

Aggregates

Dust and spillage
mitigation solutions
for your industry.



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Solutions for the Aggregates Industry

Whether you are moving sand, gravel, limestone, silicates, gypsum, or more, Benetech has the material handling expertise to help you get the job done. We understand the competitive nature of the industry and realize that any downtime cuts into your bottom line. Not only are profitability concerns real, ensuring a safe workplace for your employees is an even higher priority. Benetech's cost-effective, rugged technologies are designed to reduce fugitive dust, stop spillage, improve material flow and ensure a safe environment. Starting at the quarry site and going all the way to its endpoint, we have the integrated solutions to handle the most abrasive aggregate material, protect your belt, and keep your operation running at peak capacity.

From mistracked belts resulting in spillage to uncontained load zones resulting in fugitive dust, Benetech has the answer. Our vast experience in aggregate material handling enables us to assess your ever-changing conditions and ensure your system is up to the challenge. No matter what aggregate material you are moving.

Benetech's Total Dust Management technologies and services prevent problems before they occur, resulting in benefits that lead to successful operations, including:

- increased workplace safety
- reduced housekeeping
- lower O&M costs
- increased wear liner life
- decreased carryback
- increased equipment performance and reliability

Belt Cleaners

The proper cleaning of conveyor belts is a significant problem in most plants. After the material has been discharged, particles adhering to the belt (carryback) must be removed to prevent spillage along with the conveyor and build-up material on the return rollers. The material build-up will cause the belt to mistrack and eventually damage its edges. In addition, spillage around the conveyor will lead to extra maintenance and clean-up costs.

Benetech's conveyor belt cleaning solutions include primary, secondary, and specialty cleaners or belt scrapers that solve carryback issues once and for all. Created to keep production moving and extend the life of your belt, our conveyor belt cleaning systems provide superb cleaning efficiency that minimizes maintenance.

Benetech's conveyor belt cleaning solutions are made for all transported material regardless of their hardness, shape, or abrasiveness. With our conveyor belt cleaning systems, your business can manage everything from wood chips, recycled paper, and garbage to iron pellets, coal, and crushed rock.

Primary Cleaner: BEP1 Quarry

- Easy to install and maintain
- Simple spring tensioner design
- Tension is easy to apply and adjust
- 48" belt widths and less only need one tensioner
- Abrasion resistant polyurethane blade
- Blade is a simple dual pin change out design

Secondary Cleaner: BXS5

- High efficiency blades with superior wear resistance available in tungsten carbide or ceramic
- Individual self adjusting blades via torsion element for maintaining blade-to-belt contact
- Double tensioning equipment for better pressure distribution
- Ideal for use on spliced belts allows mechanical splices to pass without any damage
- Superior service life available with self-adjusting pneumatic tensioners or dual rosta tensioners
- Overlapping blades For more efficient scraping

*Replacement Retrofit Blades Available



BEP1 Quarry



BXS5 Cleaner

Belt Support & Alignment

Simple Slide Idlers

Benetech's Simple Slide Return Rollers allow for safe and simple installation and maintenance while providing optimal belt support between the discharge point and the tail pulley. In addition, the compact size of the frames allows for placement even in confined spaces.

Drop & Slide Idlers

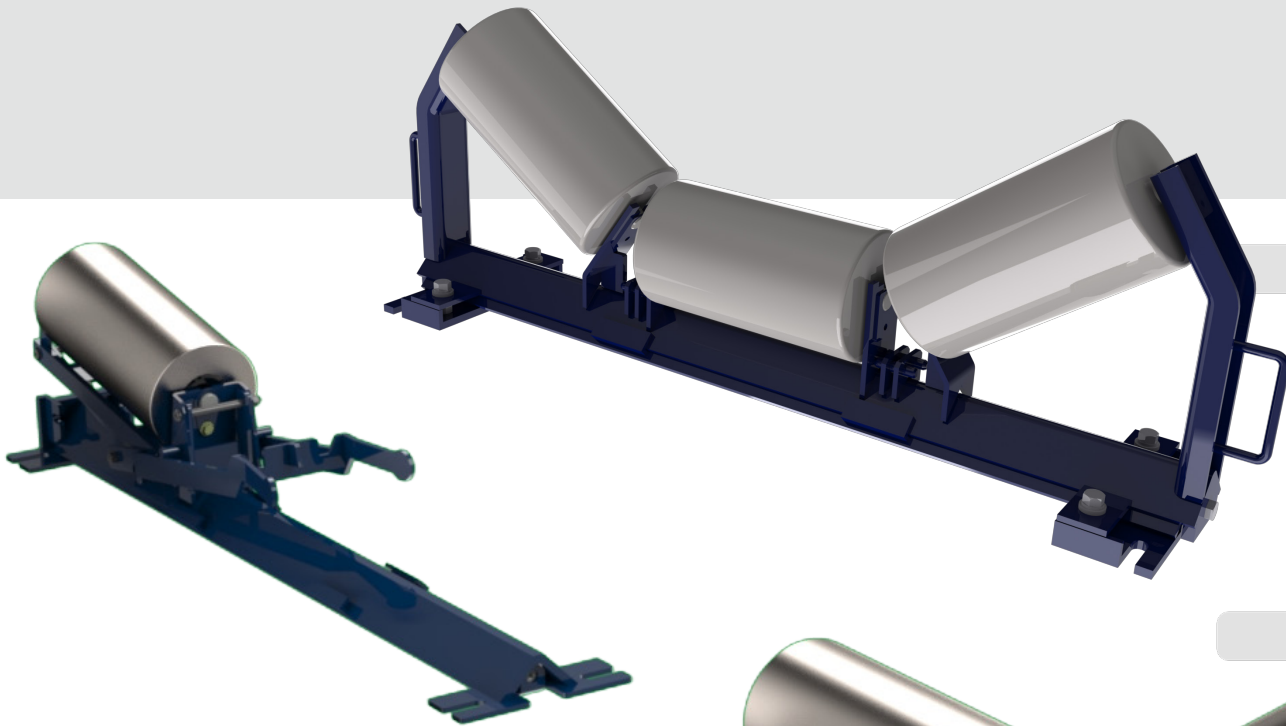
The Benetech Drop & Slide Idler can be completely dismantled, inspected, and serviced by one person from one side of the conveyor. When in the retracted position, the roller unit simply slides out from underneath the existing conveyor belt allowing for easy roller inspection or replacement.

