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What should I consider when selecting a feeder for an application with frequent material changeovers?

When your application requires frequent material changeovers, the time it takes to make the material change should be your main consideration. Every time you change a material, you experience production downtime and that leads to lost revenue.

When selecting a feeder for handling multiple materials, consider the following:

- Local feeder control: Does the operator need to communicate with another operator in the control room to manually operate the feeder, or can a local control station be installed on or near the feeder?
- Tool-free disassembly: Are tools required to disassemble the feeder for cleaning? Does the feeder have quick-disconnect features to speed disassembly? Make sure you ask the supplier how long feeder disassembly will take.
- Access from the nonprocess side: Does the feeder need to be disconnected from both the upstream and downstream devices to be cleaned? Can components such as feed screws or flexible internal hoppers be removed for cleaning without disconnecting the feeder from its infeed and discharge?
- Cleaning provisions: Is the feeder clean-in-place or clean-out-of-place? Does the supplier offer mobile feeder frames with casters so the feeder can be taken offline and cleaned at a cleaning station? If the cleaning process is wet instead of dry, make sure that a washdown motor is available. If the cleaning process is done with caustics, make sure chemical-duty or stainless steel motors are available.
- Recalibration: Does the feeder need to be recalibrated after material changeovers? Some control systems have features that store specific calibration data that can be recalled and loaded back into the controller, making recalibration unnecessary.
- Replaceable components: Does the feeder have replaceable components, such as internal flexible hoppers, that can be dedicated to a material or quickly replaced with a clean one while the other one is being cleaned?
- Complete material discharge: If your process doesn't allow remaining material to be run through to downstream equipment, how will you get the material out of the feeder before changing to a new material? Some feeders offer sample ports between the discharge and the feeder. These can be used both to perform catch samples to verify calibrations and to empty out the feeder for complete material discharge.

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One of the most important things to consider when selecting any piece of equipment that must handle frequent material changeover is how quickly and easily the unit can be cleaned between runs. Make sure the feeder is designed for quick access to all material contact surfaces and that all surfaces can be easily inspected to ensure cleanliness before the next run. Check that the interior is free of crevices that will trap material. If the feeder will be wet-washed or cleaned in place, all surfaces should drain properly. If any part of the feeder needs to be dismantled for cleaning, the disassembly should be able to be accomplished using basic operator hand tools.

One of the best ways to find equipment that's designed to be cleanable is looking for the 3-A logo. If the feeder you're considering has an applicable 3-A SSI standard, finding feeders that meet that standard is a great first step in narrowing down your selection.

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o select a feeder for an application that's handling multiple dry materials, start by calculating the range you'll need to cover all the material variables. Also pay close attention to each material's physical properties, such as density, percent water content, and temperature. A feeder that covers the largest range and can handle the different characteristics will be your best choice. Avoid specialized feeders for this type of application. Also, since you'll be working with multiple materials, consider cleaning and ease of part changeouts when making your final feeder selection. Choose the feeder type based on the accuracy you need for the various materials in your process.

Several feeders are available for applications requiring frequent material changeovers. Screw feeders are the most versatile, can handle a wide variety of materials, and have good turndown because they can be equipped with multiple screws. Vibratory feeders also have a good turndown, but don't work on all materials. Belt feeders have a fair turndown and work on most materials except those that are sticky. Other miscellaneous feeders just aren't good for handling multiple materials.

Make sure you select a feeder that will cover all the types of material and ranges you can anticipate. Rely on suppliers to guide you on the particular use of their equipment.

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Equipment suppliers are a valuable source of information about equipment and processes. In light of this, 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 suppliers to answer, send it to Alicia Tyznik, Associate Editor, Powder and Bulk Engineering, 1155 Northland Drive, St. Paul, MN 55120; fax 651-287-5650 (atyznik@cscpub.com).