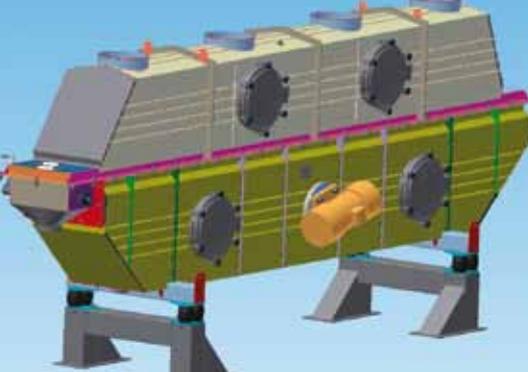
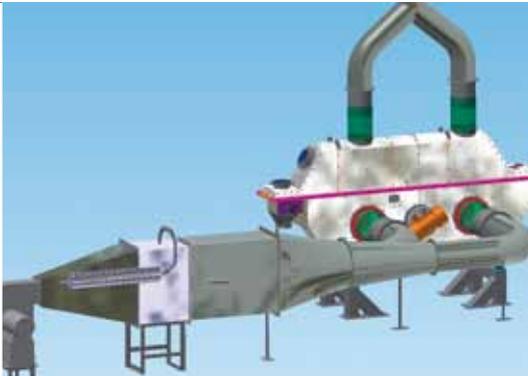


Drying & Cooling **Carrier Fluid Bed**



## Vibrating Fluid Bed System for Drying and Cooling

### Introduction

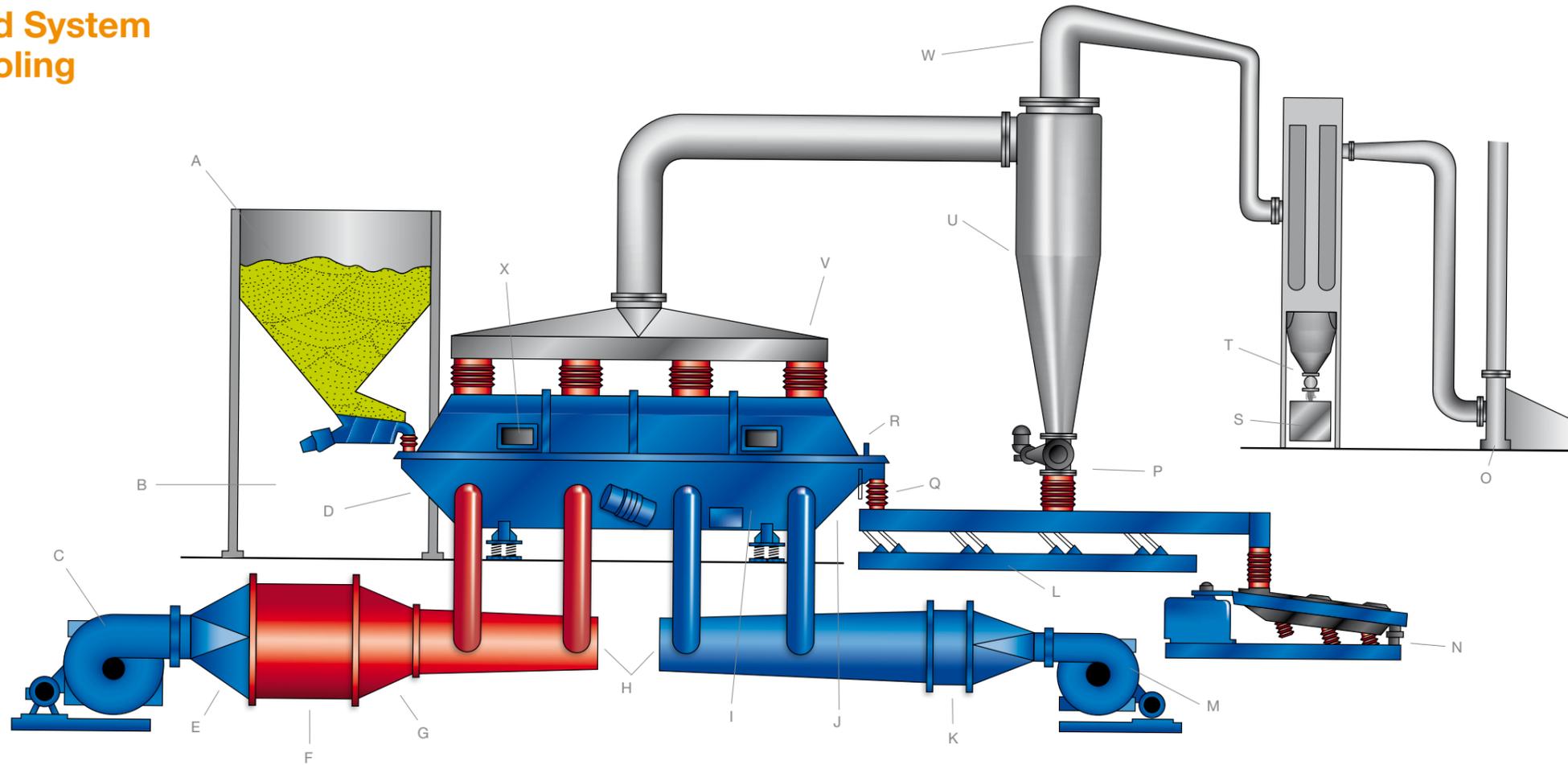
In conjunction with Carrier, iBulk offers internationally renowned drying and cooling technology. Utilising fluidisation, a condition in which solid particles are placed in a state akin to that of a fluid, an effective and consistent drying and cooling environment is achieved. This in turn will result in a uniform end product.

