

## ▼ DRYERS



PROVEN DESIGN AND COMPETITIVE SOLUTIONS

# ▼ DEDERT DRYERS

Dedert Corporation is a specialist in the design and supply of Dryers for a variety of industries. The Dryers in our product portfolio include Flash Dryers, Ring Dryers, Fluid Bed Dryers, Spray Dryers, Steam Dryers and Rotary Dryers (ecoDry™).

Dedert offers proven designs and competitive solutions for our Customers' drying applications. Our designs consistently meet our Customers' expectations for product quality, cost efficiency and lower maintenance costs.

Dedert dryers include the following equipment/features:

- Various feeding devices
- Cyclone collection
- Secondary collection
- Partially-closed circuit
- Closed circuit
- Pressurized

## ENERGY EFFICIENCY

Energy integration and heat recovery offers the most energy efficient system. Combined with Dedert evaporation systems, Dedert can provide a complete liquid concentration to dry product plant for the process industries.

Dedert offers dryer replacement, retrofits, upgrades and audits; we offer a complementary on-site review of existing dryer systems.

## FLASH DRYERS

Dedert Flash Dryers are simple yet versatile in their design. Flash Dryers can be used for drying a variety of products, usually filter cakes and slurries.

Flash Dryers can be designed with inlet temperatures as high as 1470°F (800°C).

## RING DRYERS

Dedert Ring Dryers are used when products cannot be dried efficiently in single pass Flash Dryers.

The differentiating technology between the Flash Dryer and the Ring Dryer is the incorporation of a classifier (manifold), which recirculates semi-dried product back to the initial heat zone for additional drying and dispersion.

Dedert has designed and built the world's largest partially-closed Ring Dryer operating at 179,000 ACFM and evaporating 34 tons of water per hour in a single system.

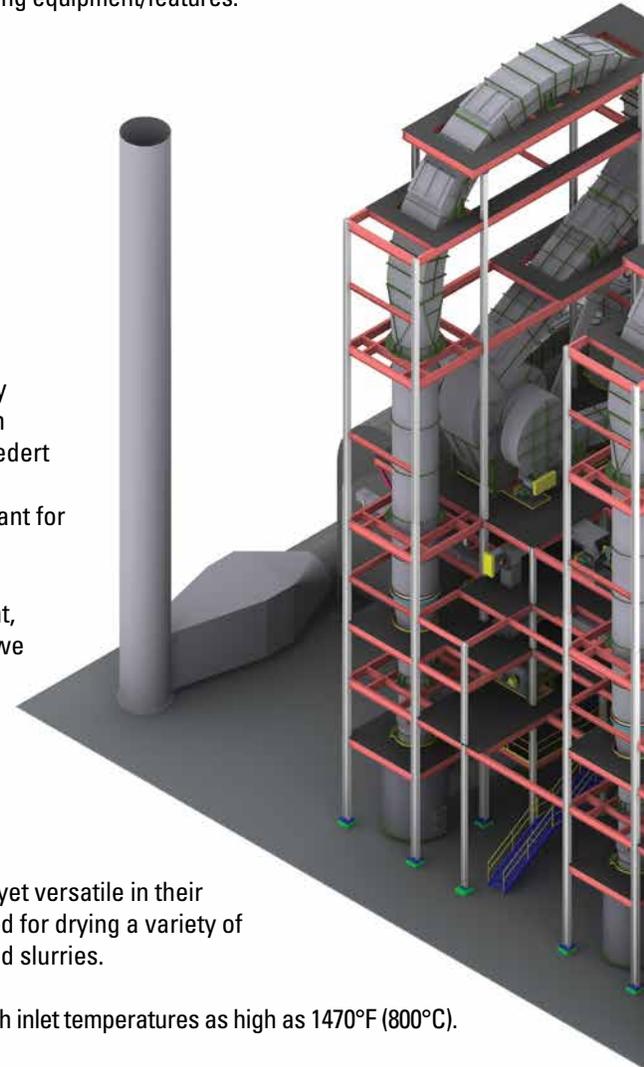
## PRODUCTS TYPICALLY DRIED

Agrochemicals  
Algae  
Botanicals  
Calcium Carbonate  
Calcium Hypochlorite  
Ceramics  
Citrus Fiber  
Corn Germ  
Corn Gluten  
Corn Fiber  
Corn Starch  
DDGS  
Detergents  
Dried Cellulose  
Dyestuff  
Emulsions  
Erythritol  
Fiber  
Flavors  
Gypsum  
Inorganic Chemicals  
Lignin  
Metal Oxide  
Minerals  
Nutraceuticals  
Orange Peel  
Pigments  
Polymers  
Proteins  
Specialty Chemicals  
Spices  
Starches  
Sugars  
Sweeteners  
Vitamins  
Wheat Gluten  
Wheat "A" Starch  
Wheat "B" Starch  
Wood Fiber  
Yeast

