

Steel

Dust and spillage
mitigation solutions
for your industry.



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Solutions for the Steel Industry

Competing in a global steel market requires optimal performance. Premium production depends on your plant's ability to supply products without delays or complications.

During production, your conveyor systems moving iron ore, coal/coke, hot sinter, and limestone/dolomite must work reliably while minimizing dust and spillage. In addition, environmental standards for dust generation from loading/unloading operations, storage yards, and vehicular traffic are now even more stringent.

Benetech solutions for material handling dust control at steel plants help prevent and avoid problems to ensure maximum output, less maintenance, and a safer, cleaner operation.

Challenges to Metalworking Dust Control

Sustaining high performance in the steel industry requires you to maintain a steady material flow, including unloading, storage, sizing, coking, and sintering operations. Whether spillage, carryback, or belt mistracking, just one snag can halt operations and create safety issues. In addition, dust from open piles, vehicle traffic, and dust from open terrain can also cause problems.

As a steel-mill operator, you're especially alert for spillage and fugitive dust, which also wear down conveyor belts. In addition, worn-out conveyor belt components such as cleaners, idlers, trackers, and ploughs further threaten operations and prevent the belt from achieving its design capabilities.

More Productive Conveyor Belt Products for the Steel Industry

You succeed with Benetech because our engineers know and solve your exact challenges. Whether getting the most from your conveyor belt or enhancing your material handling dust control, with Benetech you:

- better material flow
- performance at high temperatures
- significantly reduce fugitive dust
- increase belt, chute, and wearliner life
- prevent belts from mistracking
- decrease spillage and carryback
- improve operational safety
- cut maintenance time and costs

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

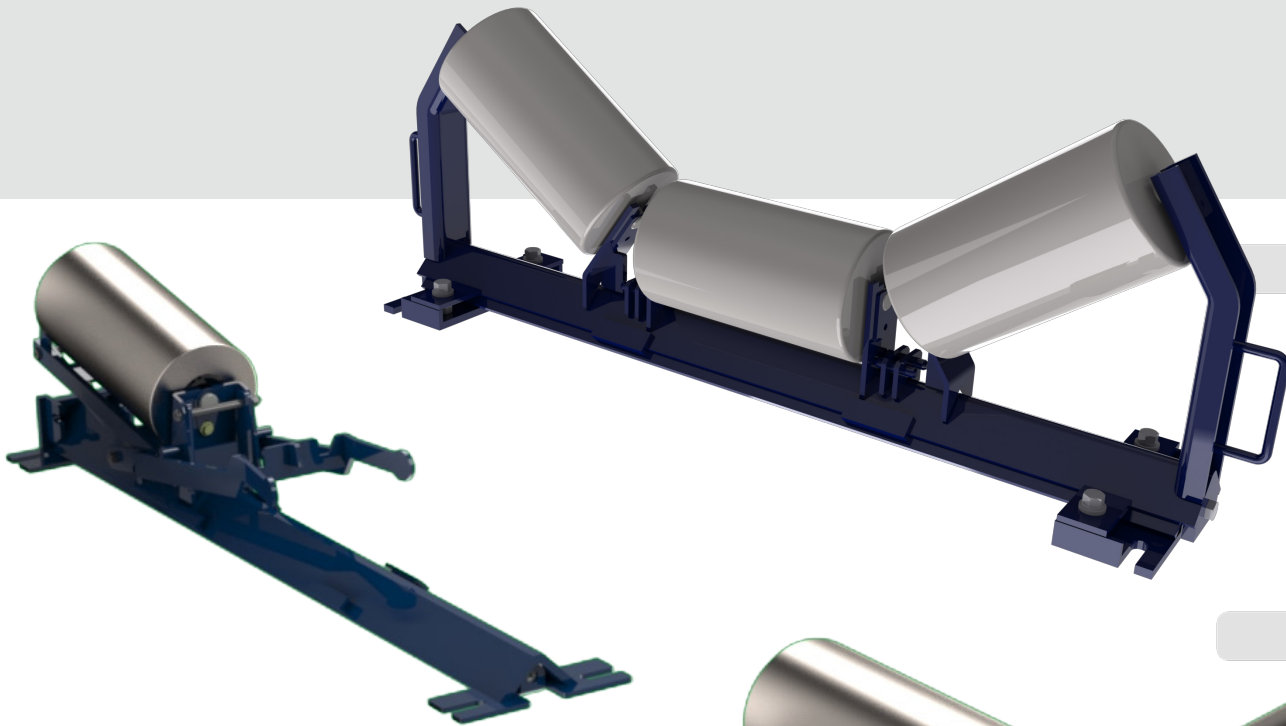
The Benetech Drop & Slide Idler can be completely dismantled, inspected, and serviced by one person from one side of the conveyor. When in the retracted position, the roller unit simply slides out from underneath the existing conveyor belt allowing for easy roller inspection or replacement.

