

The storage, handling and transport of solid materials are common operations throughout the chemical process industries (CPI). In some industry sectors, the bulk of the raw materials and products may themselves be solids and in these industries, solids handling and processing play a predominant role in manufacturing. Examples are the pharmaceutical, food-and-beverage, polymer and mining industries.

In almost all of the CPI, however, some handling of solids is needed — whether it is the raw materials, byproducts or products — and knowledge of solids-handling principles and techniques is therefore required throughout the CPI. Typical subjects that *Chemical Engineering* features in this area include monitoring solids flow and level, blending and segregation, feeding and conveying, characterizing particle size and shape, and handling of fine powders including safety and environmental considerations.

**In June 2019, *Chemical Engineering* will publish the Solids Processing 2019 Special Ad Section. Advertisers running a display ad will receive a bonus advertorial write-up of the same size (up to 1/2 page). This is the most economical way to get your message into the hands of the CPIs critical decision-makers.**

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46% of respondents in a recent survey said that *Chemical Engineering* offers the Best Coverage of Solids Processing (among listed publications)

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### How to write your editorial for a *Chemical Engineering Magazine* Special Advertising Section

We are grateful for your advertising support and pleased to offer you the opportunity of free editorial space.

Within reason you are welcome to use your editorial space in any way you wish. However, we have a few “house rules” to provide a consistent look across the section and reinforce the impression that this is independent editorial written by a journalist, rather than advertising. So please:

- Send Sophie Chan-Wood <schanwood@accessintel.com> 350–400 words for a 1/2 page editorial, 250–300 words for 1/3 page, or 150–200 words for a 1/4 editorial.
- Be aware that we will edit your text to house style, and shorten it if this is needed to fit the space. We will always send you a proof to check before publication.
- Write in the third person (for instance “the company” or “YourCorp., Inc.” instead of “we”), and don’t address the reader directly.
- No ® or ™ symbols, please. They never appear in standard magazine editorial.
- If possible, include a headline that will comfortably fit the available space. For a standard half-page of editorial this is likely to require 35–48 characters, but check a sample copy. Smaller editorials and vertical layouts will need fewer characters. The head should not include your company or product name.
- Similarly, it helps to include a deck (subhead) of roughly the right length. For a standard half page this is generally 130–160 characters; again, check a sample copy. The deck should include your company name; product names are optional.
- One illustration is normally enough, though it’s sometimes possible to use two small ones. A single large illustration can look striking, but there is a trade-off with the length of the text (which is one reason why it’s hard to be precise about word counts).
- Please try to include a caption for your illustration, especially if it shows a particular product or plant. Make sure you have copyright clearance for your illustration.
- Illustrations can work well in either landscape or portrait orientation; landscape gives more flexibility with layout. Cutouts (vignettes) against a plain background or with clipping paths are welcome.
- We can handle most graphics file formats, but for photographs a good-quality hi-res CMYK JPG suitable for printing at 300 dpi is fine. Please send illustrations as separate files, not embedded in Word documents.
- For diagrams and charts, vector artwork (Adobe Illustrator or vector PDF) is much preferred. Remember that graphics with narrow lines and small text do not work well at small column widths.

### Solids Processing

#### Solids Discharge: Characterizing Powder and Bulk Solids Behavior

How shear-cell testing provides a basis for predicting flow behavior

**Robert McGeer**  
Bristol Engineering Laboratories

Power plants are the primary source of electricity. The process of generating electricity involves the conversion of mechanical energy into electrical energy. In this process, the mechanical energy is generated by a turbine, which is driven by a fluid (water or steam). The turbine is connected to a generator, which produces electricity. The generator consists of a rotor and a stator. The rotor is a coil of wire that rotates within the stator. The stator is a series of magnets that create a magnetic field. As the rotor rotates, the magnetic field induces an electric current in the stator, which is then used to generate electricity.

In a container, Figure 1 shows how particles move uniformly downward. The particles are shown as small circles. The container is a vertical cylinder. The particles are moving from the top to the bottom of the cylinder. The flow is uniform, meaning that all particles are moving at the same rate.

From a container, Figure 2 shows how particles move uniformly downward. The particles are shown as small circles. The container is a vertical cylinder. The particles are moving from the top to the bottom of the cylinder. The flow is uniform, meaning that all particles are moving at the same rate.

Types of powder flow: The particles in a powder can be classified into three types: free-flowing, cohesive, and cohesive. Free-flowing powders flow easily and do not clump. Cohesive powders tend to clump together and do not flow easily. Cohesive powders are often used in applications where a stable structure is required, such as in the construction of concrete or in the production of pharmaceuticals.

The change in the volume of the powder bed is measured by a displacement sensor. The sensor is a vertical rod that passes through the center of the hopper. The sensor is connected to a displacement transducer, which measures the change in the volume of the powder bed. The displacement transducer is a device that converts a change in displacement into an electrical signal. The electrical signal is then processed by a computer, which calculates the change in the volume of the powder bed.

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