■ AFTER SALES

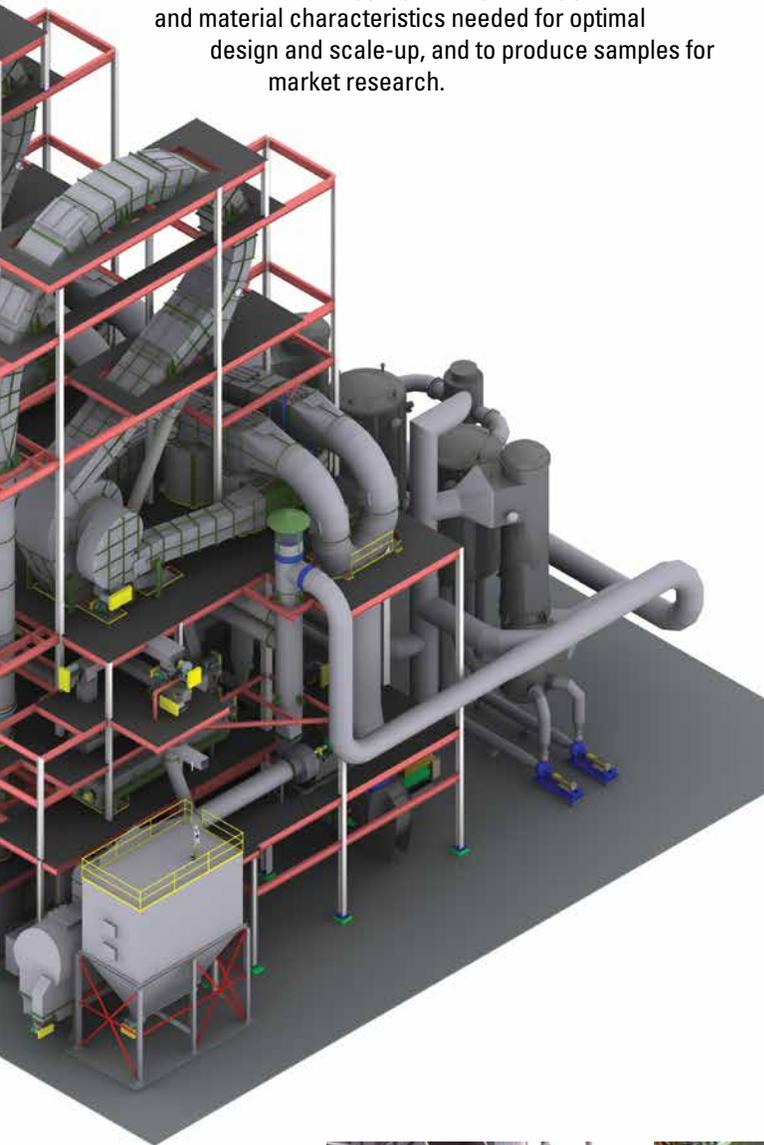
● EVAPORATORS

▼ DRYERS

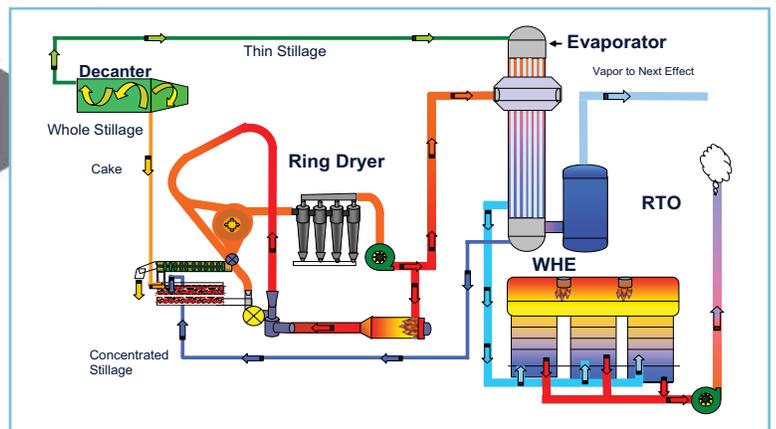


## TESTING

Dedert's experienced professional engineers assist Customers in developing viable dryer and evaporator processes, taking ideas from concept to pilot scale to production. Dedert has a fully equipped research facility located in Chicago in the heart of the Midwest. The test center allows Customer products to be tested on a pilot scale to establish the appropriate operating parameters and material characteristics needed for optimal design and scale-up, and to produce samples for market research.



*Twin Ring Dryers*



*Dryer and Evaporation Integration*



*Pre-Separator*



*Double Paddle Mixer*



*Infeed Screw*



*Disintegrator*

# ▼ DEDERT DRYERS

## P-RING DRYERS

P-Ring Dryers are recommended where once-through operation is warranted and recirculation of semi-dried product back to the hot zone for additional drying is undesirable.

The P-Ring Dryer has a classifier (simplified manifold) located in the top of the drying column where approximately 80% of the drying has already taken place and the drying temperature has dropped significantly.

Dedert P-Ring Dryers can be supplied to over 120,000 ACFM and achieve 12 tons of evaporation in a single system.

## FLUID BED DRYERS

Fluid Bed Dryers provide for gentle yet efficient drying action, which is ideal for friable or soft agglomerated particles with a fairly narrow particle size distribution, and for medium size particles (200 – 400 Microns).