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.



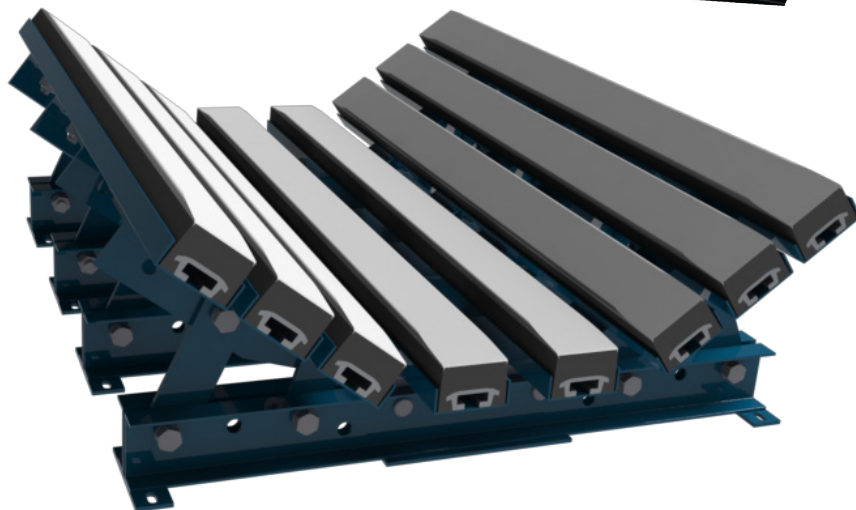
Simple Slide Idler



Drop & Slide Idler



Tracker



Impact Bed

Load Zone 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.

