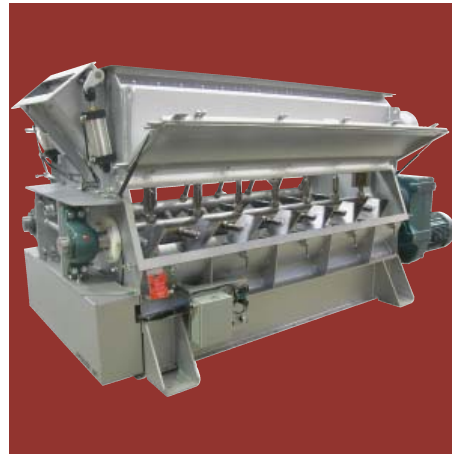
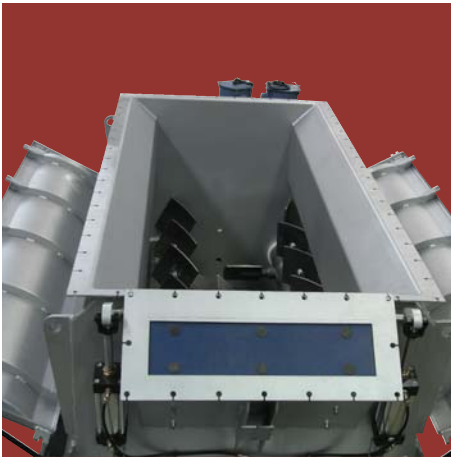


# **Bella<sup>®</sup>**

**DRYER/COOLER**



***The Perfect Way to Heat, Dry, Cool  
or Moisturize Bulk Solids***

# Mixing energy and product in

## Product Profile

The Bella® dryer/cooler offers a highly efficient method of drying or cooling powders, granulates and filter cakes. The super fast mixing capability of the Bella dryer/cooler makes it an ideal heater or cooler, since the process of drying or cooling is simply the mixing of heated or cooled air with any given material. The better the mixer, the better the dryer.

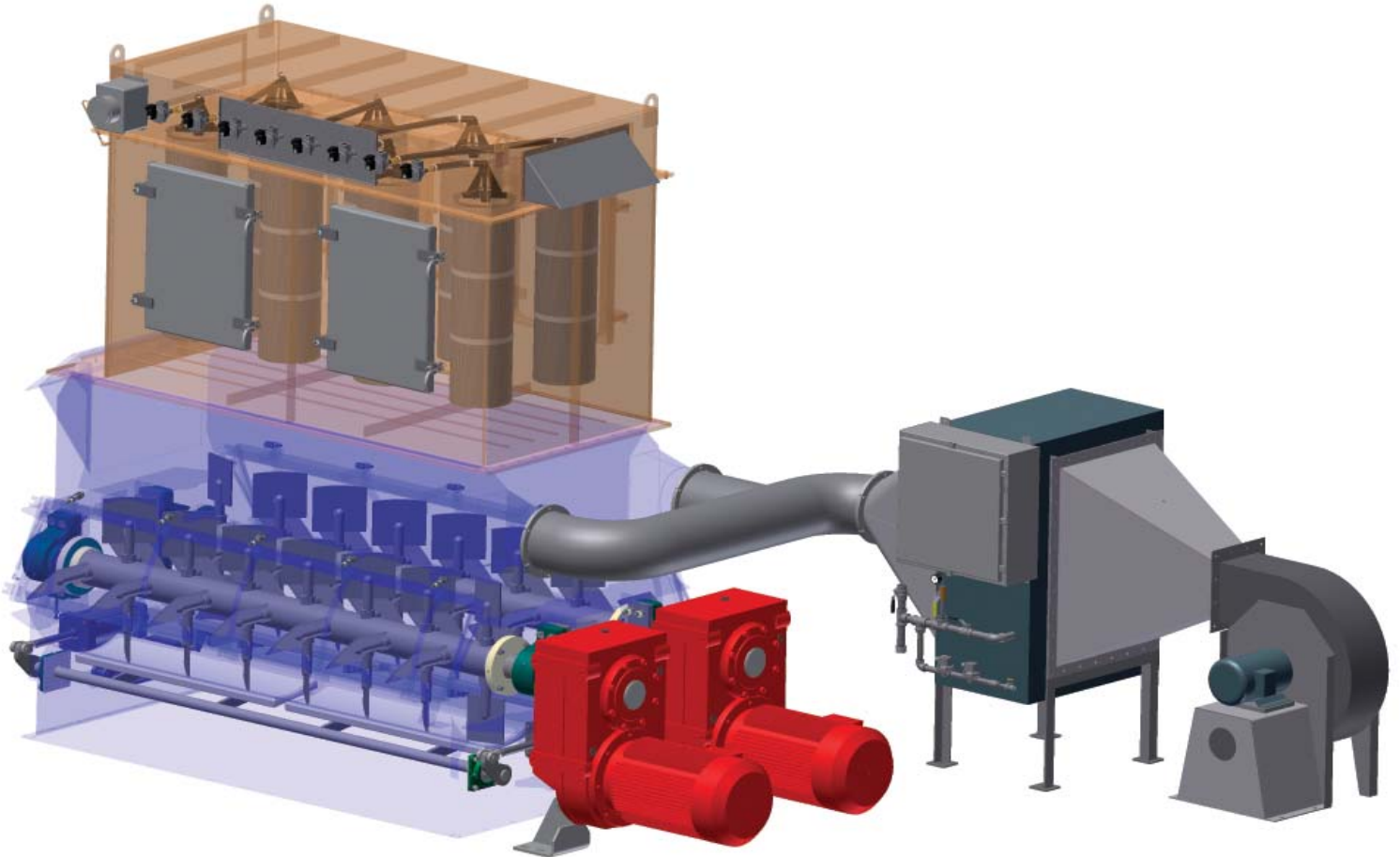
Since the Bella mixer is one of the fastest mixers for mixing dry granular powders and granulates, when used as a dryer or cooler it becomes highly efficient and creates some very high energy savings which can have a huge impact to lower operational costs.