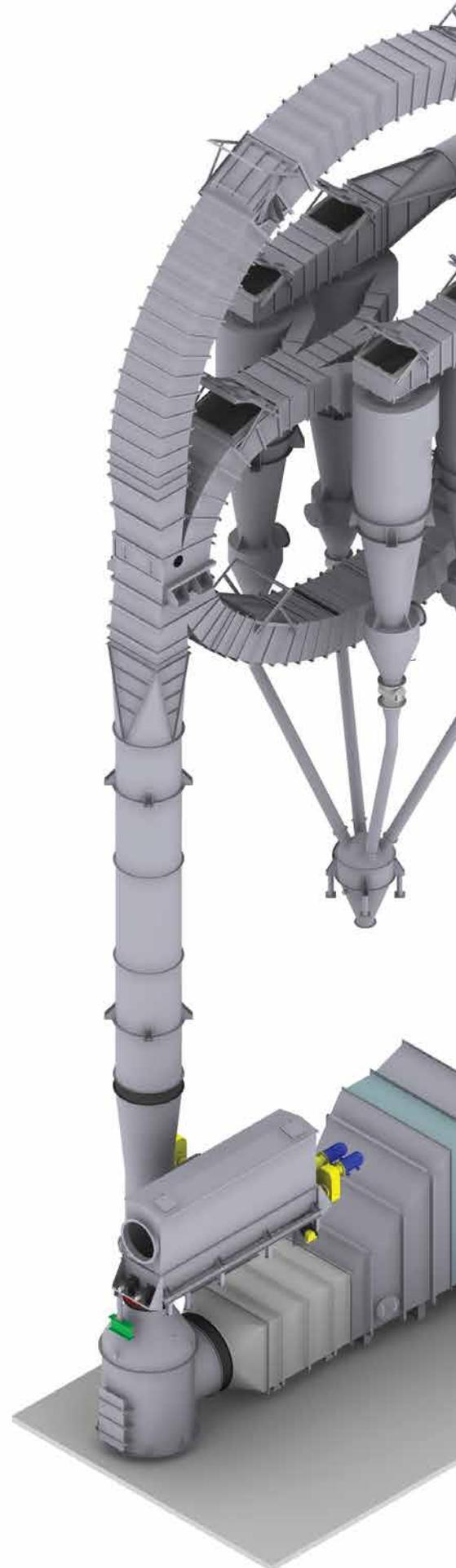
Product is fluidized by the process gas stream entering the dryer through the distributor plate. Dedert offers a variety of distributor plates, which are application dependent.

Process drying air can be designed as multi-zone to enhance drying characteristics in different parts of the bed. Exhaust air leaves the dryer through a hood and is further cleaned in cyclones or bag filters to maximize product recovery while meeting emission guarantees.