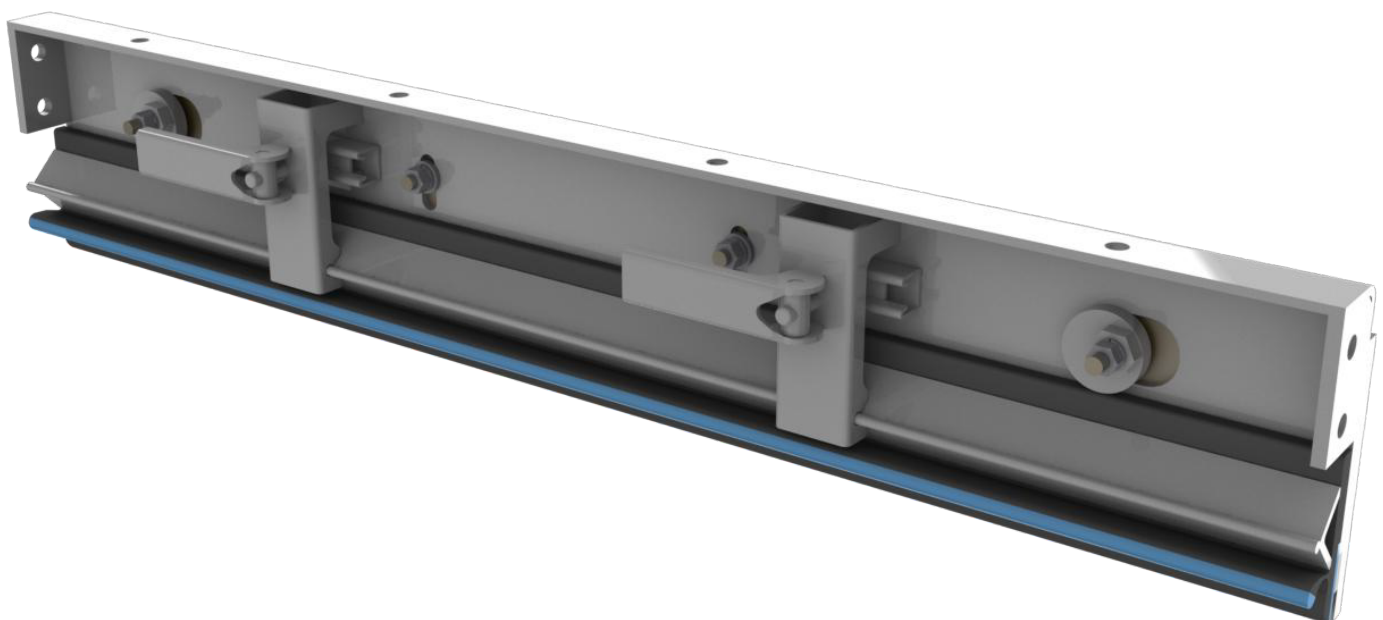
XN Liners

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



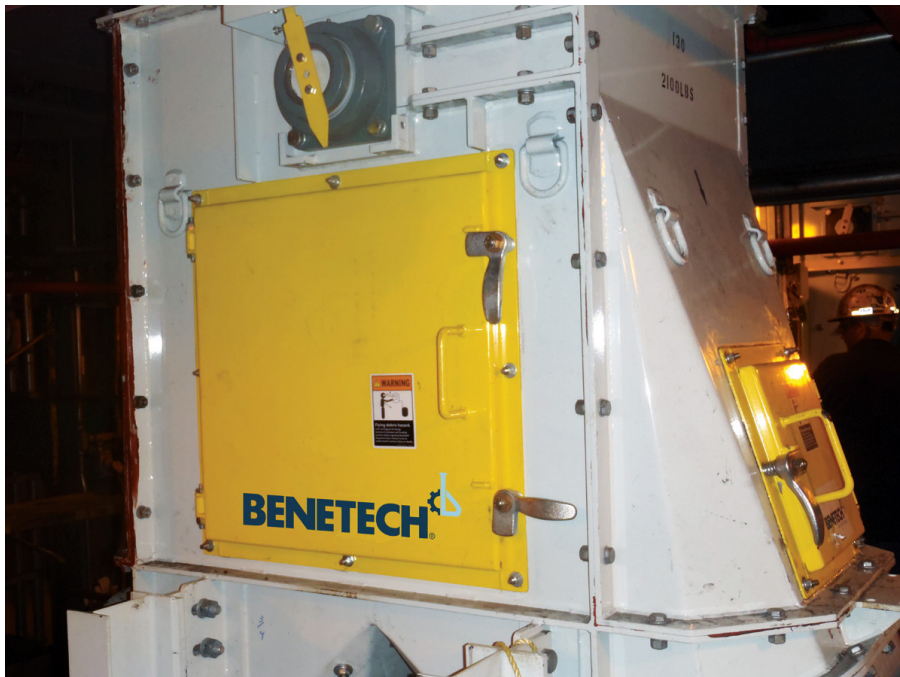
XN Liner

Load Zone Containment

Inspection Doors



Before



After

XN Liners



Before



After

Load Zone 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.

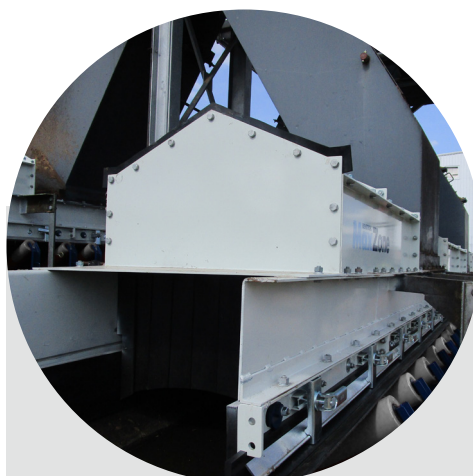
When budget and time constraints rule out a total system replacement, the MaxZone Modular Skirtboard and Belt Support System is your answer for an economic transfer point and load zone. With the system's modular design, you can replace components without special permits or extended shutdowns. In addition, 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



