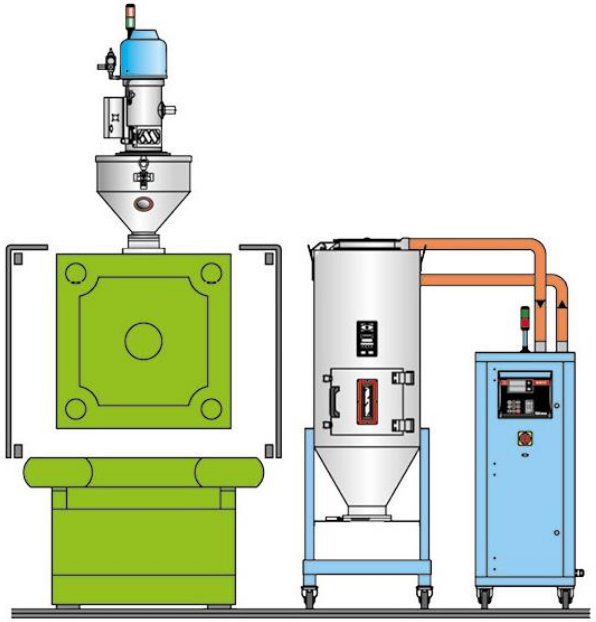


XD & OTX Installation Configurations

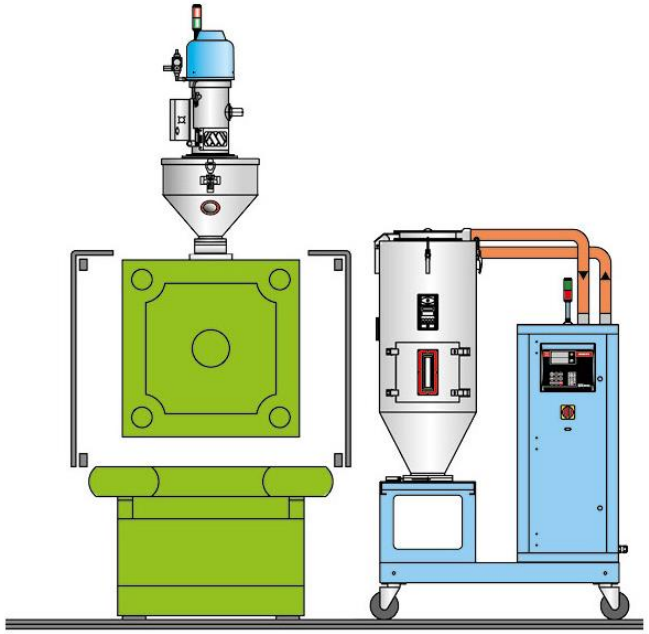
EMPOWERING PLASTICS



ON VERSION



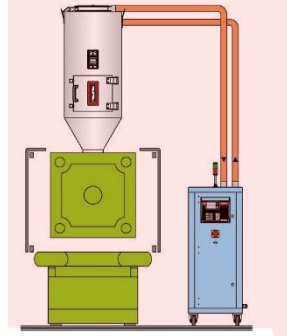
SIDE VERSION

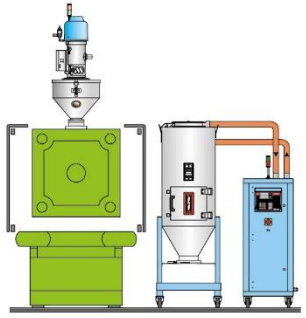


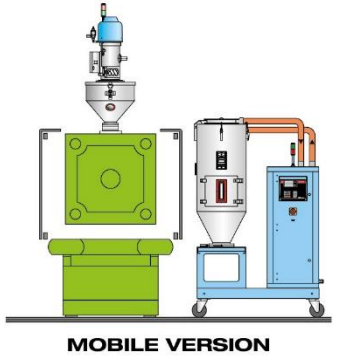
MOBILE VERSION

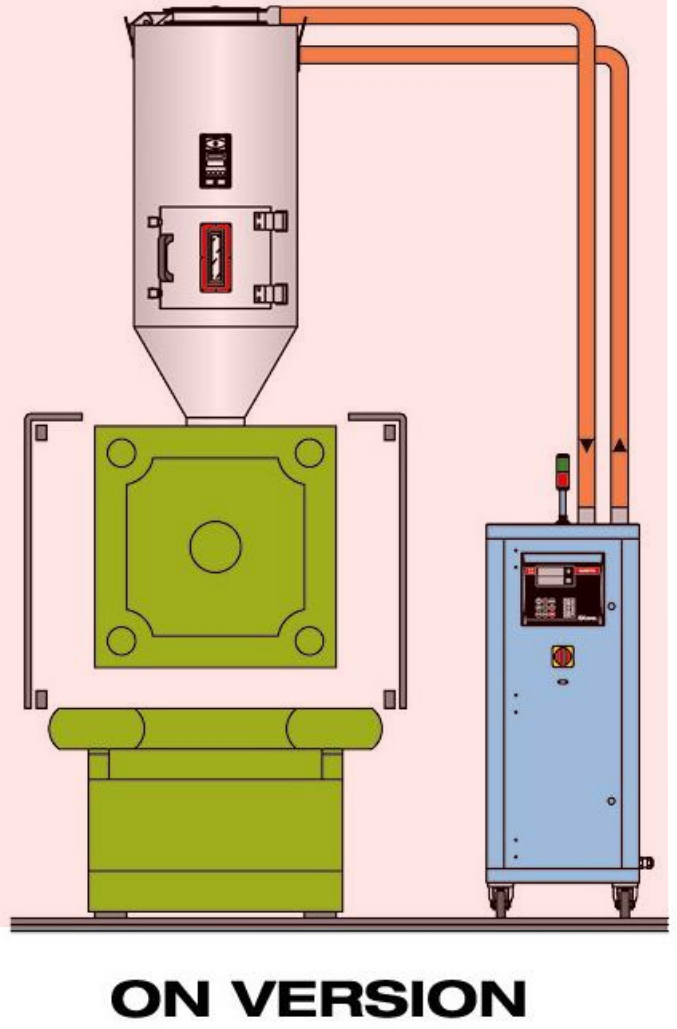
XD & OTX Installation Configurations