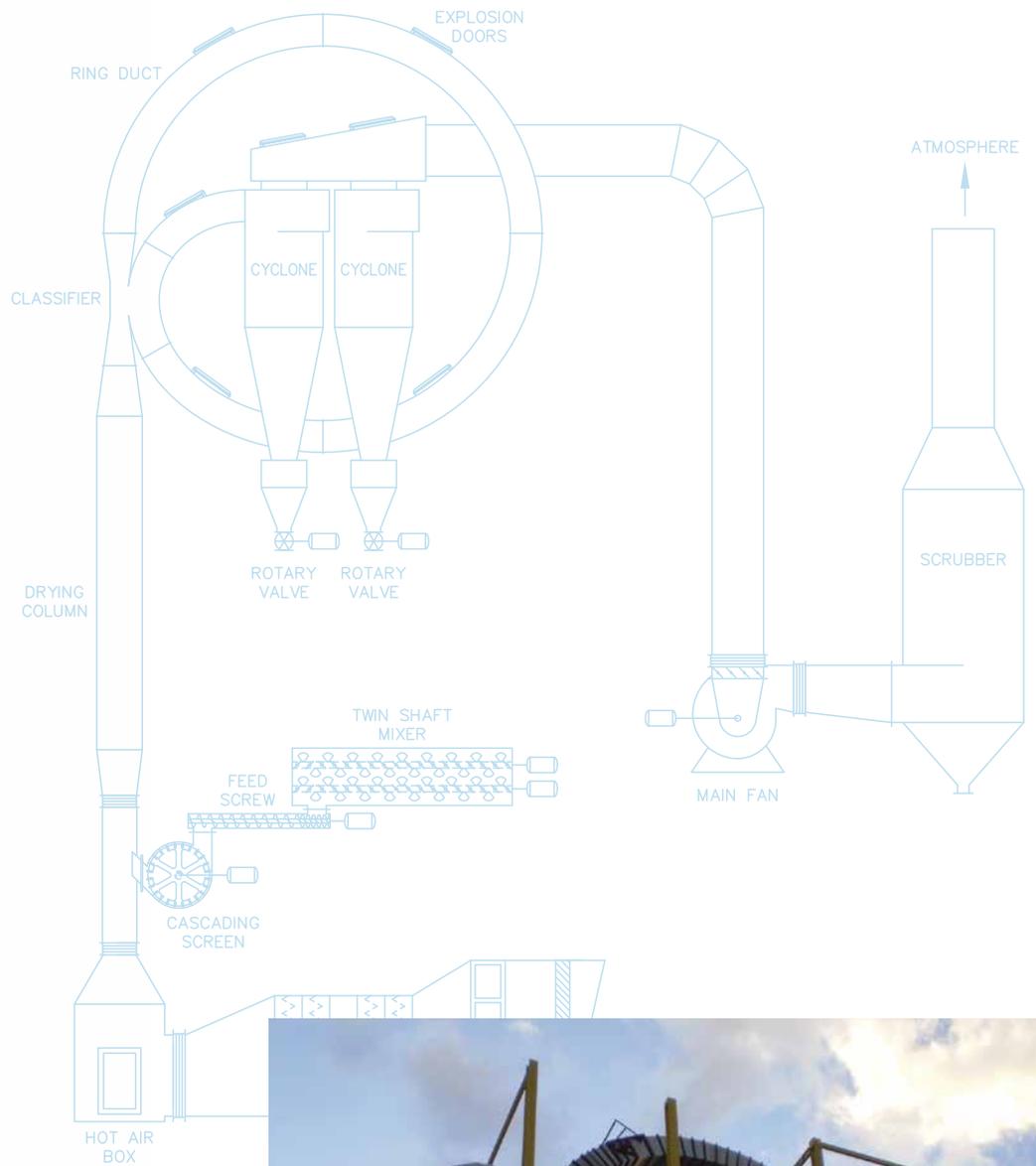
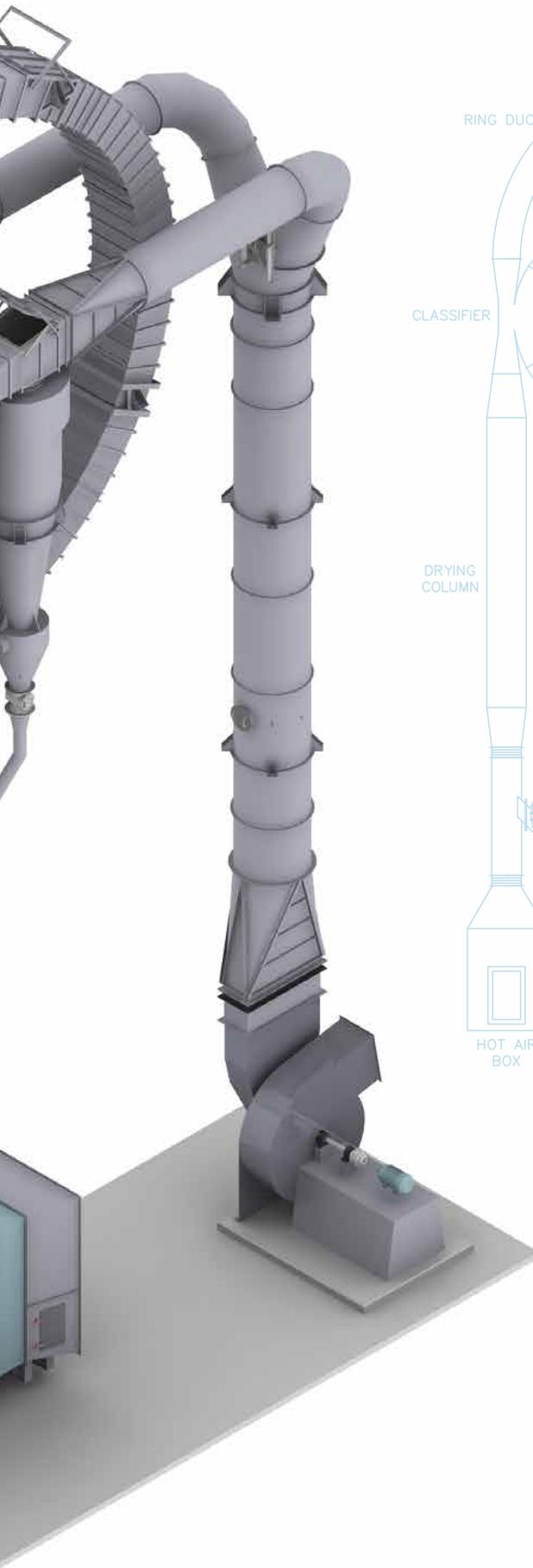
Fluidized heating and cooling zones can be integrated into a single Fluid Bed Dryer. Submerged extended surface heat exchangers can also be incorporated; this approach maximizes the heat transfer rate. Submerged heat transfer area can be retro-fitted to existing Fluid Bed Dryers to increase evaporative capacity.



*Fluid Bed Dryer*



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*P-Ring Dryer*

# ▼ DEDERT DRYERS

## SPRAY DRYERS

Dedert Corporation has pioneered the development of a new high speed rotary atomizer for the chemical and food industries. The new design, based on magnetic bearing technology, eliminates the need for high maintenance gear drives, traditional bearings, shafts, oil lubrication and cooling systems, providing unparalleled flexibility for the most demanding applications.

### GAS DISPERSER

Dedert's new Spray Dryer is also enhanced with an innovative gas disperser to ensure optimum contact between the heated drying gas and atomized spray cloud, thereby improving dryer performance and efficiency. Available features include remotely adjustable process gas velocity and swirl vane angle.

### EXPLOSION VENT DOORS

Dryer components are equipped with sanitary, flush-mounted, curved (as applicable) explosion vents. These NFPA-68 compliant hinged doors include spring-release latches and dual seals.