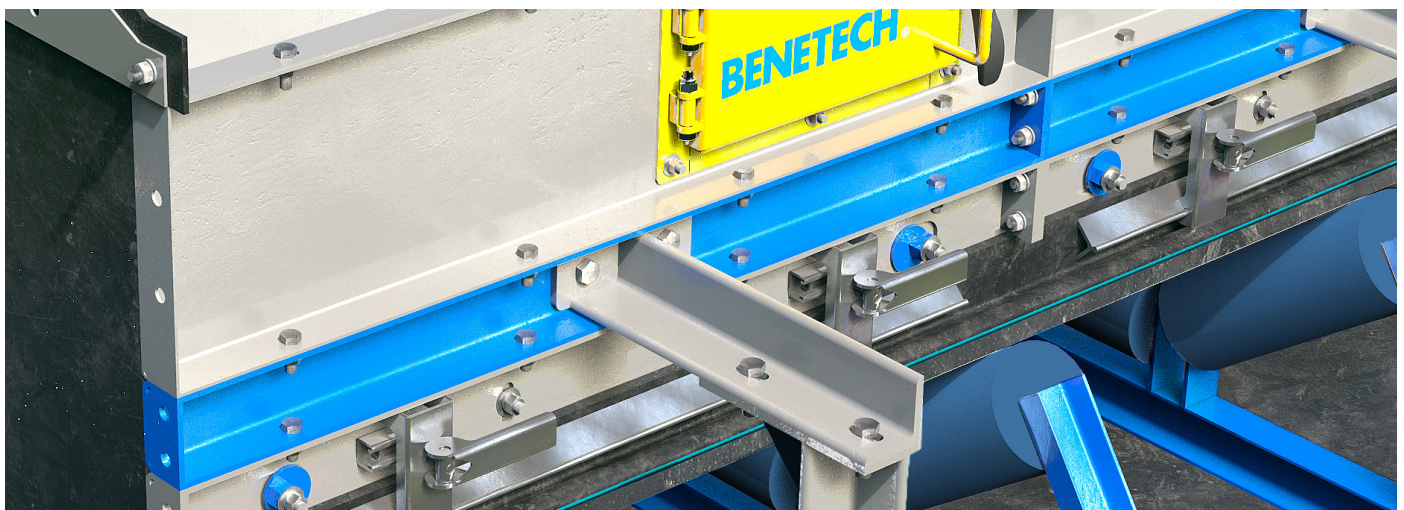
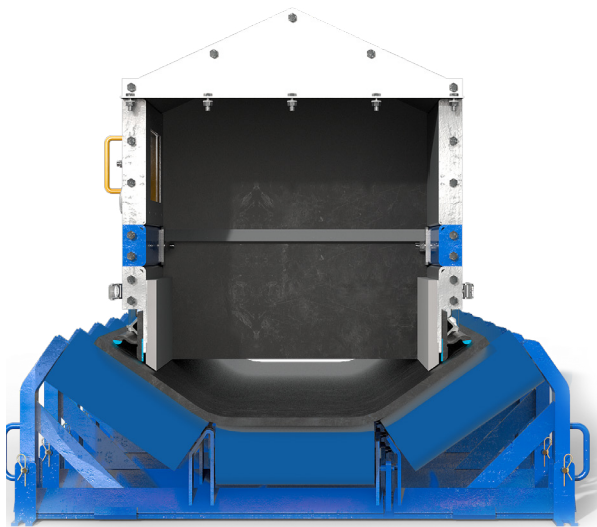
MaxZone®



