

TALKING SHOP –
FEEDING YOUR PLANT
by Paul Smith



Producers have a range of equipment to consider when it comes to feeders.

Have you ever noticed how each type of beverage has its own unique glass?

There are beer mugs, wine glasses, brandy snifters, water glasses and so forth.

Red wine is generally served in a different glass from white wine or champagne, and there are a number of beer glasses used to enhance the experience of drinking Pilsners, ales and other beers.

What do they all have in common? They are delivery devices, each designed to feed different types of beverages in the best way possible for that particular beverage.

The same holds true in our businesses as it relates to feeders.

Look through a few machinery websites and you will see the diverse types of feeders available. These are paired with various forms of crushers, screens, wash plants and material handling devices. The benefits of each style of feeder are often overlooked, yet each can be a big contributor in the overall success of the plant.

If you think about it, the feeder is the mouth of the plant. It needs to be capable of “eating” whatever diet the plant is on.

Obviously, each feeder type is designed to meet the unique characteristics of a particular application. While many are routinely used in an array of applications – especially portable configurations – understanding the operating principles, variables and limitations of each can potentially boost efficiency, as well as maintain uptime.

Vibrating Grizzly Feeders

Most commonly used ahead of a primary crusher, vibrating grizzly feeders (VGFs) are perhaps the most popular design used today. This is primarily due to their dual role as both a feeder and a scalper to bypass or reject dirt and fines.

VGFs are also popular due to a long, or wide, feed opening that is favorable to being fed by a wheel loader. They are robust enough to accept large surges of material, as well as large boulders.



Adjustable grizzly openings provide some control over the size of material being fed into the crusher, as well as what is rejected ahead of the crusher. This saves crusher wear cost while boosting plant capacity.

It should be understood, too, that VGFs rely on a vibrating mechanism to lift and throw the material down the length of the feeder pan. Accordingly, if too few G-forces are generated then the result can be an ineffective device that does not efficiently transfer the material or clear grizzly openings. This can be an issue in sticky material.

Ideal applications for a VGF include primary crushing plants used in shot quarry and sand and gravel operations. They are popular in wheel, track and stationary plant configurations.

Roller Belt Feeders



The biggest advantages of the roller belt feeder are their relatively low cost and that it is a “positive feed” device that does not rely on vibration to move material.

Belt speeds can easily be adjusted or automated for precise volumetric metering. The loading

hoppers and feeder lengths can be designed to accommodate just about any type or size of loader or excavator. Often, these machines are equipped with hydraulically tipping grids to prevent excessive feed material from entering the system. This is especially beneficial when feeding a machine with a limited feed size.

You can expect a belt feeder to require similar maintenance to that of a conveyor. The rollers used are generally limited in terms of the feed size and impact that can be introduced to a belt feeder. Obviously, unlike a VGF, a belt feeder does not have the advantage of an integral scalping device.

Ideal applications for a belt feeder include sand and gravel operations, truck and railcar loaders and unloaders, and mobile wheel and track screen plants.

Apron Pan Feeders



Similar to belt feeders, apron feeders are “positive feed” devices that are well suited to applications where sticky materials may be prevalent.

Pan speeds can be adjusted to enable precision metering of feed. Like a belt feeder, apron feeders can also be designed to any length to accommodate the desired loading device.

However, an apron feeder provides the additional advantages of being capable of feeding material at an incline, as well as being very robust and capable of accepting large feed sizes and heavy impact. If properly maintained, unscheduled downtime of apron feeders is rarely an issue. As such, these devices are very popular on primary crushing plants paired with a scalping pre-screen, in mines and on mobile track scalping screen plants.

There are several other devices that are intended to carry material from point A to point B, including reciprocating plate feeders and vibrating pan feeders.

Selection Criteria

It is always important to first understand the fundamental application criteria: top size, capacity and material characteristics. These three criteria will help define the type and size of the feeder that can best meet your needs in the most economical method possible.

At that point, additional variables can be weighed, including any mobility or relocation requirements, varying feed materials and so forth.

If you’re still in doubt, write down the diet of your operation and then consult with both your internal and external industry peers for feeder selection advice. They will be happy to help you decide the best way to feed your plant.