Trackers

Benetech Training Idler responds instantly to the misalignment of the belt and does so without special modifications to the structure. Frame and guide rollers are often the cause of belt damage, which reduces the lifetime of the belt. The Benetech Training Idler requires no maintenance and fits into a standard drop bracket. The Benetech Training Idler can be manufactured to suit all belt sizes in operation in any country. Special design requirements, such as specific shaft dimensions and lengths, are possible at little or no additional charge.

Impact Beds

The Warrior Impact Bed stabilizes and supports the conveyor belt during loading, defending it from damage. The stiff, rigid frame and soft rubber bars of the Warrior cushion the belt and absorb impact. The result is longer belt life, eliminated spillage, and decreased O&M costs.



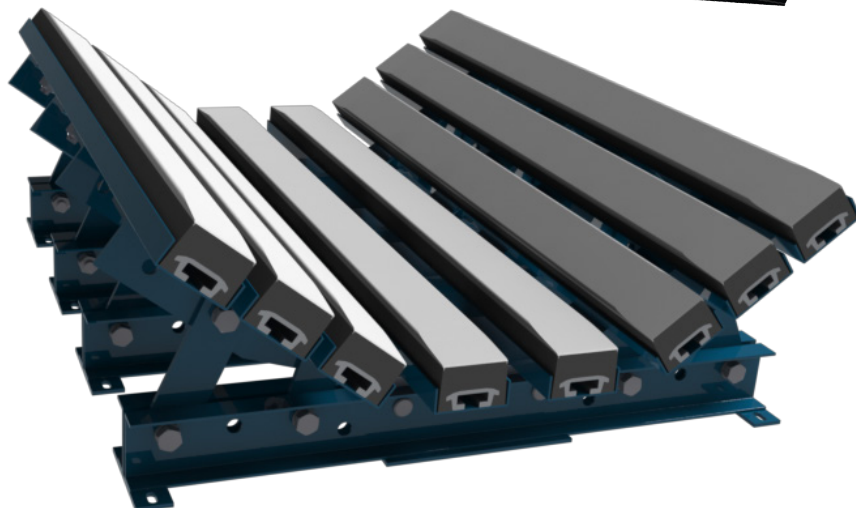
Simple Slide Idler



Drop & Slide Idler



Tracker



Impact Bed

Load Zone and Containment

Inspection Doors

Benetech conveyor chute inspection doors let you achieve both necessary steps safely and efficiently. The doors' distinctive design and proven technology provide you with complete and easy access for service and maintenance, as well as a tight seal against airborne dust.

Product Offerings

- An innovative door-deflector panel for less material build-up on the door seal
- Grease fitting on pinned hinges for no play or locking up
- Resilient door seals are hidden in the groove for long-lasting service
- Ergonomic cam-action and never-seize closing latches with adjustable tension for suite operation requirements
- Heavy-duty handles that won't bend
- Easy installation with a simple cut-and-weld or bolt-on process

The standard Benetech conveyor chute inspection door is available in mild steel (safety yellow) with an unlined deflector panel.