MaxZone® with a peaked hood



MaxZone®



Load Zone Containment

MaxZone® Plus

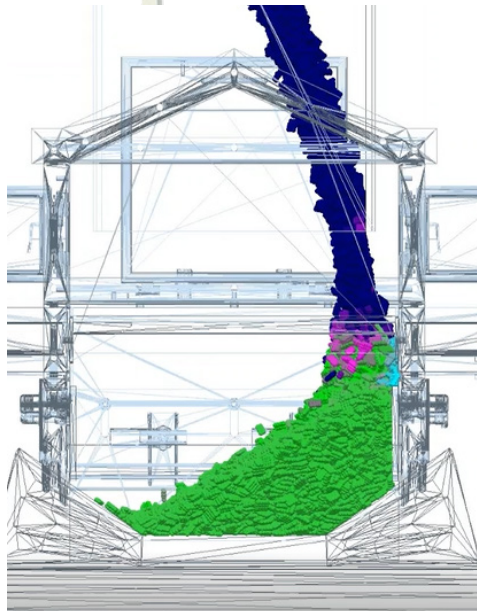
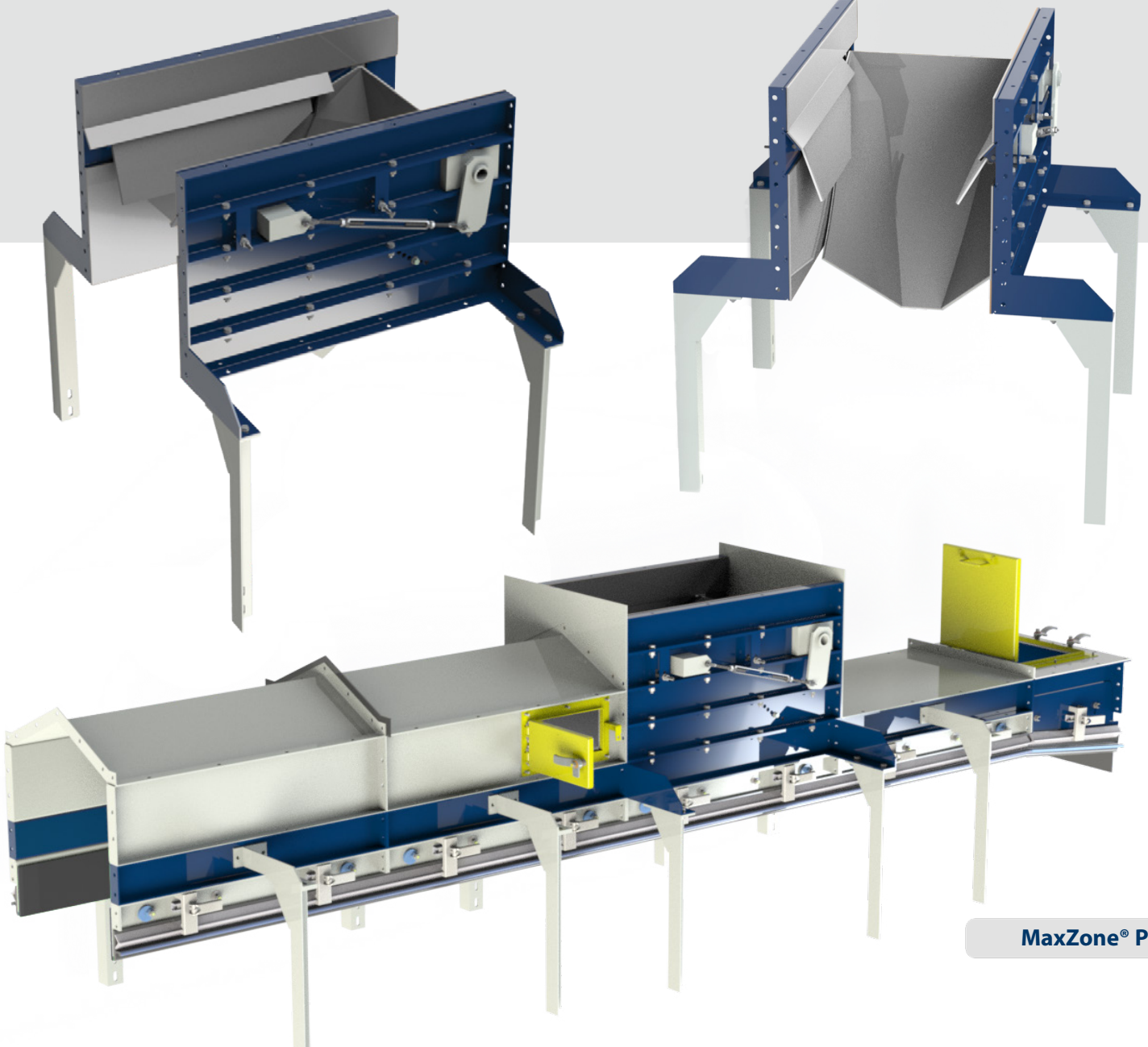
A low-cost solution to combat off-center conveyor loading without costly chute redesign.

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.

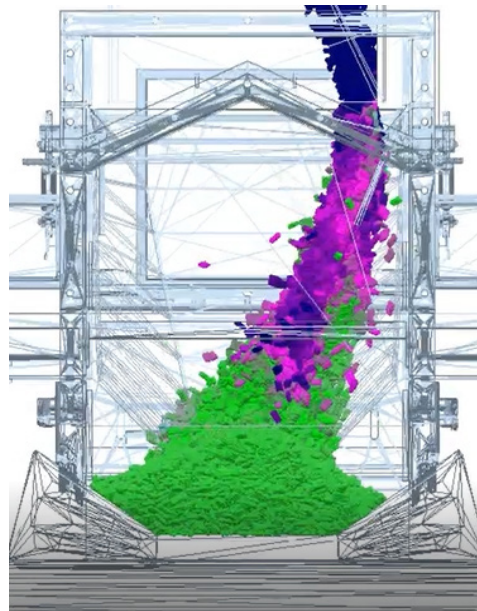
Improper or off-center loading can lead to several problems. First, when the material is loaded to either side of the belt, it creates excessive spillage and dust and threatens to mistrack it fully. Mistracking can then damage the conveyor; cause uneven wear; make the motor work harder, and even create 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

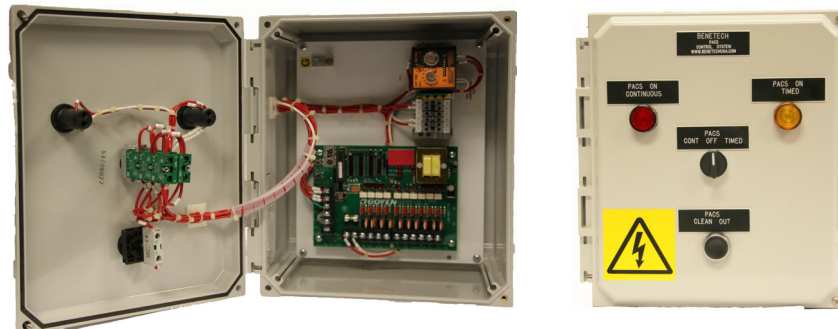
Distinctly designed for bulk materials, the radial Clean Sweep AC automatic cleaning system uses standard plant compressed air at 80–100 PSIG to prevent pluggage and eliminate build-up in transfer chutes, bins, hoppers, silos, and bunkers.