The process utilises fluidisation. This involves the passing of process air or gas directly through a bed of particulate material via a perforated plate, lifting and mixing the solids.

Adding mechanical vibration to the system further increases efficiency by continuously agitating the material, resulting in the solids attaining fluid-like properties. This fluidisation maximises the exposure of particle surface areas to the process air, resulting in higher heat transfer rates, increased operating efficiencies and therefore reduced operating costs.

Vibratory systems consist of U-shaped trough, covered by a hood section all mounted on a structural air plenum. Uniform vibration is provided along the entire length of the unit by means of natural frequency spring systems or rotating weights.

The effectiveness of a standard dryer is evidenced by the fact that it typically uses 30-40% less fuel than a rotary dryer.



### Key

- A Product Storage Hopper
- B iBulk Super Feeder
- C Process Air Blower
- D iBulk/Carrier 'Q' Processor
- E Damper
- F Burner Duct Section
- G Duct Section
- H Air Inlet Manifolds
- I Optional Manual Access Door
- J Standard Clean-out Door
- K Cooling Coils
- L iBulk VIMEC Conveyer
- M Cool Air Blower
- N iBulk Rotex Screener
- O Exhaust Air Fan
- P Rotary Lock
- Q Flexible Connectors
- R Manually Adjustable Weir
- S Tote Box
- T Fines Discharge
- U Cyclone Dust Collector
- V Exhaust Manifold
- W Sub-Micro Particles
- X Standard Inspection Windows

### Advantages

- Efficient heat transfer with low energy consumption.
- Product is continually mixed to promote uniformity.
- Fragile products can be handled with negligible particle degradation.
- No moving parts in contact with the product. Maintenance and abrasive wear are minimised and equipment is easily cleaned.
- Product retention times and gas temperatures are easily adjusted to vary the finished product condition.
- Fluid beds can be multifunctional. Drying, cooling, classifying and calcining can be done in one unit.
- Lower fluidising velocities are required, making the system more energy efficient.
- Easy to clean and maintain.
- Recirculated exhausts heat and closed-loop systems available for improved efficiency or solvent recovery.
- Clean-in-place and fire suppression systems available where necessary.
- Carrier's patented Delta-Phase® Drive option permits on-line adjustment of angle of vibration and precise retention time control.
- Sanitary construction available.

### Applications and Industries

Vibrating Fluid Beds are mainly used in the following industries:

- Sand
- Coal
- Plastics
- Food
- Polymers
- Chemicals
- Minerals

The applications that this product is used in include:

- Drying
- Cooling
- Calcining, and
- Sterilising



### Installation

Fluid Bed Dryer / Cooler installations are infinitely variable and are tailored to meet your requirements.

In addition to a standard dryer/cooler the air can be recirculated to provide an additional energy saving of 10-15% resulting in a reduction of the amount of air exhausted to atmosphere by up to 50%.

Furthermore, the addition of a multi-point predictive control system can place controllability and customisation at your finger tips.

## CASE STUDY

### New Food Coatings

Quite often we take the simple things for granted, and one would imagine that making bread crumbs wouldn't pose too many challenges, but think again. New Food Coatings, a food product manufacturer found themselves facing quite an unusual problem, how to effectively and efficiently dry bread crumbs in order to prevent contamination, reduce the likelihood of mould setting in and ultimately prolong product life.

This was never going to be an off-the-shelf fix and from the outset, it quickly became obvious that our experience in dealing with unusual requests would really assist in providing a workable, cost effective solution.

To identify, develop and design the process that would provide the desired results, iBulk's R&D team worked closely with the client, whose parent company also provided valuable information, to bring together various elements that would ensure the project's success.

At the heart of the design was a CARRIER fluid bed processing unit in which air is passed through a bed of particulate matter via a perforated plate. This process lifts and mixes the solids as required. In addition iBulk added mechanical vibration



to the system. By continually agitating the material, the solids attain fluid like properties.

This maximises the exposure of the particle surface areas to the process air, resulting in higher heat transfer rates and increasing operating efficiencies.

To top it all off, the process system that iBulk designed also allows New Food Coatings to mill the crumbs to specific sizes as required so it can be used in a wide variety of popular food items.

#### Head Office

MELBOURNE

iBulk Solutions Pty Ltd

36-38 Marni Street Dandenong South Victoria 3175

Tel: +61 3 8792 0200 Fax: +61 3 9706 6430

[www.ibulk.com.au](http://www.ibulk.com.au) [info@ibulk.com.au](mailto:info@ibulk.com.au)

#### Office Locations

ADELAIDE

iBulk Solutions Pty Ltd

PO Box 263 4/5 Main Street Crafers SA 5152

Tel: +61 8 8339 7160 Fax: +61 8 8339 7371

BRISBANE

iBulk Solutions Pty Ltd

PO Box 893 Office 2C

125 Old Cleveland Road Capalaba QLD 4157

Tel: +61 7 3823 4405 Fax: +61 7 3823 4465

NEW ZEALAND

A.E. Tilley Ltd

PO Box 14-122 Kilbirnie

Wellington 6241

Tel: +64 4 387 7009 Fax: +64 4 387 9114

[www.aetilley.co.nz](http://www.aetilley.co.nz)