



# PROJECT PROFILE: THE QUARTZ CORPORATION

<b>Product Handled:</b>	Quartz sand (Quartz, Mica, Feldspar)
<b>Particle Size:</b>	3 to 240 microns
<b>Bulk Density:</b>	38.6 to 89.5 PCF
<b>Bag Type &amp; Capacity:</b>	50 lb. valve bags on the Model A valve bag; 1000 lb. and 2000 lb. bulk bags on the IBC3000 bulk bag loading station
<b>Dense Phase Convey Rate:</b>	36,000 lbs. per hour
<b>Plant Location:</b>	North Carolina

## APPLICATION SUMMARY

The QUARTZ Corp is a key supplier of high-purity quartz sand and several different purities for the solar, semiconductor, and fiber optic markets. Though headquartered in Oslo, Norway, their quartz is sourced in Spruce Pine, North Carolina, a 3.9 square mile town nestled in the Appalachian Mountains, 2,559 feet above sea level. Spruce Pine's unique geology presents the world's highest purity quartz deposits, mined from a mountainside.

The QUARTZ Corp was already producing 50 lb. bags and bulk bags at a nearby facility. Yet, market demand for this quartz sand skyrocketed so high that the current rates the company was yielding could not keep up. The Spruce Pine location became a new production facility in an existing building that The QUARTZ Corp acquired to produce much more of this valuable commodity.

### Increasing production required:

- A fully automated system with pneumatic conveying, bulk bag filling and 50 lb. valve bag packaging systems
- System equipment capable of standing up to quartz's severe abrasiveness
- The ability to pneumatically transfer ten different materials for loading into bulk bags of 2000 lbs. and 50 lb. bags and for ten different bulk densities and particle sizes using only two Dense Phase systems: one for each silo
- The ability to transfer to either the bulk bag station or the 50 lb. bag station without allowing either station to be short of material

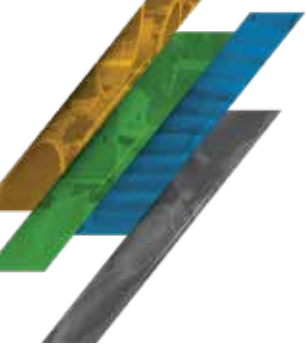


*Model TRV1000 robot placing 50 lb. bags for filling and conveying.*



*Model TRP3000 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 on time and within budget. After material testing at our test lab, our team fine-tuned the valve air packer and bulk bag station to fill at the rate The QUARTZ Corp team desired, exceeding prior rates. The IBC3000 bulk bag fills up to 3,000 lbs. at a rate of up to 30 BPH, and using a robot palletizer, the 50 lb. valve bag line results in 12+ bags per minute. Also, the material can be transferred to both valve 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 (2) 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.

### 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.

### Packaging Systems

#### Magnum's Valve Bag Filling

- A Surge Hopper complete with level indication, bin discharger, and rotary airlock for feed control.
- (3) 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.



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



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



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 (IBC3000)

- A Surge Hopper complete with level indication, bin discharger, and rotary airlock for feed control.
- An IBC3000 Bulk Bag Filler for weighing of up to 3,000 lb. bulk bags.
- 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 IBC3000 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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