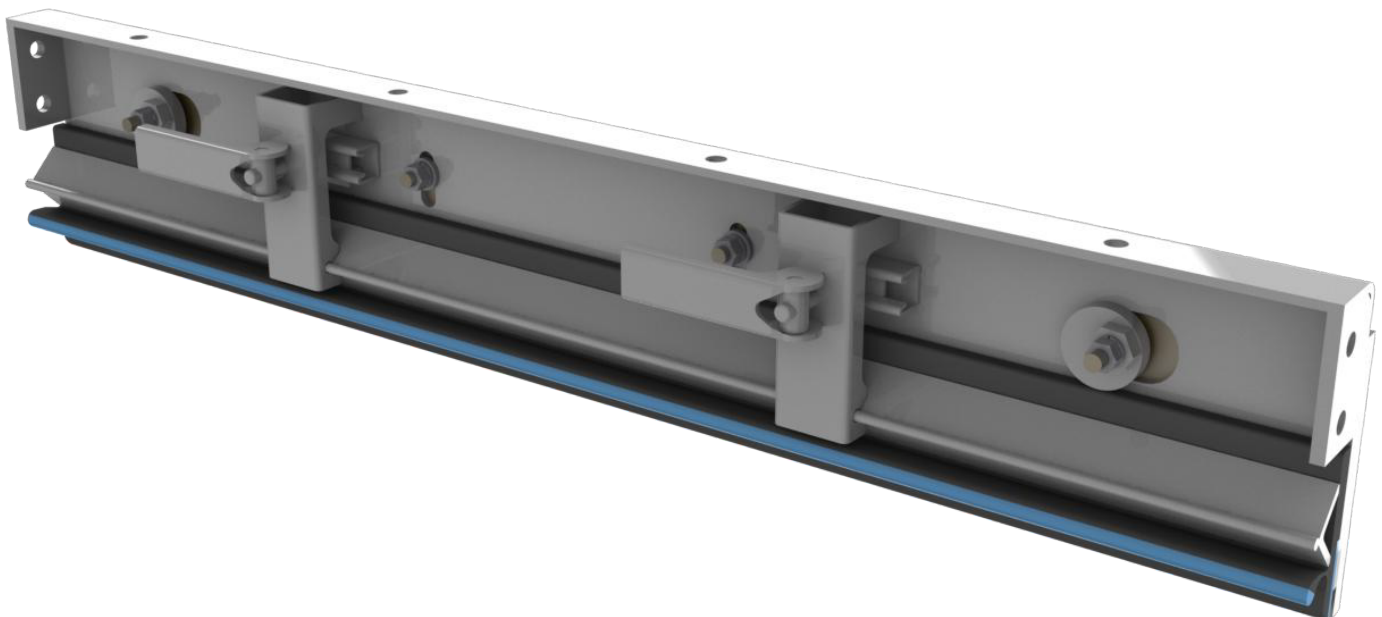
XN Liners

The XN Externally Adjusted Internal Wear liner is placed in the conventional position inside the skirtboard while the adjusting mechanism can be accessed from the outside. As a result, you never need to enter the chute to remove the liner or make adjustments.

This patented technology gives you instant advantages, including quick, simple wear liner replacements; no confined entry requirements; easily visible adjustment with immediate performance results; reduced early wear and erosion of skirt rubber; extended life of usable steel/chrome; and no more cutting/welding of wear liners.



Inspection Doors



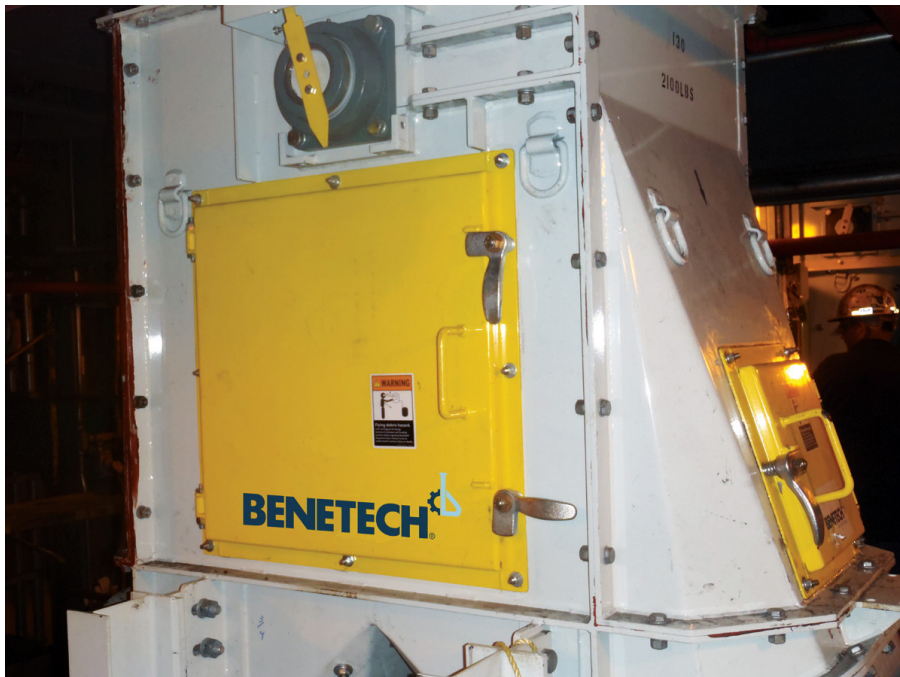
XN Liner

Load Zone and Containment

Inspection Doors



Before



After

XN Liners



Before



After

Load Zone and Containment

MaxZone®

Benetech's patented MaxZone® Modular Skirtboard and Belt Support System seals your load zone to reduce airborne and fugitive dust, preventing product loss and spillage while improving material flow. This system also can be retrofitted to accommodate and enhance an existing system as an economical solution to sealing and protecting your load zone.

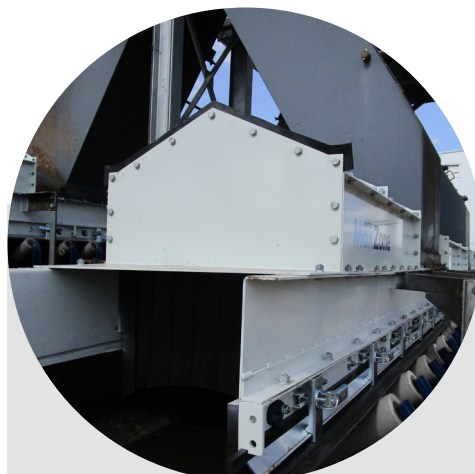
When budget and time constraints rule out a total system replacement, the MaxZone Modular Skirtboard and Belt Support System is your answer for an economic transfer point and load zone. With the system's modular design, you can replace components without special permits or extended shutdowns. In addition, installation is simple and affordable, and no welding is required.