### LOW EMISSIONS

Dedert's spray drying systems are supplied with the most efficient product separation and gas cleaning technology available. High efficiency cyclones, bag filters or wet scrubbers are incorporated for pollution control to meet the most rigid plant emission requirements. Fully integrated thermal oxidation systems can also be included for removal of VOC's and other emission contaminants.



*Product Feeding System*



*Atomizer Stand*



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## ATOMIZERS

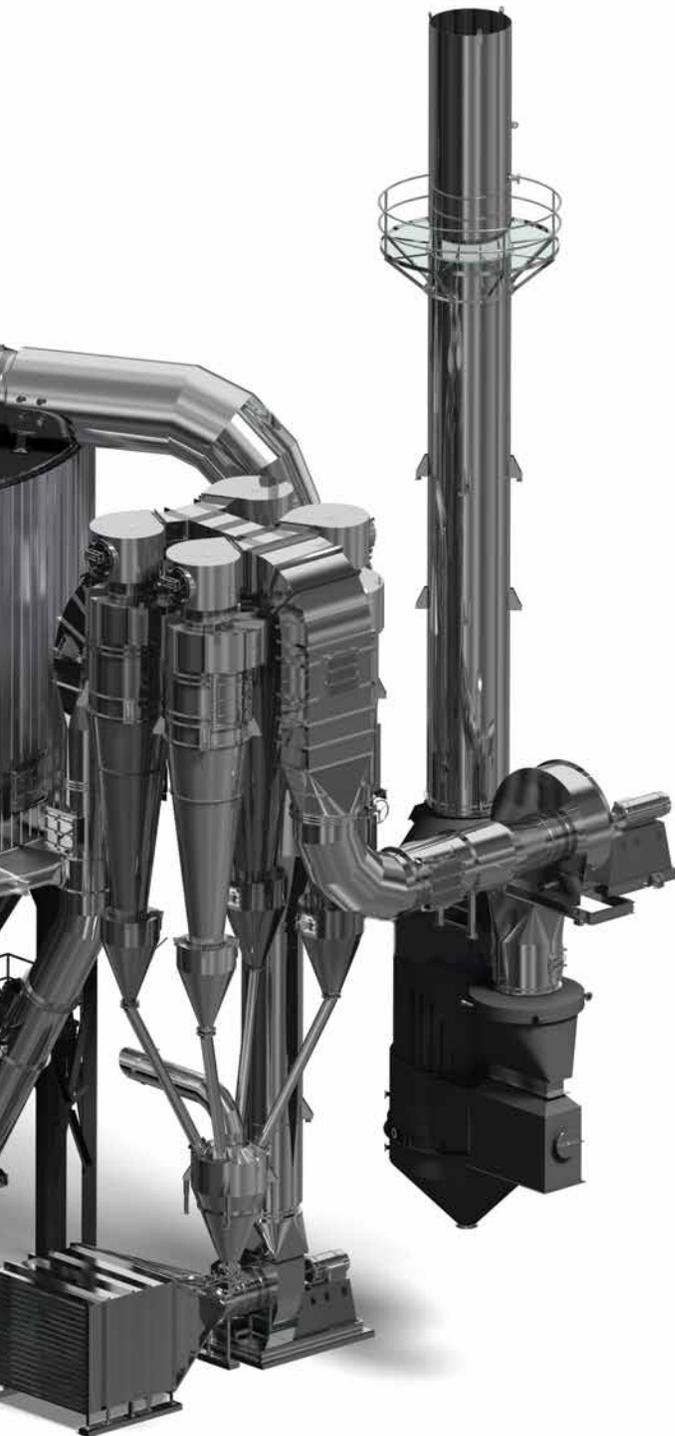
Dedert's new patented Atomizer incorporates permanent magnet rotor or motor and magnetic bearing technologies. This innovative design eliminates the need for high maintenance gear drives, belts, bearings and lubrication systems.

The magnetic rotary Atomizer is a compact and mechanically robust design, offering low maintenance and high reliability compared with conventional rotary technology, and can accommodate a broad range of liquid feeds, including abrasive products. Dedert Atomizers are provided complete with variable speed drive and a fully automated PLC-based utility control and monitoring system.

### **Advantages of Dedert's Magnetic Rotary Atomizer:**

- Direct-drive robust design with only one moving part
- Compact high-efficiency permanent magnetic motor up to 350hp
- Non-contact active magnetic bearings requiring no lubrication
- Extremely high disc peripheral speed of 900fps
- PLC-based control and monitoring systems

Dedert Atomizers can also be readily adapted to existing installations to increase spray dryer capacity or greatly reduce maintenance costs.



*Magnetic Rotary Atomizer*

# ▼ DEDERT DRYERS

## STEAM DRYERS

Dedert offers two types of Steam Dryers: Ring and Flash Dryers. A Steam Dryer is a closed circuit Air Dispersion Dryer which creates steam from evaporated water. Steam is discharged from the system at pressures as high as 4 barg and can be used for various heat recovery purposes.

