

SUPPLIERS' TIPS

What major factors should buyers consider when selecting a drying method?

The major factors to consider are:

- **Drying:** Is the dryer designed for maximum heat transfer?
- **Efficiency:** Can heat energy be recovered and recycled?
- **Cost:** How will the dryer's design affect the operating cost?
- **Energy source:** What energy types (gas, propane, steam, electric, turbine) are the most effective?

*Tom Schroeder,
president,
Ventilex USA,
513-398-8778*

The most important factors in selecting a drying method are the type of product you're going to sell and how you're going to compete.

For example, suppose you plan to produce a commodity product such as powdered eggs, and you're going to compete on price rather than product differentiation. You want to copy your competitor's drying method, but you want to do it cheaper. You can reduce cost by using big equipment to produce big quantities (economy of scale), by buying used equipment, or by selecting a plant location that yields inexpensive labor, fuel, and transportation.

Each month, we ask suppliers a question of concern to our readers. Answers reflect the suppliers' general expertise and don't promote the suppliers' equipment. If you have a question you'd like to have suppliers answer, send it to Jamie Nashban, associate editor, Powder and Bulk Engineering, 1155 Northland Drive, St. Paul, MN 55120; fax 651-287-5650 (jnashban@cscpub.com).

On the other hand, if you're planning to produce a specialty product and want to compete on quality, you'll need to test your product with at least two high-quality technologies — freeze drying and spray drying. Then pick the system that gives the best results within the cost range you expect from your product. In a perfect world, the dryer that produces the best powder would also yield the most differentiation from competing products. Costs, as long as they're within reason, should be a secondary factor.

*James A. Rehkopf,
president,
Pulse Combustion Systems,
415-457-6500*

The first things to consider are what form the feed will take and the dry material's desired characteristics. The feed can be a solution, slurry, paste, wet cake, or relatively dry powder that needs further drying. The feed particles can be very fine or lumpy or a material formed from an extruder or pelletizer. Keep in mind that some dryers are suitable for certain feeds but not for others. You also need to consider the final particle size, density, and flowability. All of these factors affect the dryer type you'll choose.

Be sure to ask these questions when selecting a drying method:

- Would a batch or continuous process be best?
- What is being evaporated, water or solvents?
- Is the material temperature-sensitive?
- Is the material flammable?

Answering these questions will narrow the choices to one or two dryer types. After that, compare energy efficiency, operating costs,

and capital cost to make the best choice.

*Fred V. Shaw,
vice president, chemical division,
Niro,
410-997-8700*

Here are important questions to ask when selecting a drying method:

- Does the vendor have experience manufacturing similar-sized systems?
- Can the vendor supply references from previous customers?
- Will the dryer fit in the space you have available?
- Will the dryer remove the required moisture from your material?
- Will the dryer process your material with the required quality?
- Will the dryer process your required volume of material per hour per day?
- If necessary, will the dryer operate 24 hours a day, 7 days a week, with minimal downtime for maintenance?
- What's the dryer's total electricity and gas energy use?
- What's the normal delivery time after a customer places an order?
- If you need factory service, how much will it cost?

*Virgil Macaluso, president,
Catalytic Drying Technologies,
800-835-0557*

Factors to consider include the issues of dryer quality and reliability, manpower requirements, and operating costs. Proper dryer selection will affect a company's operation

for many years after the initial capital cost has been absorbed.

*Joseph Henderson,
project sales engineer,
Wyssmont Co.,
201-947-4600*

There are several factors to keep in mind when selecting a drying method:

1. What's your feed material's particle size and what's the desired final particle size? A friable flake will require a much different drying process than a fine powder. Fluid-bed dryers work very well when the desired product is a friable flake. Flash dryers work well on fine materials.

2. What's the material's viscosity? Is it a slurry, filter cake, or damp powder? Spray dryers work well on thin slurries, but won't work on a filter cake because of the material's viscosity. Some flash dryers won't dry damp powders, but will be able to dry heavy filter cake. If the material is a slurry, consider mechanical dewatering prior to drying.

Depending on the production rate, moisture content, and the material's nature, mechanical dewatering prior to drying may be able to substantially lower your operating costs.

3. What's the maximum amount of heat your material will stand? Organic materials degrade at a much lower heat threshold than inorganic materials do. If your material is heat-sensitive you may need to consider indirect vacuum drying versus direct-fired drying.

4. What's your material's moisture content? If your material contains volatiles, you'll need to take different steps than if you're simply drying off water.

5. How much plant space is available? Is there a drying method that will meet all your criteria and still fit in your available space?

6. What will it cost per hour to dry your material? How efficient in terms of thermal dynamics is the drying system you're considering? How much horsepower will the system require?

7. How much does the system you're considering cost? Certain drying methods are more expensive than others because of the process's technical difficulty.

*Rich Lucas,
vice president of engineering,
Scott Equipment,
952-758-2591*

Generally, any of several dryers can satisfy your application's thermal requirements. However, one of the most important and often-overlooked factors in drying equipment selection is the material handling characteristics of the wet material and the dried product. You must take these into account so the material will safely and efficiently transfer from the upstream process, through the drying equipment, to the downstream equipment.

*Gregg Muench,
sales manager,
GEMCO,
732-752-7900*