MaxZone® Bundled Kit

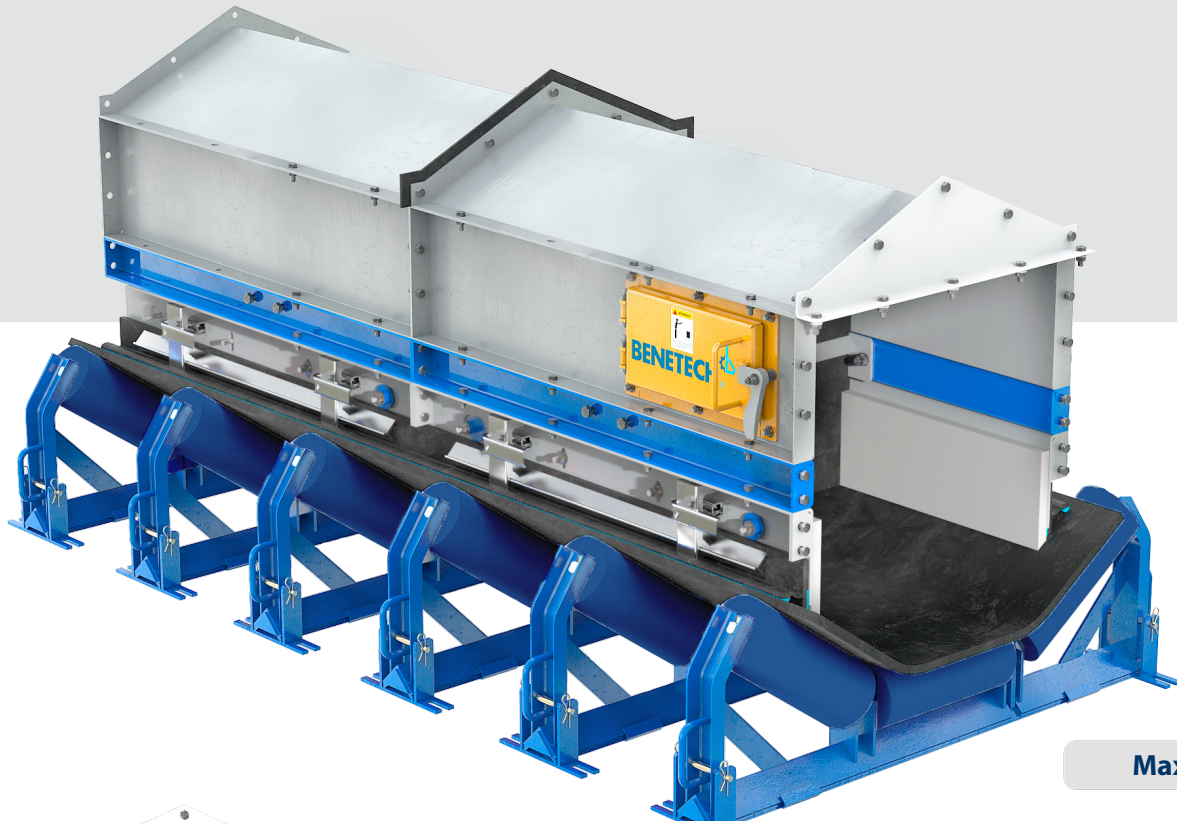
- 2' or 4' Tailbox
- 4ft Loading Section
- 4ft Full Height Sections
- Peaked or Flat Hoods
- Dust Curtains
- XN Wearliner
- Skirting Seal
- Dust Tight Inspection Door
- Warrior Impact Bed
- Simple Slide Idlers



