SUPPLIERS’ TIPS

What are some important features to look for in a gravimetric feeder?

When evaluating and selecting a gravimetric feeder, there are a number of factors to consider. Although the operating principles employed by the various gravimetric feeder manufacturers are similar, distinct equipment design and functional differences do exist. Of primary importance is the design of the feeder’s scale and controller.

Various scale types are used in gravimetric feeders. Certain suppliers offer similar designs while others incorporate proprietary features. It’s important to understand the differences between feeders to determine which design and what features will best meet your application requirements.

Two key parameters in scale design that can affect a gravimetric feeder’s performance are resolution (the smallest increment in applied weight that can be detected) and calibration (testing the scale to ensure weighing accuracy). The amount of resolution and the ability to calibrate the scale, if necessary, are determined by the type of weight sensor used. Sufficient resolution is essential to controlling the “weight-loss” of the feeder in order to achieve the desired accuracy. The scale resolution available from the different manufacturers is in a range of 1:30,000 up to and in excess of 1:1,000,000. It’s important to distinguish between usable and actual resolution. A considerable amount of resolution, in many weighing systems, is taken up by the metering mechanism that’s being used to feed the material, while other weighing systems counterbalance that weight, allowing all of the usable resolution to be applied to weighing the product being fed.

Additionally, some scale configurations are affected by heat more than others. For these heat-sensitive configurations, it’s important that their weight sensors are temperature-compensated to avoid errors. Depending on the manufacturer, periodic scale calibration may be required, which can result in costly downtime. It’s important to determine what design features are available to facilitate this process. Ideally, a scale that doesn’t require periodic calibration is preferable.

There are also scale designs which incorporate a mechanical or electrical means to offset the effects of pressure variation when required.

A majority of the key operational features of a gravimetric feeder are contained within the feeder’s controller. It’s important that the controller is user-friendly and offers an ease-of-navigation. Other considerations concern the software contained within the controller. A gravimetric feeder must have a scale disturbance feature that prevents the feeder from negatively reacting to an outside disturbance. The ability to filter out vibrations that the scale design, weight sensor, or both cannot handle may also be required.

Additionally, controllers that offer such features as autotuning, user-programmable alarms, and recipe storage and retrieval can greatly increase functionality. Finally, the capability to interface and communicate with a wide range of host devices for control or data collection purposes is an essential feature of a gravimetric feeder controller.

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When looking for a gravimetric feeder, one of the often overlooked aspects of the solution is how the feeder’s design features translate to benefits for the operator and maintenance team. Key design features include mechanical robustness, scale design, and calibration simplicity. The overall structure of the feeder should be rugged enough to provide extended use of life even in a typical operating environment with unexpected disturbances and shock loads. The key serviceable components like the load cell should be easily accessible. The scale, whether a platform scale, load cells, or a lever arrangement, should be mechanically robust and include multiple adjustment methods for fine-tuning. Finally, the calibration sequence should be simple and manageable by a single operator. When purchasing a gravimetric feeder, the goal is to invest in a piece of equipment that will improve the process and simplify the operator’s experience.

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