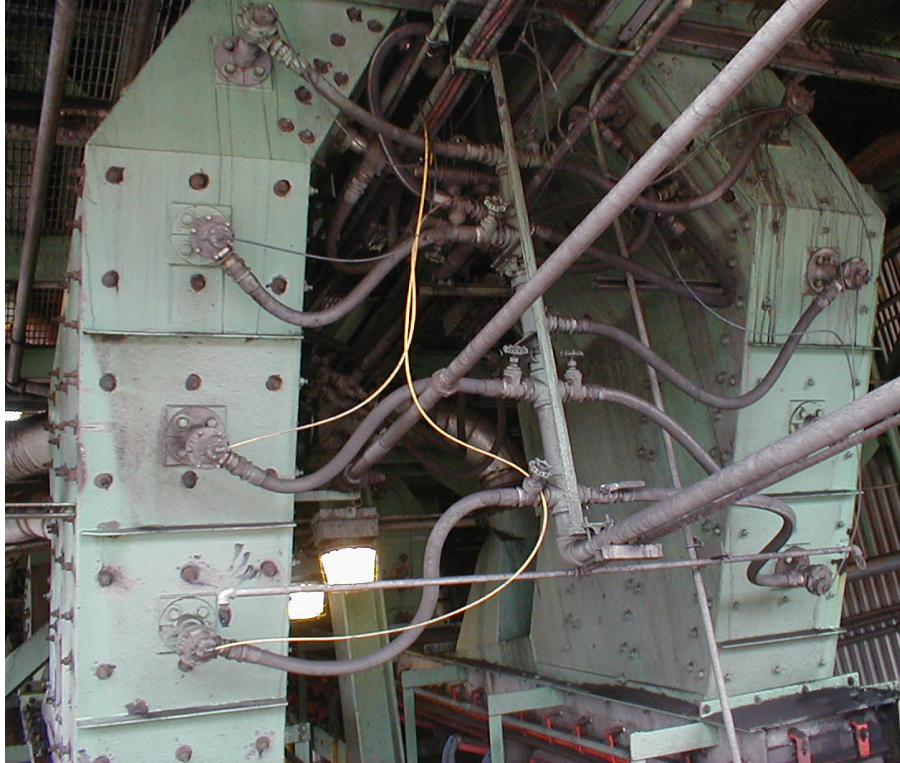
Easy to install and maintain, Clean Sweep AC is your trouble-free answer to ensuring uninterrupted material flow, especially for wet and sticky substances such as sand and cement. Clean Sweep AC is the only radial, pneumatic cleaning system created for bulk material handling and designed not to damage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

Engineered Transfer Chutes

With over 500+ engineered chute designs worldwide, Benetech, Inc. applies advanced engineering technologies and years of experience to design material handling systems that upgrade your efficiency and improve safety.

By adeptly improving material flow issues, Benetech engineered transfer chutes to minimize production problems. This includes pluggage or choked flow; help eliminate spillage and airborne dust; and reduce high-impact areas, optimize belt life, and create longer intervals between service and maintenance.

Discrete Element Modeling (DEM) Flow Analysis

Benetech uses state-of-the-art DEM analysis to evaluate and optimize each material handling transfer point design in developing advanced transfer chutes. This pre-installation computer-modeling process anticipates your plant's potential downstream material flow problems and solves them before expensive mistakes interfere.