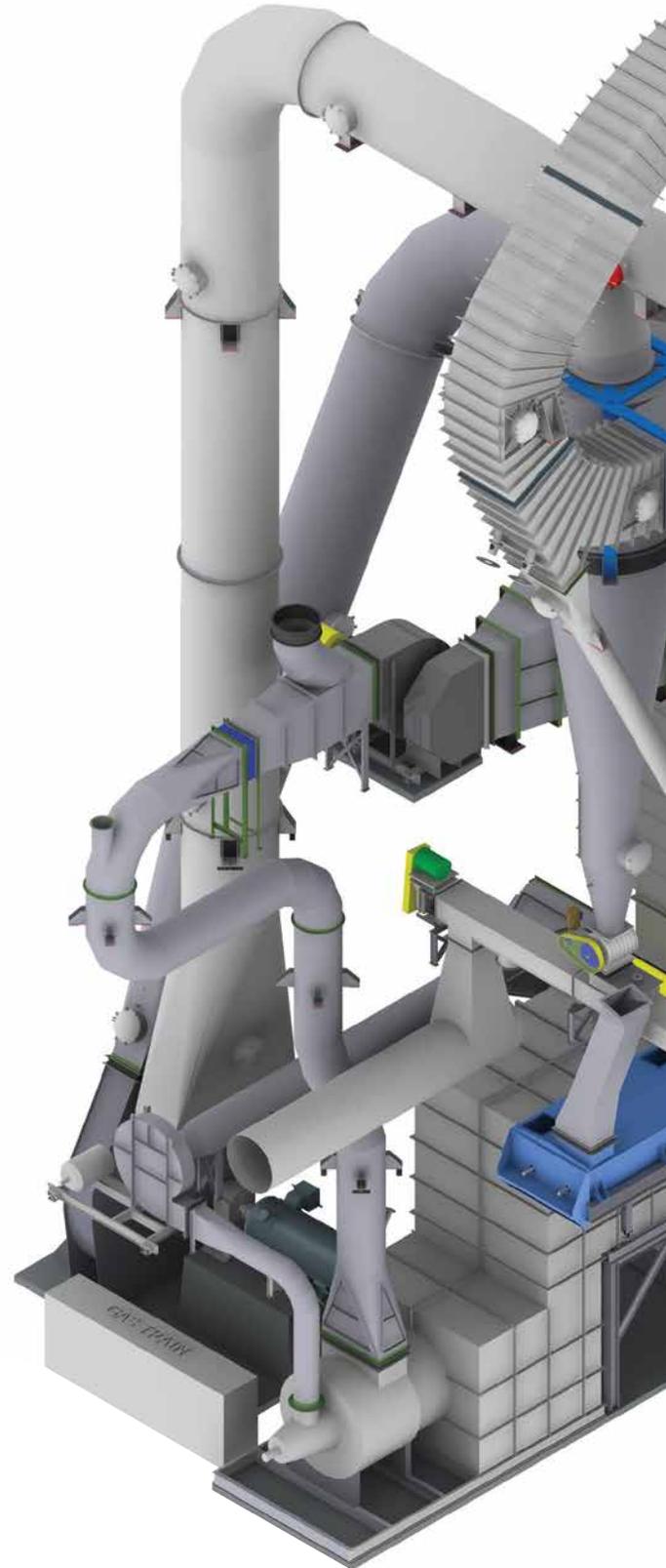
These technologies are used in applications where equipment and energy economics make heat recovery from a standard Ring or Flash Dryer the technology of choice.

Both of these technologies include the following advantages:

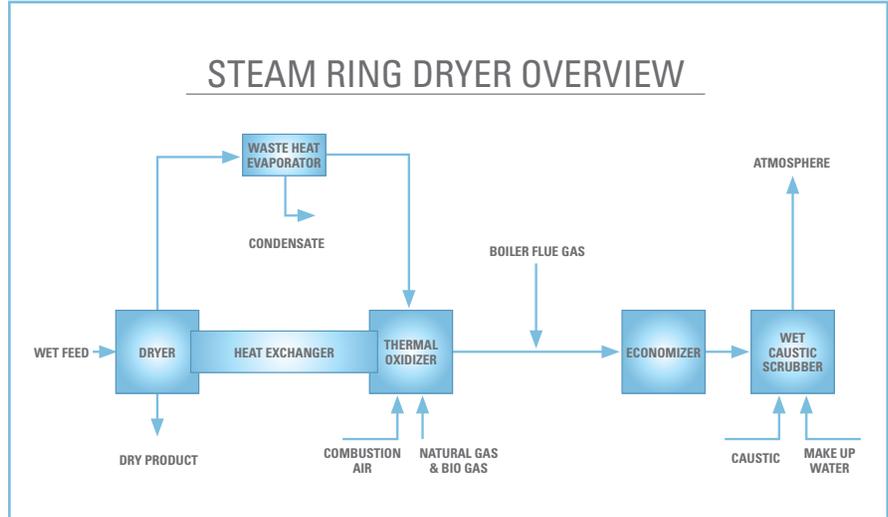
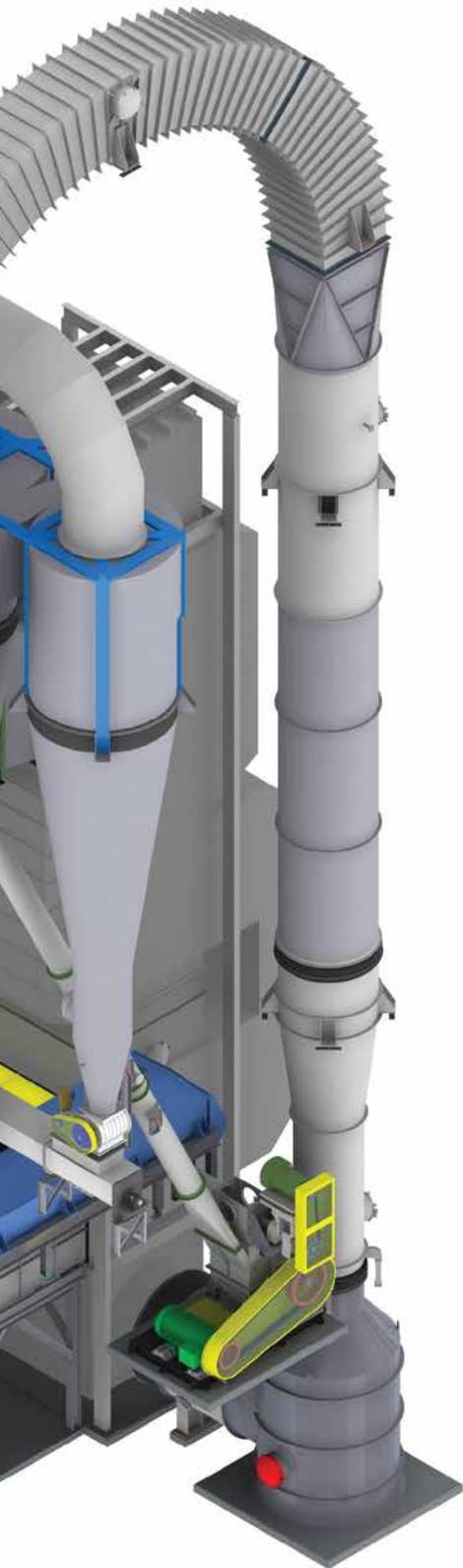
- High operating wet bulbs for heat recovery
- Integrated thermal oxidizers
- Safe steam drying environment
- Single burner, gas train and combustion air system



*Discharge Stack*



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## STEAM RING DRYERS

Dedert can provide Flash or Ring Dryers designed to run in a steam atmosphere. The Steam Dryer is indirectly fired, operating in closed circuit and capable of reaching 4 barg pressure.

Steam is sent to a heat exchanger to be raised to the required inlet temperature, is continuously discharged and can be utilized as recoverable energy in other process operations.



*Classifier Duct*



*Steam Inlet to Hot Box*

# ▼ DEDERT DRYERS

## ecoDry™

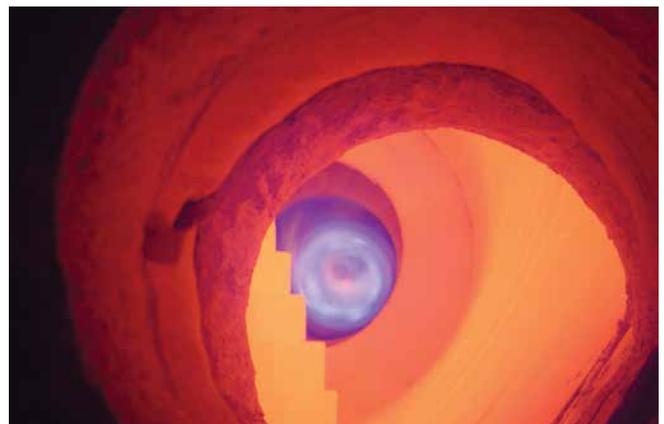
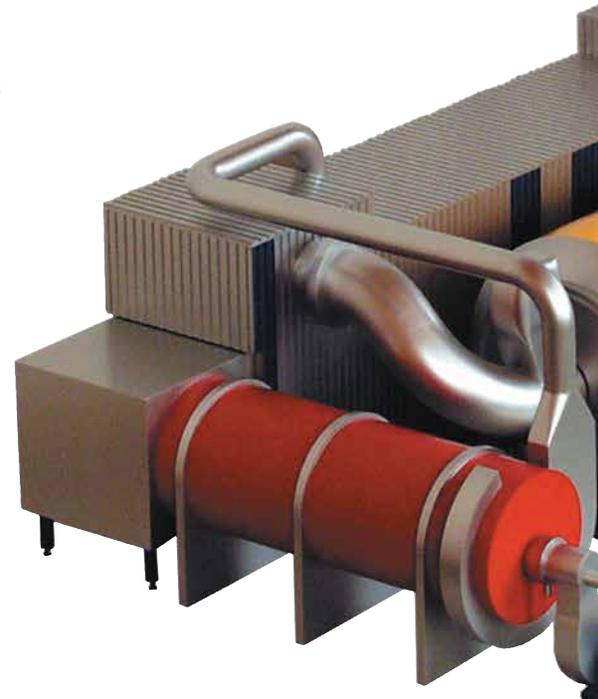
Dedert is the exclusive licensee for Swiss Combi's ecoDry™ drying system in the USA and Canada for the starch and ethanol industries. The ecoDry™ destroys odors and meets emission guarantees by using a partially-closed circuit rotary dryer with integrated thermal oxidizer operating at over 1600°F (870°C).