In addition, the gentle agitation of the mixing paddles produces a very desirable finished material which is consistent in texture, moisture and particle size.

With the twin counter rotating paddles, dead zones are eliminated because each and every particle

being dried or cooled is in constant motion and moving in numerous random directions. Material is never allowed to stagnate, thus increasing its total exposure time to the heated or cooled air to improve performance and efficiency. Thus, the heated or cooled air is allowed to easily move in and around each particle because the material is slightly suspended as a result of the constant agitation of the paddles as it moves the material in and out of the weightless zone before the heated or cooled air is allowed to exit. This process also maximizes the total surface of the material which is exposed to the heated or cooled air, thus increasing the thermal efficiency. The drying process will naturally go through an adiabatic evaporation with thermal efficiency as high as 80 percent. Therefore, smaller air volumes are required.

The Bella dryer/cooler can be used for drying, cooling, mixing, spraying and agglomerating in one single unit.



# *a unique and efficient way!*

## How it works

The Bella dryer/cooler consists of twin drums which have two counter rotating agitators with specifically angled paddles. The paddles sweep the entire bottom of both drums. The material moves in a horizontal counterclockwise direction at the perimeter while simultaneously moving both left and right in the center (Fig. 1). The heated or cooled air enters all along from the top of the Bella dryer/cooler at Zone B and Zone C. The air then moves downward in the direction of the moving agitators (Fig. 2), moving in and around the material and in and out of the weightless zone.

The material in Zone B and Zone C (Fig. 2) is in its normal gravimetric state as material and air is being moved and directed by the agitators. In Zone A, a fluidization or weightless zone is created that effectively lifts the material to an almost weightless state allowing the material to move freely and randomly and mix thoroughly with the heated or cooled air. Thus the heated or cooled air achieves maximum contact with the material for maximum efficiency.

## Benefits

- Improved material characteristics
- Excellent heat transfer rates
- High thermal efficiencies
- Added mixing capability
- No material stagnation
- Minimal exposure time
- Operating temperatures from -150° F (-101° C) to +900° F (482° C)
- Gentle low shear agitation
- Easy access doors
- Low maintenance requirements
- Low energy requirements
- Continuous or batch operation

