Fast and efficient discharge of viscous, sticky mixtures

Avoid post-mixing bottlenecks

Any process is only as fast as its slowest operation. If a mixer can complete a high-viscosity formulation in a reasonable amount of time only to get held up during discharge and clean-up, throughput can suffer. It’s not uncommon for processes to experience bottlenecks specifically due to discharge and product changeover.

Especially with viscous and sticky products that have a tendency to solidify or are difficult to clean, operators are often left to contend with manually scraping or chipping product off vessel surfaces and/or using up a fair amount of harsh solvents. In these cases, automating the discharge process can significantly increase production rate and improve operator safety.

Discharge systems: theory of operation

A discharge system consists of a platen that is lowered hydraulically into a mix vessel. The platen is fitted with an O-ring which forms a very tight clearance with the vessel wall. As the platen pushes down on the batch, sidewall surfaces are virtually wiped clean. Product is forced out through a valve on the side or bottom of the vessel, or through the top of the platen. The platen may be jacketed to maintain batch temperature during discharge.
A discharge system eliminates wasted hours of scraping heavy or sticky materials from a mix vessel. With push-button simplicity, the system can automatically discharge several hundred gallon batches in minutes — into bulk containers, filling or packaging equipment, an extruder, or downstream milling equipment. Yield from every batch is maximized because typically, only a thin layer of undischarged product remains on the vessel bottom.

**Semi-continuous processing**

Same-size vessels from multiple mixers can be rolled to the discharge system for fast discharge, and then rolled away for cleaning as the next vessel is positioned underneath the platen. This flexibility can boost production on several process lines, all working with a single discharge system. The discharge platen may be wrapped with a disposable plastic liner to keep it clean and always ready for the next vessel.

**Improve plant safety**

A discharge system improves plant safety because it lowers the risk of injury while scraping heavy materials from the mix vessel. It also reduces the operators’ exposure to a hazardous batch, minimizes the release of harmful vapors into the plant atmosphere and decreases the amount of cleaning solvents required after every mixing cycle.

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**Sample Installation:**

**Discharge System at a Pharmaceutical Plant**

- Clear polycarbonate and stainless steel safety guard doors.
- Sanitary full port ball valves with washdown duty electric motor actuators, interfaced into PLC control system.
- Connections to tube-filling line.
- Cylinder-mounted linear transmitter for precise indication of platen position.
- Electronic Pressure Control System to maintain constant product flow at 15-psi platen pressure.

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For more information on Ross Discharge Systems

Visit [www.mixers.com](http://www.mixers.com) or click [here](http://www.mixers.com) to download a brochure.