The basis of the ecoDry™ system is an indirect heated drying process using a partially-closed steam drying loop with process-integrated thermal oxidation. High moisture gases in the partially-closed loop are heated in a specially designed gas-gas heat exchanger by furnace exhaust gas, before entering the drying drum at a temperature in excess of 800°F.

Apart from its environmental advantages, the ecoDry™ process also consumes less energy and can be integrated with a wide variety of existing installations. The superheated steam drying atmosphere leads to high dry product quality and low fire and explosion risk. These benefits make this process ideal for all drying applications with problematic emissions and/or odors, and where minimal energy consumption is a decisive cost factor.

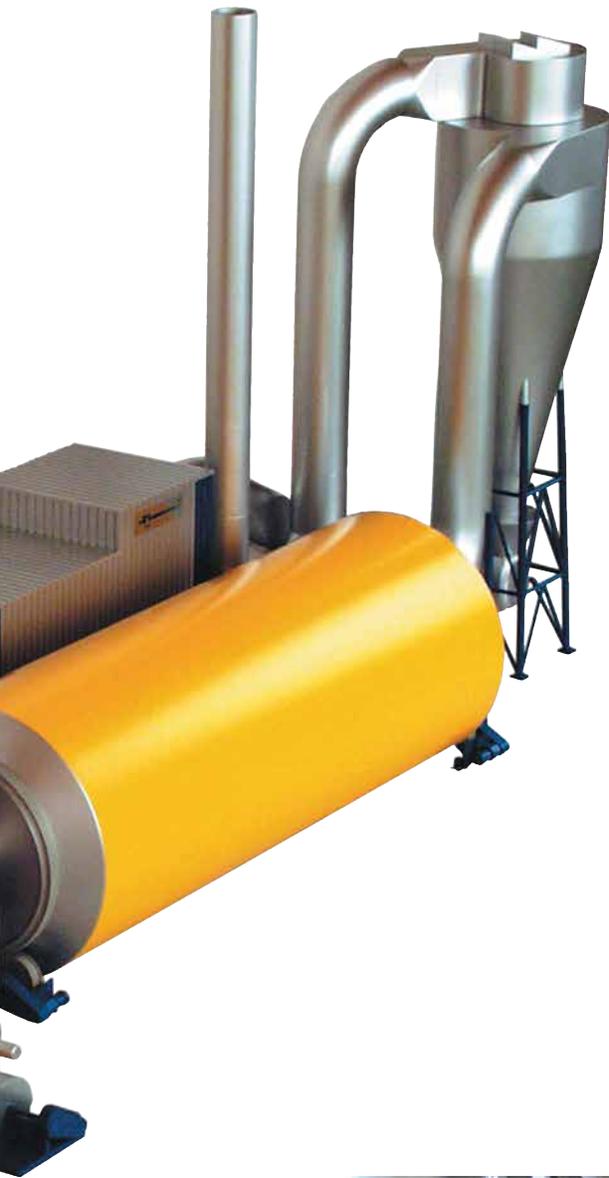


*ecoDry System*



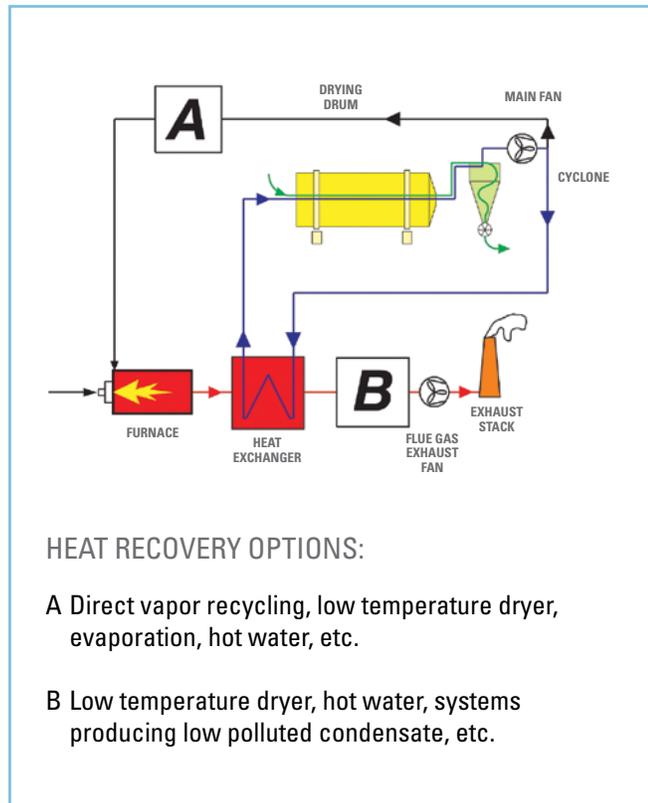
*View into Furnace*

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**Advantages of the ecoDry process:**

- High destruction efficiency of emissions
- Significant odor reduction
- Gentle drying for optimal product quality
- High efficiency energy use
- High energy recovery potential  
(dew point temperature above 200°F)
- High capacities (up to 70,000 lb/hr water evaporation per system)



*Drum Discharge*



*Product Cooler Mezzanine*



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