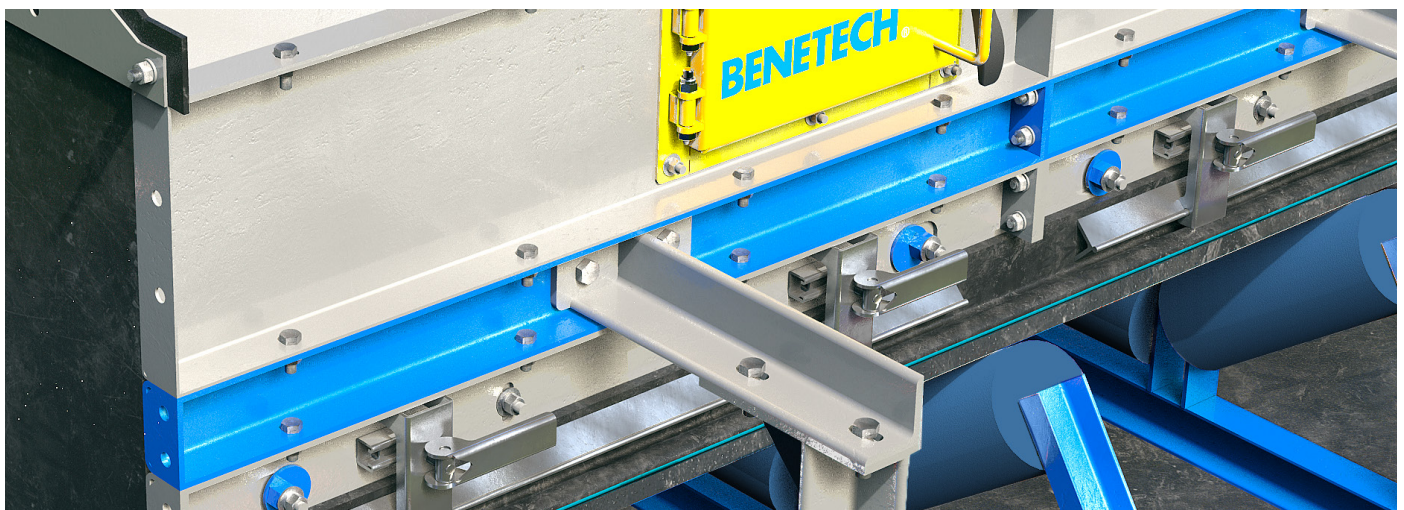
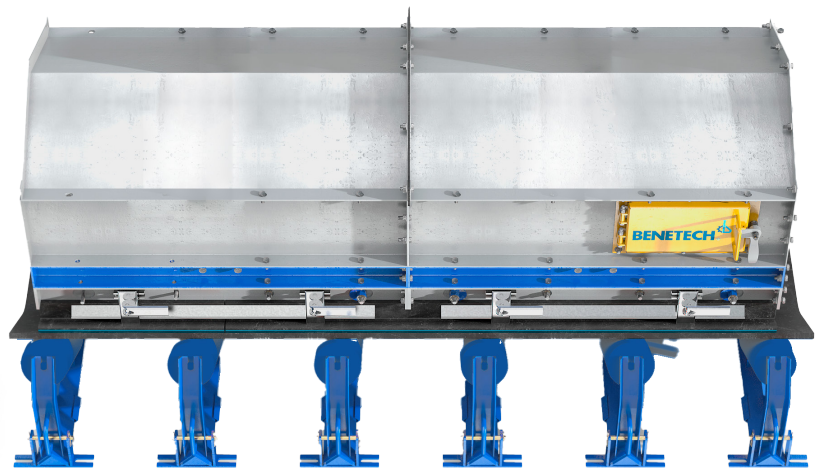
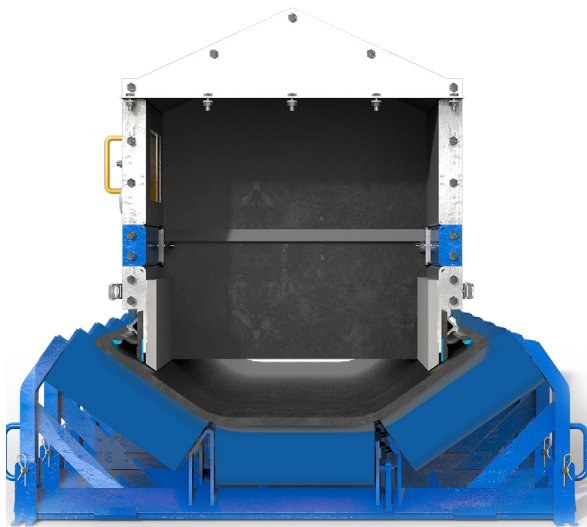
MaxZone®



