

Mobile Powder Conveyors Get-Up-and-Go in Nutraceuticals Plant

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BULK MATERIAL HANDLING

INDUSTRIAL VACUUM CLEANING

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Mastering the growth of a company from its humble beginnings in a garage to its current standing as a global nutraceutical and functional foods custom contract manufacturer producing, packaging, and labeling over 4,000 formulations for more than 500 brands in over 75 countries requires continuous investment in facilities. It also requires a commitment to innovation, which is exactly what New Jersey-based Vitaquest has been doing for over 40 years.

Successfully managing a high level of growth requires flawless execution in production and an understanding of how the right equipment contributes to the bottom line.

With a history of being an early adopter of the latest manufacturing technologies to support its customers and anticipate market requirements, Vitaquest leverages equipment to develop novel processes and products, such as the first shelf-stable consumer probiotic and the first stick pack design and delivery system.

Recently the custom contract manufacturer accepted delivery of its 10th mobile vacuum conveyor at its new 200,000 square foot state-of-the-art facility, where it formulates and blends ingredients, processes them into a broad array of dosage forms, and packages them using a wide variety of packaging technologies including pouches, stick packs, jars, and vials.

At Vitaquest, the technology of choice for its powder filling lines is vacuum conveying, and for more than 20 years the company has worked with US-owned and operated VAC-U-MAX, a pioneer in vacuum technology, for powder conveying needs.

With over 65 years' experience handling over 10,000 bulk materials and powders, VAC-U-MAX is also a company with many firsts, including the first venturi-powered vacuum generator, direct-loading of vacuum-tolerant process equipment, and vertical-wall Tube Hopper material receivers.

"Vacuum conveyors are the best choice for feeding filling lines for space savings, flexibility, reduced changeover time, simple operation, and minimal maintenance," says Vitaquest Engineering Manager, Angel Simeon, Jr.



Since 1977, Vitaquest International has delivered innovation in nutraceutical development by providing turnkey nutritional manufacturing solutions across a broad range of herbal, vitamin, protein, and probiotic custom formulations.

The custom contract manufacturer still utilizes a few feeder screws but is making a conscious effort to move away from that technology.

"Screw feeders with hoppers require additional equipment to load the hoppers, and more floor space. They are also heavier and take longer to set up and clean than vacuum conveyors," says Simeon.

"We have VAC-U-MAX mobile conveyors, and we can use them anywhere with our equipment, like our pouching equipment, rotary fillers, and our stick pack lines—really, any of our powder filling lines."

Mobile vacuum conveyors are complete conveying systems that contain all of the same conveying system components that rigidly installed vacuum conveyors have—the vacuum producer, the filter separator, the controls, convey tubing and a pickup wand—but on a compact mobile conveyor frame.

The pick-up wand is standard with the mobile conveyor and is the primary device used by Vitaquest to pull material from plastic lined drums; however, bag dump stations, bulk bag unloaders, mixers and blenders also work with the mobile conveyors.

Like many in the food and pharmaceutical industry that use wands to convey materials from plastic lined drums, Vitaquest's mobile conveyors utilize a wand with a bag guard (looks similar to a muzzle) welded to the end of the wand to prevent the bags

from being sucked into the conveying line. Mobile conveyor systems raise the receiver in order to load auger fillers, mixers, reactors, and other processing and packaging equipment, and then lower the vacuum receiver back down to ground level for easy and safe cleaning and maintenance.

Vitaquest has a long history of safety practices and is committed to improving its safety program, complete with a dedicated corporate safety manager who scrutinizes equipment and processes and performs regular safety audits in the quest of having zero injuries.

Vacuum conveyors are inherently safer and more efficient than manual transfer of materials, and some of the most common reasons facilities implement them is to meet increased demand; mitigate ergonomic, fall, and fugitive dust hazards; reclaim expensive materials; and improve product quality through precision ingredient delivery.

Mobile vacuum conveying systems add another element of efficiency in that a single mobile conveyor system can service multiple processes; and those at the custom contract manufacturer's facility have a high utilization rate.

When one type of packaging machine finishes a production run, it may be idle for the near future, but the mobile conveyor can be quickly cleaned and moved to another room for use with another type of product and packaging machine. Set-up and operation are immediate after connecting to electric power and compressed air supplies. The packaging machines interface with the mobile conveyor ensuring they never run out of ingredients.