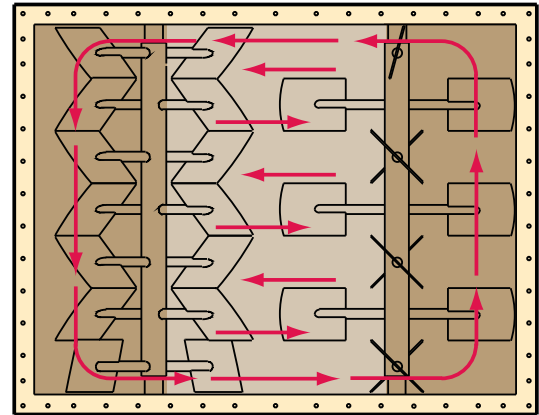


Fig. 1

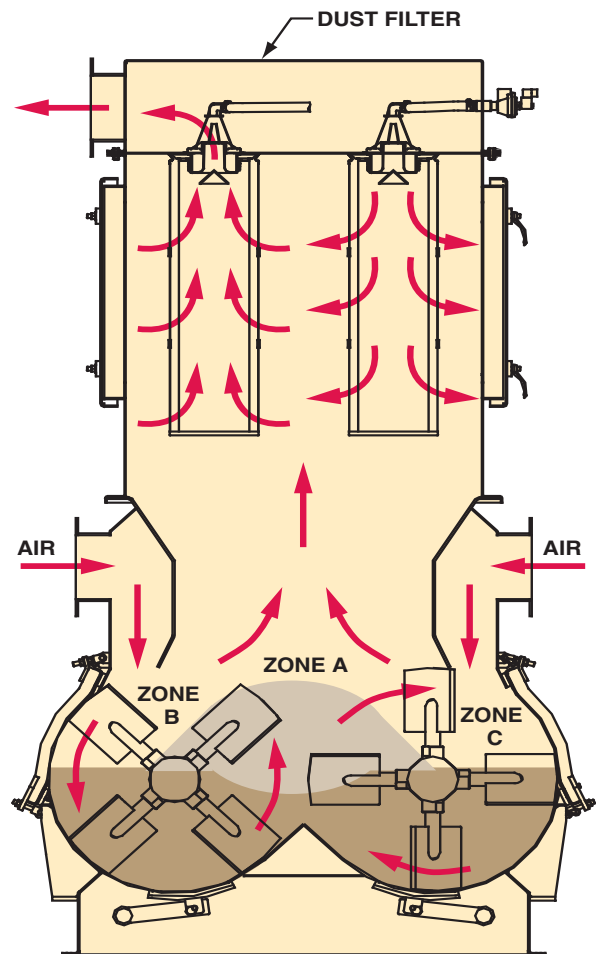


Fig. 2

## Heating/drying/ cooling procedure

The supply air inlet temperature can be as high or as low as the product will allow to keep the drying or cooling time to a minimum. Once the drying/cooling process has begun, the product temperature immediately rises or falls to a predetermined maximum allowable reading.

The exhaust air temperature will be only slightly higher or lower than the product temperature and is a measure of the dryer's efficiency. The closer the relationship between the exhaust air and the product temperature, the higher the thermal efficiency of the process.

Drying/cooling is dependent on four parameters: air/gas flow, temperature, relative humidity and efficiency. The Bella dryer/cooler optimizes these parameters and product moisture quickly reaches the desired level.

## Laboratory Testing

Dynamic Air can provide laboratory testing of your specific material at our test facility to fully demonstrate our capability for heating, drying and/or cooling in order to meet your exacting design specifications and to generate process design data for proven results.

## Dimensions

See Bulletin 21148 for dimensions. Custom sizes available.

## Applications

- Weight reduction
- Volume reduction
- Reclamation
- Liquid/solid separation
- Dewatering
- Foundry shakeout sand cooling/drying
- Product sterilization
- Crystallizing PET
- Organic and inorganic compound drying
- Detergent powder drying
- Milk powder drying
- And many more



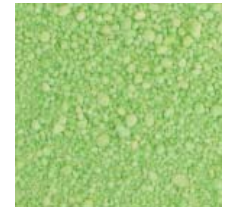
*Detergent*



*Coriander Seed*



*Ground Cinnamon*



*Detergent*



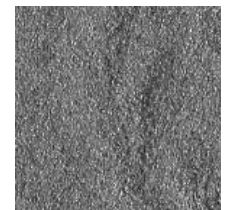
*Anise Seed*



*Caraway Seed*



*Celery Seed*



*Foundry Sand*



*Powdered Flavoring*



*Powdered Cheese*



*Silica Sand*



*Salt*



*Seasoning/Herb Mix*



*Ground Coffee*



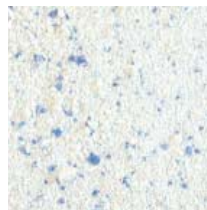
*Dried Biosolids*



*Dried Soup Mix*



*Drink Mix*



*Detergent*



*Potting Soil*



*Milk Powder*