MaxZone® with a peaked hood



MaxZone®



Load Zone and Containment

MaxZone® Plus

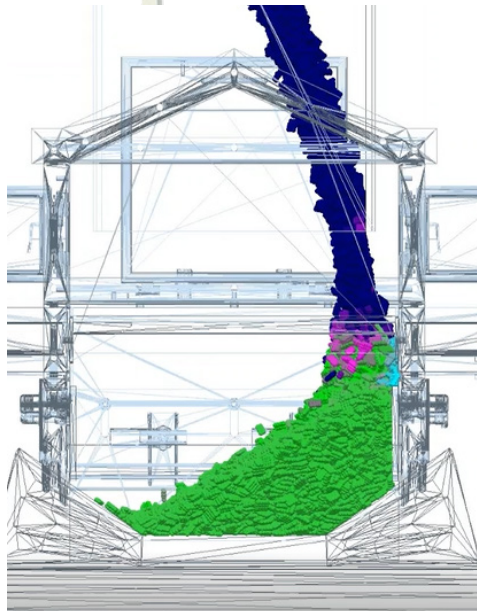
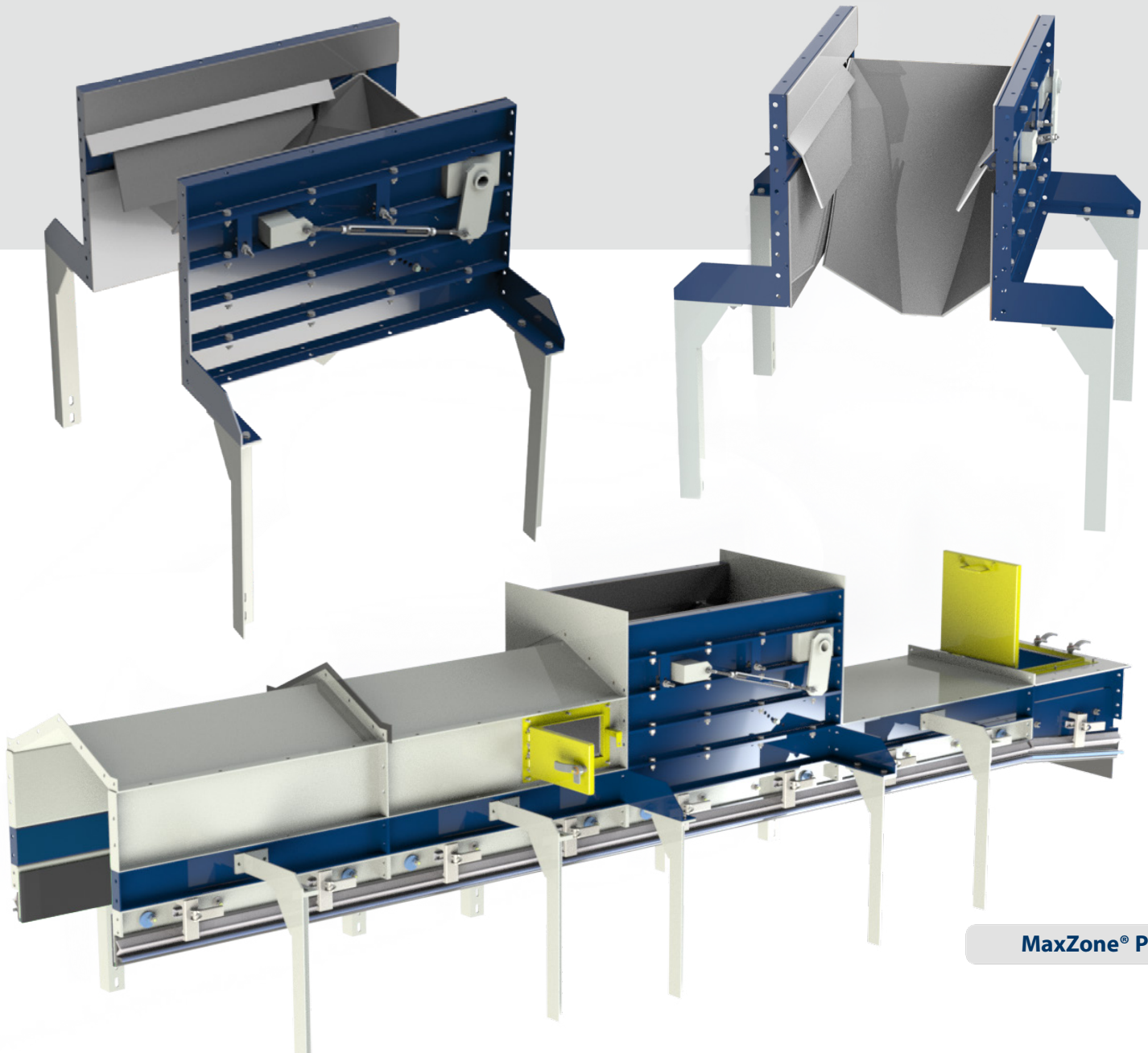
A low-cost solution to combat off-center conveyor loading without costly chute redesign.

Benetech understands the difficulties of fugitive dust and spillage from poorly designed transfer points and load zones. The underlying issue is often a misaligned transfer point chute creating a flawed material transition onto the receiving belt.

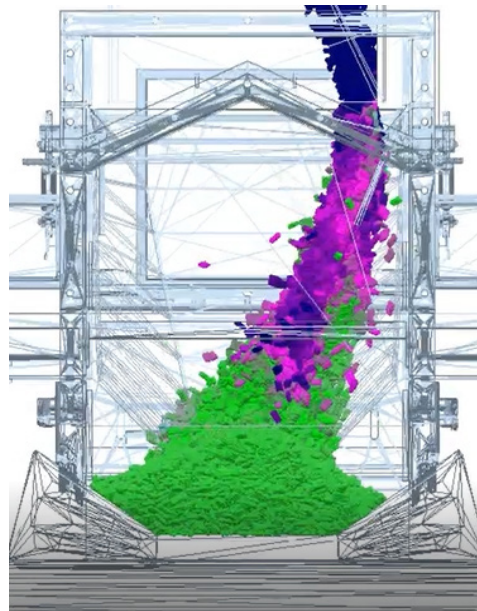
Improper or off-center loading can lead to several problems. First, when the material is loaded to either side of the belt, it creates excessive spillage and dust and threatens to mistrack it fully. Mistracking can then damage the conveyor; cause uneven wear; make the motor work harder, and even create safety issues. These potential downsides frequently result in costly maintenance, housekeeping, and material loss.

Although these problems should be addressed, time and budget constraints do not always allow for engineered load zone chute replacement, which is the best option to solve most conveyor material-flow issues. To overcome this, Benetech has developed a new low-cost solution to combat off-center conveyor loading without costly chute redesign: the MaxZone® Plus system.

The adjustable side kicker plates and deflector moves material forward onto the conveyor belt to correctly center load the material for a smoother transition onto the moving belt. With 6" removable side panels to accommodate chute configuration, the MaxZone® Plus can be installed easily into an existing Benetech MaxZone® and retrofitted to other containment systems.