EMPOWERING PLASTICS









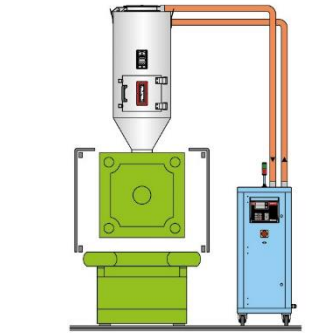
“ON” Version

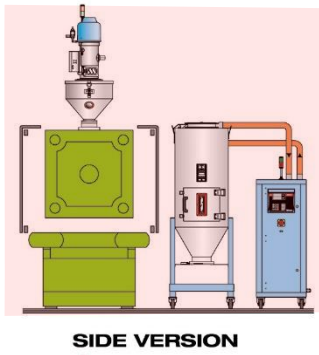
Dryer on floor; Hopper on the machine throat:

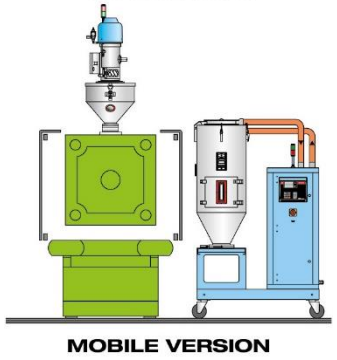
- Most common, lowest cost configuration.
- Material reliably flows from hopper to machine by gravity.
- Hopper location can make material changes more cumbersome.