"The VAC-U-MAX systems are simple to operate and maintain," says Simeon. "They have no problem keeping up with our standard rate of 1,000 lbs pr/hr for our stick pack and pouch filling lines and up to 3,000 lbs pr/hr for our rotary fillers."

The venturi-powered, mobile conveyors at the facility conform to FSMA sanitation regulations and require no tools or special mechanical skills to disassemble for product change-over. Venturi powered units have no moving parts and do not generate heat within the packaging suite. Because there are no moving parts, maintenance is minimal.

"Maintenance is easy," says Simeon. "It is just a matter of changing out the filter once in a while and the system is ready to go. The units are reliable, and the venturi has a lifetime guarantee."



Mobile Vacuum Conveying System provides continuous supply of material from containers at floor level up and over to refill stick packaging machine.

Cleaning and maintenance are always safer, more efficient, and effective, when performed at ground level. This is especially critical in industries where stringent FDA and USDA sanitary regulations lead to frequent extended downtime for cleaning.

Most packaging and process machines need to be filled from the top, with a feed opening that could be as high as 10 feet above the ground. While that is easily achieved with a vacuum conveyor, if it's permanently installed above the packaging machine, all maintenance (e.g., filter changing and cleaning for product change-over) must be performed at that elevated location requiring the use of a ladder, scissor lift, or mezzanine.

Some machines, like rotary fillers, have open-top carousels which can complicate the cleaning process if it takes place where a conveyor is rigidly installed above it. Any debris, tools (or loose parts) that drop while cleaning can fall into the carousel, further complicating the change-over process.

With mobile units, rolling the conveyor away from other machinery and lowering the receiver allows simultaneous cleaning of both the conveyor and machine, instead of one after the other.

Vitaquest utilizes segregated production suites and industry best cleaning practices throughout all its manufacturing and packaging operations.

A comprehensive cleaning and sanitation of a production line is performed between each product change over. A rotating schedule of cleaning and production reduces time and maintains a constant flow of finished product. This creates a dynamic environment where at any time, 5-10 production lines can undergo cleaning while the other lines remain operational.

“Cleaning is a whole lot easier and safer,” says Simeon.

“With mobile vacuum conveyors there is significant cost savings on changeover and assembly, he says. “Every year or so when we add equipment, we go to VAC-U-MAX because it is the fastest turnkey equipment to feed both our existing equipment and new purchase equipment,” says Simeon.

Vitaquest is so pleased with the operation of its mobile vacuum conveyors in its packaging line that it is implementing VAC-U-MAX’s Direct-Charge Blender Loading System to load its 125 cubic foot vee blenders, as well as its ribbon blenders.

Direct charge blender loading is a unique adaptation of vacuum transfer, designed specifically for the direct charge loading of blenders, mixers, reactors, or any vessel capable of withstanding a vacuum. With a facility’s blender or mixer as the primary receiver, a system is configured specific to each application, providing the power source, filters, controls, and adapters.

The new system to load the vee blender will reduce safety and ergonomic concerns from excessive ladder climbing for manual loading. It will increase blender throughput by reducing the loading time, and it will be a much cleaner operation than manually dumping ingredients into the blenders from the mezzanine.

Currently the ribbon blenders are loaded with flexible screw conveyors which can degrade the ingredients and take significantly longer time to clean during changeovers.

“The new VAC-U-MAX conveyors will eliminate an entire step in charging our blenders. It will save us a ton of time and extra manual labor the moment it is installed, and increase safety,” says Simeon.



Mobile Vacuum Conveying System eliminates overhead conveyor installation, allows cleaning at floor level, and allows the system to be used in other packaging lines.

“The best thing about any piece of equipment is when you don’t hear about it—and we hear nothing about the VAC-U-MAX systems—not from the supervisors, not from the workers, not from sanitation and not from our safety supervisor.”

“VAC-U-MAX is responsive to feedback and easy to work with when honing our systems to work flawlessly. I was here when we got the first mobile conveyor and each time we purchase a new system, it is better than the last,” says Simeon.

VAC-U-MAX and Vitaquest are both industry leaders in developing technologies that advance their respective markets, and the “mobile conveyors support the Vitaquest motto of “Delivering What’s Next” to our customers,” says Simeon.

To learn more about VAC-U-MAX or for RFQ, visit www.vac-u-max.com or call (800) VAC-U-MAX.