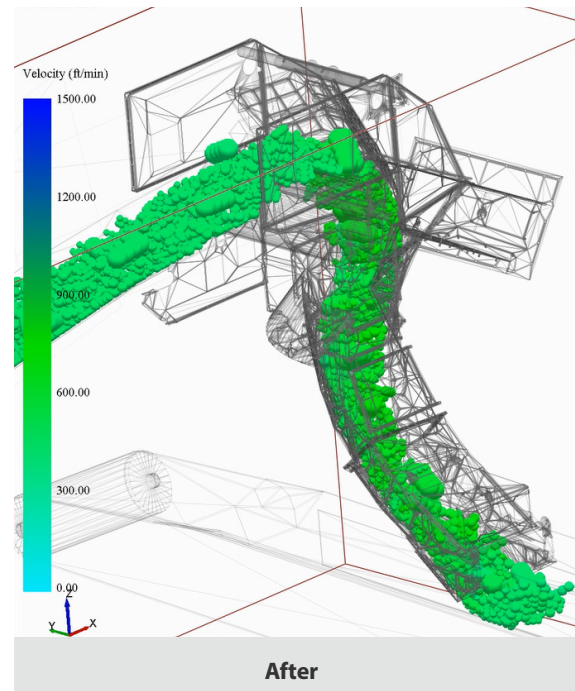
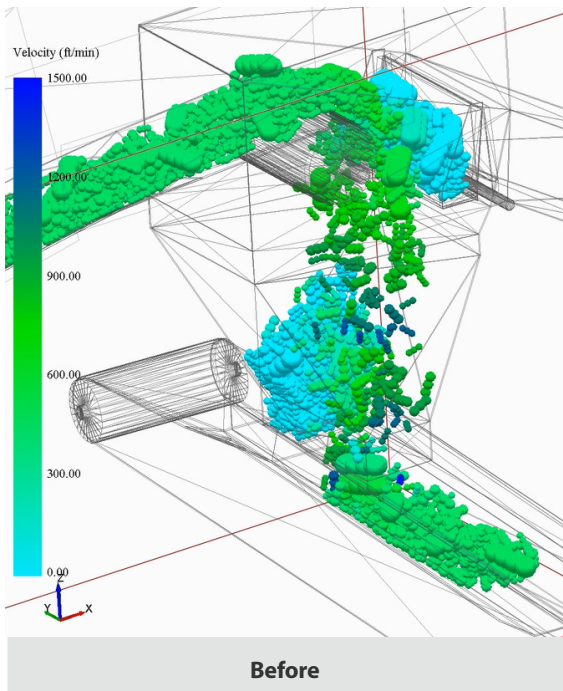
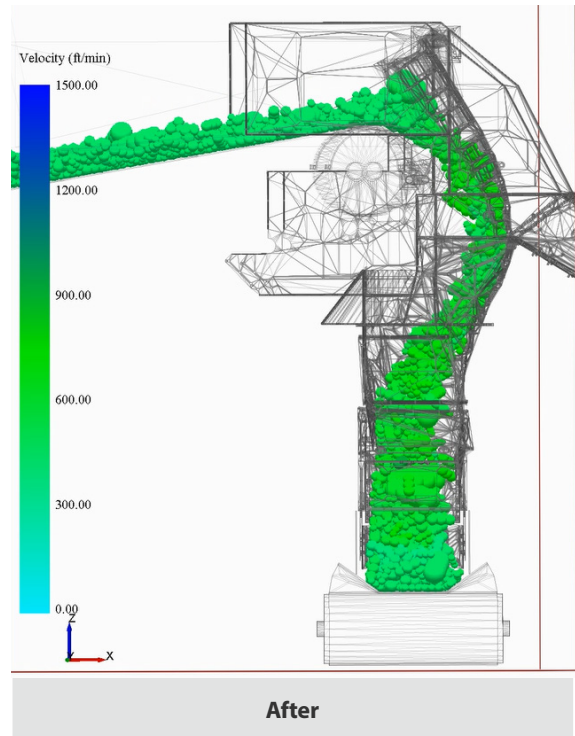
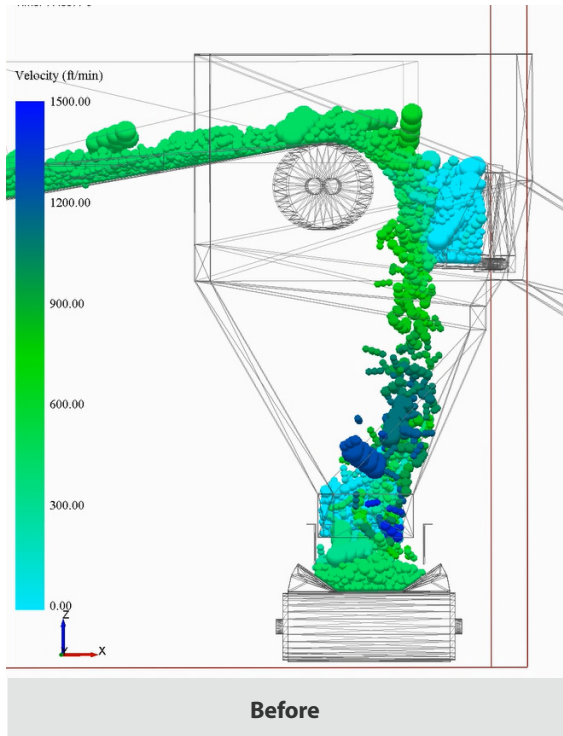
DEM chute designs are performed in-house by Benetech's highly trained and experienced chute engineers. All computer modeling also includes the latest multi-phase material flow and airflow engineering analysis based on Conveyor Equipment Manufacturers Association (CEMA) criteria. This enables precisely defined and controlled material movement from the head of the belt conveyor through discharge to the receiving conveyors.