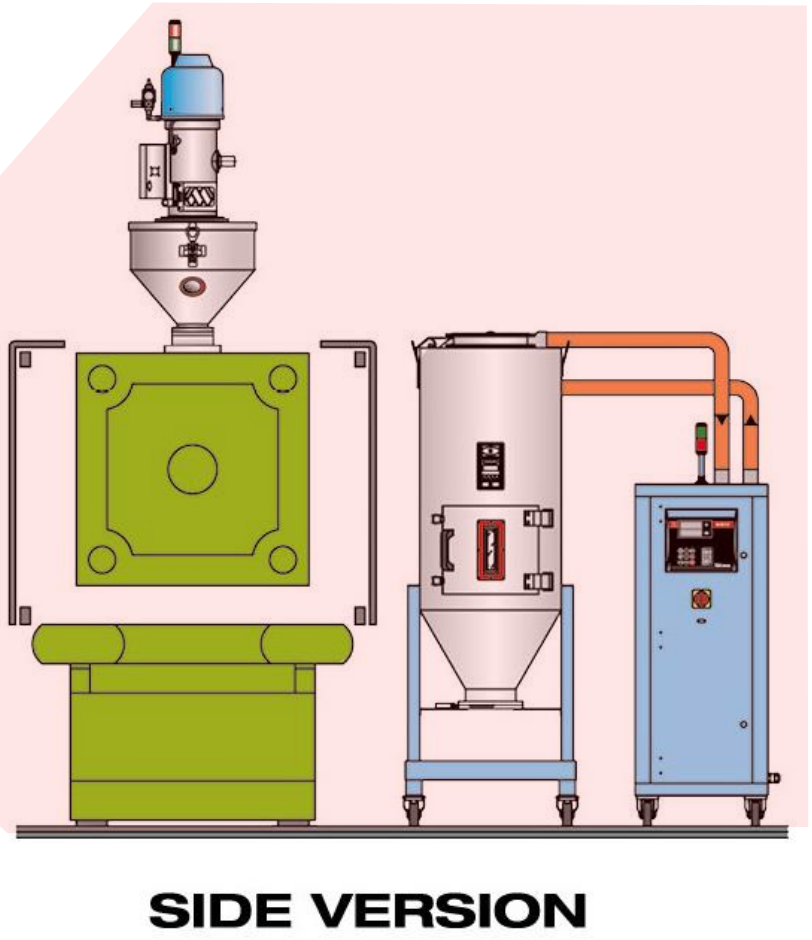
XD & OTX Installation Configurations

EMPOWERING PLASTICS









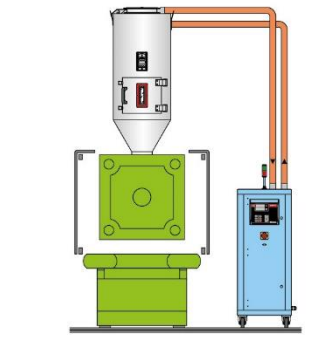
“SIDE” Version

Dryer and Hopper are both on the floor.

- Conveying must be provided from hopper to machine throat.
- Hopper consumes floor space.
- Material changes are much simpler:
  - Simple hopper draining.
  - Floor level hopper cleaning.

XD & OTX Installation Configurations

EMPOWERING PLASTICS



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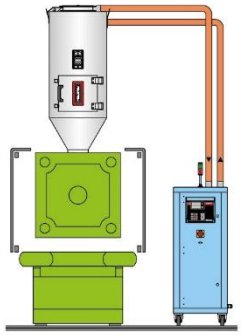

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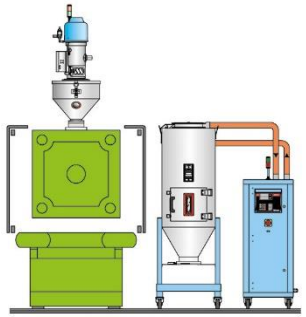

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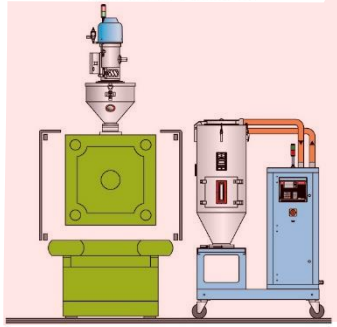

