



SMOOT

TAYLOR

PROJECT PROFILE: THE QUARTZ CORPORATION

Product Handled:	Feldspar
Particle Size:	3 to 240 microns
Bulk Density:	38.6 to 89.5 PCF
Bag Type & Capacity:	50 lb. valve bags on the Model A valve bag; 1,000 lb. and 2,000 lb. bulk bags on the IBC-3000 bulk bag loading station
Dense Phase Convey Rate:	36,000 lbs. per hour
Plant Location:	Micaville, North Carolina

APPLICATION SUMMARY

The Quartz Corp is a premier supplier of high-purity quartz, feldspar and mica. Their mission is to provide the industries of tomorrow an ultra-pure raw material, directly supporting the creation of renewable energy and innovative technologies.

Material recovery is crucial to The Quartz Corp's process, equally as important is their accountability to their communities and the environment. Meticulous quality control mechanisms allow them to set bold targets to achieve ever greater levels of purity, while letting as little product as possible go to waste. Developing a new automated system was one key strategy to eliminate waste during feldspar production resulting in a project with Magnum Systems.

Increasing Feldspar Production Would Involve:

- A fully automated system with pneumatic conveying, bulk bag filling and 50-lb. valve bag packaging systems.
- The system equipment is capable of standing up to abrasive materials.
- The ability to pneumatically transfer 10 different materials for loading into bulk bags of 2,000 lbs. and 50 lbs. and for 10 different bulk densities and particle sizes using only two dense phase systems; one for each silo.
- The capability to transfer to either the bulk bag station or the 50-lb. bag station without allowing either station to be short of product.



Model TRV-1000 robot placing 50 lb. bags for filling and conveying.



Model TRP-3000 robotic palletizing 50 lb. bags to be shrink wrapped for delivery.

Your Integrated Source for Bulk Material Automation.



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EQUIPMENT SOLUTION

Magnum Systems' design and project management teams worked closely with The Quartz Corp's team to deliver a PD truck-to-pallet solution ahead of schedule and under budget. Our teams fine-tuned the valve air packer and bulk bag station to fill at the rate The Quartz Corp team desired, which can exceed their goal rate. The IBC-3000 bulk bag fills up to 3,000 lbs. at a rate of up to 30 BPH, while using a robot palletizer, the 50 lb. valve bag line results in 12+ bags per minute, and material is also able to be transferred to both valve bag and bulk bag stations. At The Quartz Corp team's request, we implemented automation for processes ranging from empty valve bag placement to robot palletizing.

Magnum Systems' ability to offer packaging from our Taylor Products Division and pneumatic conveying from our Smoot Co. Division was critical to effectively integrating all The Quartz Corp's equipment. Also, the agreement between The Quartz Corp and Magnum Systems to work together after the installation has been an essential part of this project's success.



Magnum Systems total system solution for moving and bagging mineral product in 50 lb. and 1,000 - 2,000 lb. bulk bags from start to finish at The Quartz Corporation.



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EQUIPMENT FEATURED

Dry Bulk Storage

- Magnum Systems provided two storage silos for receiving materials via PD Truck, each complete with bin vents for air filtration, level indication, and bin activators to aid in material discharge from the silos.



Magnum Systems provided two silos for the storage of mineral products.

Pneumatic Conveying

- In each of the silo skirts, Magnum Systems provided a pressure dense phase pneumatic conveying system to transfer the materials to one of the two surge hoppers in the bag filling area. Dense phase was selected as the preferred convey method to reduce system wear and tear due to the abrasiveness of the product.



Dense phase transmitters in the silo skirts supply the minerals through the total system solution at The Quartz Corporation.

Packaging Systems

Magnum's Valve Bag Filling

- A Surge Hopper complete with level indication, bin discharger, and rotary airlock for feed control.
- Three Model A Valve Bag Fillers with robotic bag placing for packing of 50 lb. bags.
- The conveyor system includes Small Bag Conveyors, a Bag Labeler, a Check-Weigh Conveyor, an Empty Pallet Dispenser, Robotic Palletizing, and a Stretch Wrapper.



Three Model A Valve Bag Fillers with Robotic Bag Placing for packing of 50 lb. bags.

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Packaging Systems continued ...

Magnum's Bulk Bag Filling (IBC-3000)

- A Surge Hopper complete with level indication, bin discharger, and rotary airlock for feed control.
- The IBC-3000 fills up to 3,000 lb. bulk bags accurately with our upper weigh-carriage design and integrated control system.
- The conveying system includes an Empty Pallet Dispenser, Slip Sheet Dispenser, Full Pallet Chain Conveyors, Check-Weigh Conveyor, Metal Detection Conveyor, and a Robotic Palletizer.



Model IBC-3000 filling and weighing 1,000 and 2,000 lb. bulk bags at The Quartz Corporation.

Magnum Systems provided a complete control package for the automation of the conveyors. Including several HMIs for operator interface and safety interlocks.

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