**Before
DEM Off-Center Loading**



**After
MaxZone® Plus DEM Center Loading**

Material Flow

Clean Sweep AC

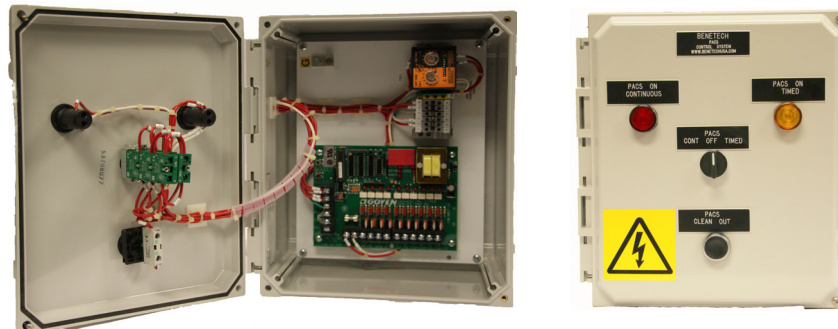
Distinctly designed for bulk materials, the radial Clean Sweep AC automatic cleaning system uses standard plant compressed air at 80–100 PSIG to prevent pluggage and eliminate build-up in transfer chutes, bins, hoppers, silos, and bunkers.

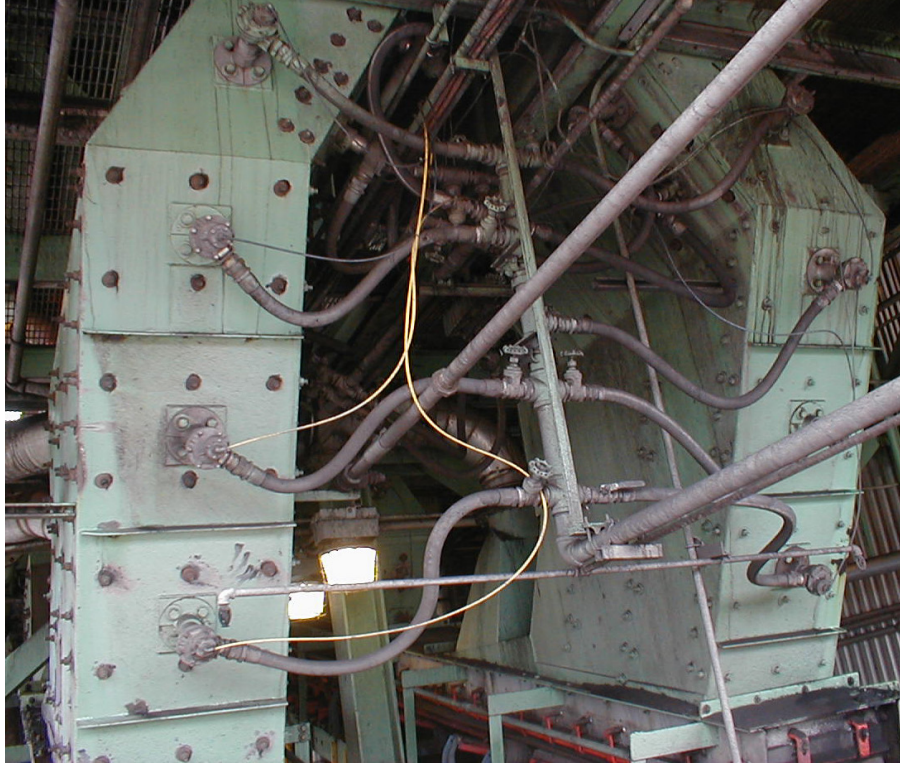
Easy to install and maintain, Clean Sweep AC is your trouble-free answer to ensuring uninterrupted material flow, especially for wet and sticky substances such as sand and cement. Clean Sweep AC is the only radial, pneumatic cleaning system created for bulk material handling and designed not to damage ceramic-lined chutes.

The system's automatic electronic controls trigger wear-resistant nozzles that sequentially fire precise bursts of plant air supplied through a quick-open/close solenoid valve to achieve less waste and maintenance. Each nozzle directs the air 360°, approximately two feet for 0.1 seconds along the surface of the chute work. In doing so, Clean Sweep AC impedes material from crusting or layering – rather, it dislodges and breaks up any potential accumulations for easy flushing by gravity and flowing material. Clean Sweep AC includes a remote air tank and control station for convenient ground-level access. As a result, there is no need to worry about installing large compressed air tanks on chutes, silos, or bunkers.

In addition, the Clean Sweep AC control panel and sequence timers can be located in an area convenient to operations, allowing personnel to make any adjustments needed for changing air pressure and rate of sequencing. Timing sequence and firing rates can be expanded (supporting up to 45 different nozzles) to accommodate a range of chute configuration changes.

Plus, unlike air lancing, which can result in injury and insufficient cleaning, Clean Sweep AC cleans automatically and does not require confined-space permits.





Dust Suppression

Chemical

At Benetech, we know dust control goes beyond using a chemical. It also calls for your program that applies methods based on premium support and technology.

Our engineers specialize in designing, fabricating, and installing custom dust suppression systems. That includes managing hydrophobic materials (those that try to repel water from the surface). Benetech dust suppression lowers the water's surface tension to a value closer to the material being treated, letting the water droplets capture more dust particles.

Benetech's chemical agents also are non-flammable, non-toxic, non-explosive, and biodegradable.