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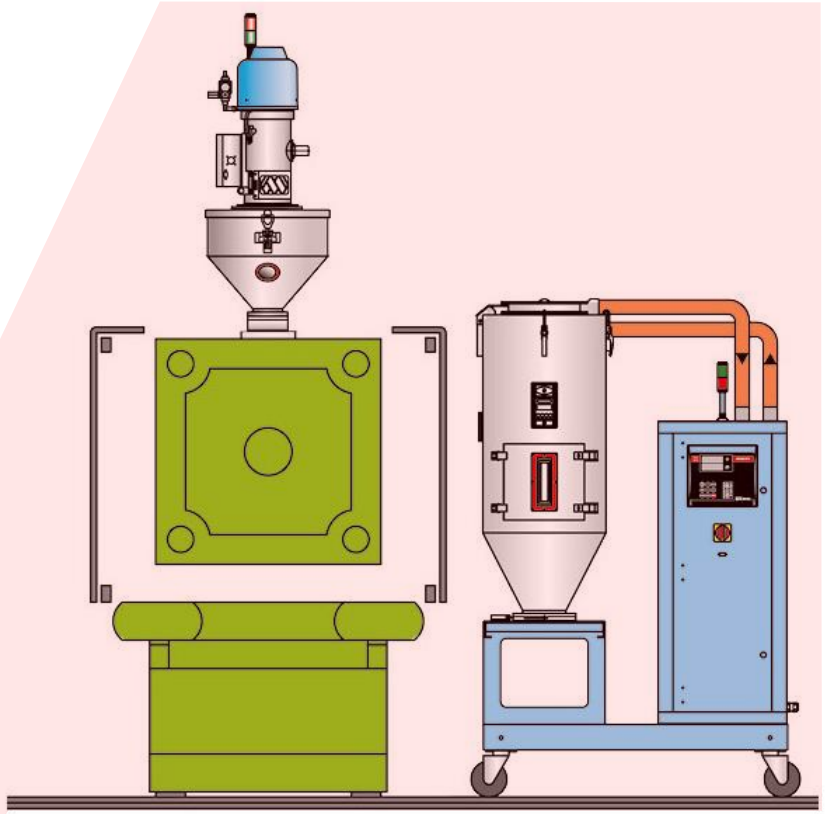


MOBILE VERSION

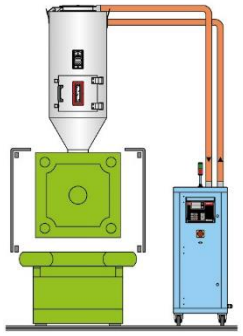
“MOBILE” Version

Dryer and hopper are mounted together on a mobile cart.

- Conveying must be provided from hopper to machine throat.
- Mobile cart consumes floor space.
- Material changes are most simple:
  - Cart can be rolled away for cleaning/refilling/pre-drying.
  - Floor level hopper cleaning.

XD & OTX Installation Configurations

EMPOWERING PLASTICS



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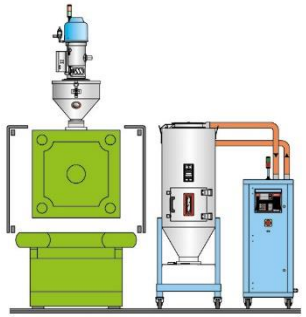

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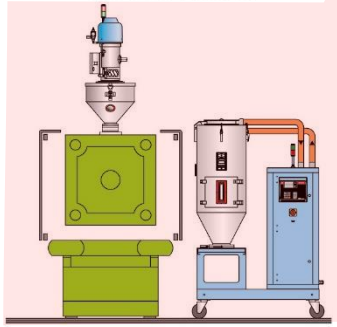

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OTX Size: *Customer 2*

EMPOWERING PLASTICS

Model for model, Moretto dryers are roughly 35% smaller than competitive models.

Comparison:
Moretto vs Novatec
mobile dryers

Shown: Moretto XD dryer

OTX Size: *Customer 1*

Model for model, Moretto dryers are roughly 35% smaller than competitive models.

Comparison:
Moretto vs Conair
mobile dryers

Shown: Moretto XD dryer

EMPOWERING PLASTICS

Original Moretto Systems and People