

# Advanced Powder Feed System

## Commercial Application

The Advanced Powder Feed System provides accurate and precise delivery of finely powdered material at low flow rates. The Energy & Environmental Research Center (EERC) developed this system as an attachment for conventional, commercially available screw feeders.

## Technological Challenge to Commercial Utilization

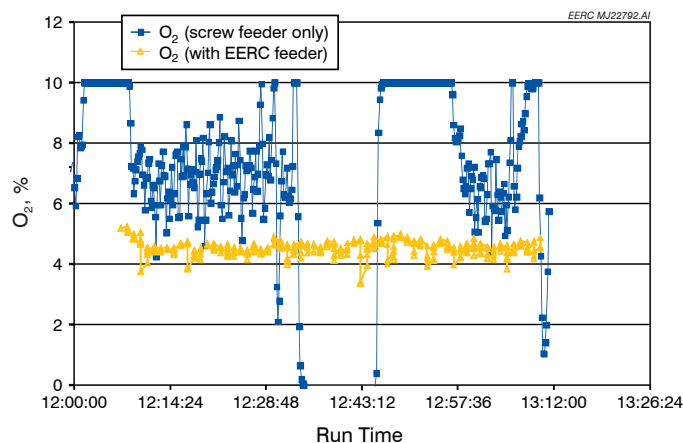
Feeding finely powdered materials at a controlled rate is difficult. Finely powdered material has a tendency to agglomerate from humidity and static electricity. Clumping/bridging of the material makes consistent feeding at low rates a challenge.

## Current Approaches

State-of-the-art feeding technology uses computer-controlled twin screws that provide for an accurate rate over long time periods. However, when a short time interval is involved, clumping of the feedstock causes “slugs” of material to be fed at inconsistent levels.

## Technological Advantage

The Advanced Powder Feed System combines fluidizing air with directional airflow to enhance particle entrainment and promote a free-flowing, nonclogging system. An additional brush improves further feed consistency.



Oxygen data from a bench-scale combustor confirm that the EERC's Advanced Powder Feed System provides a very steady feed of fine powdered material (coal).

## Benefits

- Ability to feed powdered material at a consistent rate over short time intervals.
- Ability to handle particles less than 200 mesh (74  $\mu\text{m}$ ).
- No clumping of material.
- Decrease in downtime needed to clean disrupted feeder system.
- Relatively inexpensive.
- Easy scale-up.
- Works for a wide variety of finely powdered materials in a variety of industries, such as pharmaceuticals, textiles, food, and plastics.

## Market Information

There is currently a desire to change pharmaceutical production processes from batch to continuous, requiring consistent feed at small scales. Additional applications for the Advanced Powder Feed System technology are in the food-processing and textile industries where the precise addition of nutrients and dyes, respectively, is crucial.

## Industry

Producers of automatic feed systems and more integrated processing machinery manufacturers would be ideal champions to move the technology into the market.

## Development Stage

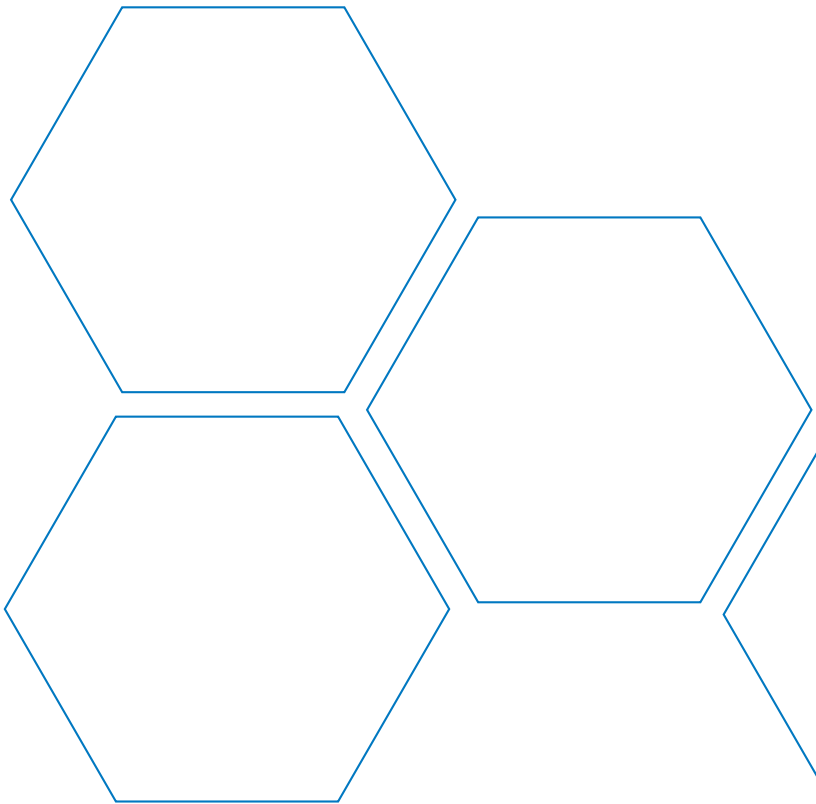
A prototype of the feed system is currently in use for coal combustion at the EERC. A similar system is being implemented for the U.S. Department of Energy at one of its test facilities. The technology is ready for optimization and commercialization.

## Type of Collaboration

The EERC is looking for demonstration and commercialization partners in a variety of processing industries.

## Intellectual Property (IP) Rights

Development of a comprehensive package of IP rights is currently under way.



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