Benetech dust suppression allows you to reduce and control fugitive dust throughout your facility:

- Stockpiles
- Transloading hoppers
- Haul roads
- Stackouts
- Transfer points
- Rail and truck dumps
- Pugmills
- Ship-loaders

Our chemicals and applications solve challenges for diverse businesses, including:

- Aggregate operations
- Cement plants
- Ports and terminals
- Refineries
- Biomass power plants
- Mines/Quarries
- Pulp and paper mills
- Steel mills and coking facilities
- Coal-fired power plants
- Pet coke power plants
- Recycling facilities
- Waste transfer facilities

Application Systems

Benetech designs, engineers, and installs complete dust suppression systems. Our dust suppression methods produce powerful dust control for millions of tons of material each year. With custom systems in force worldwide, we provide the technologies that solve even the toughest material handling challenges.

Our systems serve a wide range of dust control applications:

- Anti-oxidizers
- Rail car unloading
- Conveying systems
- Slope encrusting
- Haul road
- Stackout suppression
- Pile sealant
- Transfer points suppression
- Rail car topper
- Truck top sealants
- We offer several state-of-the-art design options for superior results.



Before



After

Project Profile

Aggregates Facility: Gypsum Plant Screw Conveyor Trough Inspection Door

A North American gypsum plant was experiencing increased maintenance and housekeeping costs due to an access door on their screw conveyor that was flat and bolted-on. Opening and closing the access door was a very long and taxing process due to the fact that each bolt had to be individually screwed on and off. Additionally, this process would result in stripped bolt threads and the aggravating task of replacing bolts. Excess leakage was experienced because the bolted on doors failed to provide a dust-tight seal. The flat door also had a ledge that collected material which fell to the floor every time it was opened.

To save on O&M costs, prevent leakage, and create a safer working environment, they turned to Benetech for a customized solution that would seal flush against the housing's U-shaped side.

Existing Problems

- Time consuming maintenance and costs
- Stripped bolt threads each time the access door is opened or closed
- Excess leakage
- Ineffective dust-tight seal
- Collected material from the door ledge falls to the floor



Before



After

The Benetech Solution

Benetech utilized its experience with inspection doors to create a customized solution that ensures both proper servicing of components and efficient housekeeping that helps control build-up. Simple to install, open and close, the bolt-free Screw Conveyor Curved Access Door allows quick and easy access for clean-out, inspection and repair with notably less maintenance time. It also reduces dust accumulation on the door and the frame while providing a dust-tight seal that stops material leakage from the access cutout and the side of the chute. Its curvature to the conveyor further prevents material from falling out when the door is opened.

Successful Results

The plant is extremely happy with the results. Inspection and maintenance times have been reduced by hours, and the door's bolt-free design has eliminated the spillage issues the plant was having. Cleaning out the screw conveyor trough is no longer an aggravating task.



Project Profile

Aggregates Facility: Limestone Transload Material Handling Quarry Haul Trucks to Unit Trains

This Montana limestone quarry needed the ability to load unit-trains with Limestone, for transportation to the nearby power station's Scrubber Feed System. While the quarry had an existing manifest-train loading system (a few cars per day), the rail company and the power plant needed to load a larger train at a higher rate. Dome storage of an entire train was not affordable, which led to the concept of establishing new spurs for storage and loading of both Limestone and Sugar Rock products, by loading each train as quickly as the trucks can be brought from the quarry and dumped (transloaded).

Once the conceptual design was established, it was important to continue working with the customer to provide more accurate pricing and scheduling. Also, the existing bagging plant interfered with new spur routing, hence, modifications to the bagging plant included structural modifications and system relocations. Finally, the design required careful planning to continue operation of the manifest-train loading during construction.

Successful Results

- New 110 ton trucks to be utilized
- Enclosed stilling shed with passive dust control similar to PRB hoppers
- 160 ton truck receiving hopper
- Stamler chain feeder with variable speed hydraulic drive
- Hilfiger wall at the truck dump, featuring the use of MLC's own rock
- Totally enclosed vibrating screen
- 600 ton per hour partially enclosed conveyor system with soft start
- Overhead tube conveyor highway crossing
- Certified weight scales (2)
- Three miles of rail siding (including bridge)
- Three miles of new roads
- Designed to be easily expandable at a future date

Benetech assisted the client in the search for additional utilities needing Scrubber Limestone, providing the possibility of more than doubling the throughput.



Passive dust hood channels air around and back through hanging belts to slow air velocity and impinge/drop out dust.



The completed Transloading System allows trucks to dump with passive dust control, just in time delivered via an apron feeder and cleaning screen, to the loading bins above the new tracks. The conveyor tube which crosses the highway is the first of its kind in the State of Montana. The system is automated to regulate speed proportional to the rate of railcar loading, thus minimizing the need for surge bin capacity.



Hilfiger systems were used with the quarry's native rock to establish retaining walls at the truck dump and haul road access area.



Rail Loadout Station includes MCC, Surge Bins, and Certified Belt Scales which feed spouts to railcars. Each load is metered out via these scales.



Benetech designed & constructed viaducts, a rail bridge, and approximately three miles of spurs and switches. The most challenging task was designing around landscape constraints, logistics, and cost. The design/construction required submittal of permits with EPA, State, County and Army Corps. Land ownership was also a design issue.

BENETECH

2245 Sequoia Dr. #300
Aurora, IL 60506

+1 (630) 844 -1300
info@benetechusa.com
www.benetechglobal.com