Before



After



Project Profile

Steel Industry: Material Handling System Upgrades

The team at a South American Steel Plant was fighting on a daily basis with extreme dust and spillage in two mill areas. The result was a challenging working environment and an unstable material handling operation. In addition, the system they had in place was not maintenance friendly and therefore experienced significant labor costs related to repairs, cleanup and confined space requirements.

Many different materials are processed in the mills including:

- Ore Pellet
- Sinter
- Limestone
- Scrape Iron
- Aluminum
- Coke
- Manganese
- Limestone

Existing Problems

- Elevated employee safety practices
- Respiratory dust PPE
- Confined space protocol
- Excessive work environment inspection for material spillage
- High operating costs
- Unstable system availability
- Lost material percentage from spillage
- Extended repair and maintenance schedule
- High Labor Costs
- High volume of time for cleanup crews
- Extended maintenance time due to limited accessibility and confined space
- Unscheduled repair labor
- Premature component wear

3D Model of Project



The Benetech Solution

Benetech provided the Design, Supply & Installation of a MaxZone® Modular Skirtboard System and new loading chutes for two mill areas. These new loading chutes help direct the material flow in the direction of belt travel, greatly helping loading and spillage issues. The Modular Skirtboard System provides consistent sealing and prevents material leakage at loading points.

Successful Results

- Reduced Dust Emissions and Spillage
- Increased Plant Safety
- Greater Operating Efficiency
- Reduced House Keeping and Maintenance



Before

Fugitive dust caused issues with safety and efficiency.



After

Extreme Dust Control improvements after installation of the MaxZone Modular Skirtboard System.



Before



After

Article

Steel Production Dust Control & Suppression: Make Material Flow Even Better for your Steel

Those in the steel industry know that competing in a global market requires reliable, steady production. To achieve that excellence, your plant must supply superior products and services without delays or complications.

Manufacturing steel places high demands on your conveyor systems. With maximum flow and minimal spillage and dust, belts have to move iron ore, coal/coke, hot sinter, and limestone/dolomite. Just one snag can halt operations and create safety hazards. Dust from open piles, vehicle traffic, and open terrain can cause problems as well.

At the same time, you need to satisfy stricter environmental standards for dust from loading/unloading, storage yards, and vehicular traffic.

Dust and Spillage Reduction at Steel Plants

Specialized support is key to your continued success in steel production. Benetech, Inc. provides the engineered chute transfer system conveyor belt products and solutions that keep the steel industry producing at full capacity.

As a steel professional, you're always on alert for spillage and fugitive dust, which wear down your conveyor belts. In addition, worn-out belt components such as cleaners, idlers, trackers, and plows further threaten operations and prevent the belt from achieving its design capabilities.

Benetech's conveyor upgrades for material handling dust control ensure greater output, less maintenance, and a safer, cleaner operation. Just recently, a South American steel plant was fighting daily battles with spillage and dust in two mill areas. The problem affected both the working environment and material handling operations. In addition, the plant's conveyor system was hard to maintain, leading to rising labor costs.

After analyzing the conveyor system, Benetech designed, supplied, and installed the MaxZone® modular skirtboard system and new advanced transfer chutes for the two mill areas. The loading chutes now decrease dust and spillage by guiding material flow in the direction of belt travel. The upgrades have resulted in greater plant safety and operating efficiency and reduced housekeeping expenses and effort.

Challenges to Metalworking Dust Control

Sustaining high performance in the steel industry requires you to maintain a steady material flow, including unloading, storage, sizing, coking, and sintering operations. Whether spillage, carryback, or belt mistracking, just one snag can halt operations and create safety issues. In addition, dust from open piles, vehicle traffic, and dust from open terrain can also cause problems.

As a steel-mill operator, you're especially alert for spillage and fugitive dust, which also wear down conveyor belts. In addition, worn-out conveyor belt components such as cleaners, idlers, trackers, and ploughs further threaten operations and prevent the belt from achieving its design capabilities.

What Is Your Steelmaking Dust Control Challenge?

While most steel plants will face common barriers concerning dust control, each will also have distinct variables underlying the problem. Whatever your steelmaking dust control challenge might be, Benetech's specialists can assess your system and pinpoint the areas that will return you to full capacity in a safer, less costly environment.



Before



After

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