

# REDUCE DUST

Lower Risk & Increase Safety

# PREVENT SPILLAGE

Reduce Clean Up & Transfer Cost

# **IMPROVE MATERIAL FLOW**

Enhance Productivity & Earnings

# **ENSURE COMPLIANCE**

OSHA - MSHA - EPA - NFPA



www.BenetechGlobal.com

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# BENETECH

# Company Overview

Established in 1983, Benetech quickly became respected as the **premier dust control** provider in the United States. As client relationships grew, our expertise was also called upon to handle a variety of **bulk material handling** issues.

This progression drove the development of a complete line of material handling products and services. Through acquisitions and the building of "best-in-class" products for conveyor components, dust suppression, advanced transfer systems, dust collection, and load zone systems, Benetech became the only EPC with in-house engineering, equipment, manufacturing, research, chemical production, and field service capabilities.

Today, with locations in multiple countries, Benetech is respected around the world, offering comprehensive, performance-based bulk material handling solutions. Our solutions are designed to comply with standards and guidelines enforced by OSHA, EPA, MSHA, and other domestic and international governing bodies.

We look forward to providing practical, innovative, and effective solutions for all your bulk handling needs and issues.

Ron Pircon, President of Benetech

# INDUSTRIES WE SERVE

- Aggregates
- Biomass
- Cement & Concrete
- Coal-Fired Power
- Fertilizer
- Glass
- Grain

- Kaolin & Clav
- Ports & Terminals
- Pulp & Paper
- Recycling
- Sawmills & Planing Mills
- Steel

# **BULK MATERIALS WE HANDLE**

- Lime & Gypsum
- Potash, Soda, & Borate
- Iron Ore
- Pet Coke
- Silica Dust
- Trona
- Coal

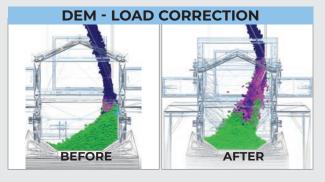
- Industrial Sand
- Crushed Granite & Limestone
- Kaolin
- Wood & Lumber Byproducts
- Other Materials

# Proven Technologies to Solve Material Flow Challenges

# MAXZONE® LOAD ZONE SYSTEM BEFORE AFTER











# MaxZone® Premium

# MODULAR LOAD ZONE SYSTEM

Benetech's patented MaxZone® Premium modular skirtboard seals your load zone to reduce airborne and fugitive dust, preventing product loss and spillage while improving material flow.

This system can be used to retrofit existing systems to enhance performance as an economical solution for sealing and containing your load zone.

With the system's modular design, replacing components can be done without special permits or extended shutdowns. Installation is simple and affordable, and little to no modification is required. Full install, partial install, or on-site management are available.

# MAXZONE® PREMIUM INCLUDES:

- Skirtboard Panels
- XN Liner® Wearliners
- Quick-Release Clamps
- Belt Skirting
- Peaked or Flat Hoods
- Dust Tight Inspection Doors
- Dust Curtains
- Tailbox

# MaxZone® Standard

# AN ECONOMICAL SOLUTION

Benetech's patented MaxZone® Standard modular skirtboard is the newest addition to our MaxZone® Series that provides a more economic solution.

When the material and application require it, this cost-effective containment system solves dust and spillage issues. With optional features that can be tailored to your needs, we have solutions to keep operations clean, safe, and efficient.

# MAXZONE® STANDARD INCLUDES:

- Skirtboard Panels
- XN Liner® Wearliners
- Quick-Release Clamps
- Belt Skirting
- Flat Hoods

- Dust Tight Inspection Doors
- Dust Curtains
- Tailbox

# **MAXZONE® FEATURES & BENEFITS**

- Minimum downtime for installation
- Full install, partial install, or on-site management available
- Minimal to no modification necessary
- Skirting seal options available
- Inspection door options available

# MaxZone Plus®

# LOADING RE-ALIGNMENT

Improper or off-center loading can lead to excessive spillage and dust leading to mistracking belts, making motors work harder, and creating safety issues.

Although these problems should be addressed, time and budget constraints do not always allow for an engineered load zone chute replacement. Benetech has developed a low-cost solution to combat off-center conveyor loading without costly chute redesign.

The MaxZone® Plus system has adjustable side kicker plates and a rear deflector that move material forward onto the conveyor belt to center load the material correctly for a smoother transition onto the moving belt. Removable side panels accommodate precise configuration and can be installed easily into an existing MaxZone® or retrofitted to other containment systems.

# Features & Benefits

- Adjustable side kicker plates and a rear deflector improve center loading of material
- Removable side panels allow for height adjustment based on load chute needs
- Greatly minimizes dust and spillage from load zones
- Compatible with Benetech's XN Liner®





Off-Center Loading



Center Loading With MaxZone Plus®



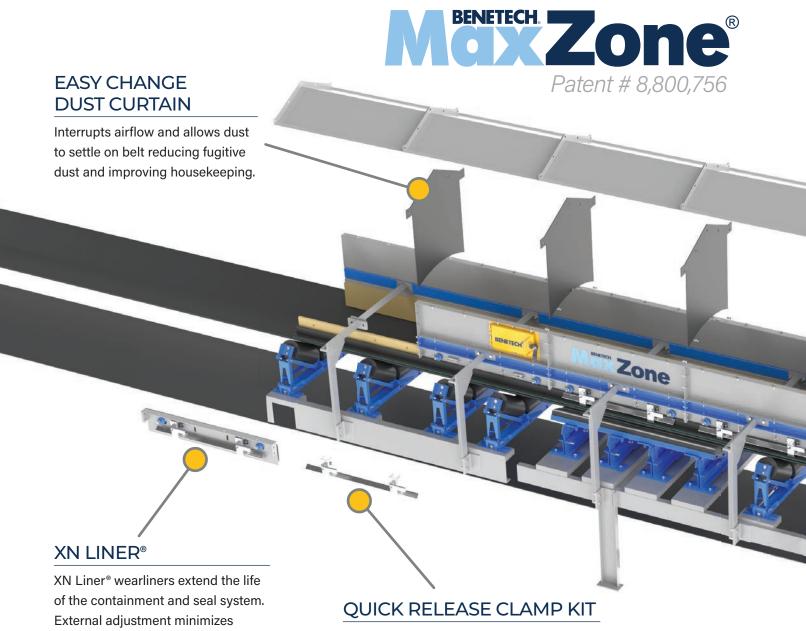
The Self-Cleaning Conveyor Capsule (SC3®) conquers loadzone dust and spillage through a fully enclosed, self-cleaning conveyor system.

The SC3® system uses dust-tight inspection doors that are easy-to-access with lubricated hinges and corrosion-resistant surface coatings.

Dust inside the enclosure is washed down with fine spray on a return pan as necessary to remove any particulate accumulation. That material can then be disposed of with normal wastewater disposal. No fan or outside air source is required.

#### Features & Benefits

- Fully-enclosed, self-cleaning conveyor
- Built-in inspection doors with lubricated hinges
- Corrosion-resistant surface coatings
- No roller-to-pan transitions required
- No internal ledges for the dust to buildup
- Exceeds environmental, safety, and regulatory compliance guidelines



Quick release clamps plus side skirt seals contain dust & material, eliminate spillage, and reduce clean up. Installation and maintenance is quick and easy.

# **EVERY APPLICATION IS DIFFERENT.**

Our application engineers can assess your load zone(s) and determine the best solution for you. Our goal is to provide the most effective containment system for your specific needs.

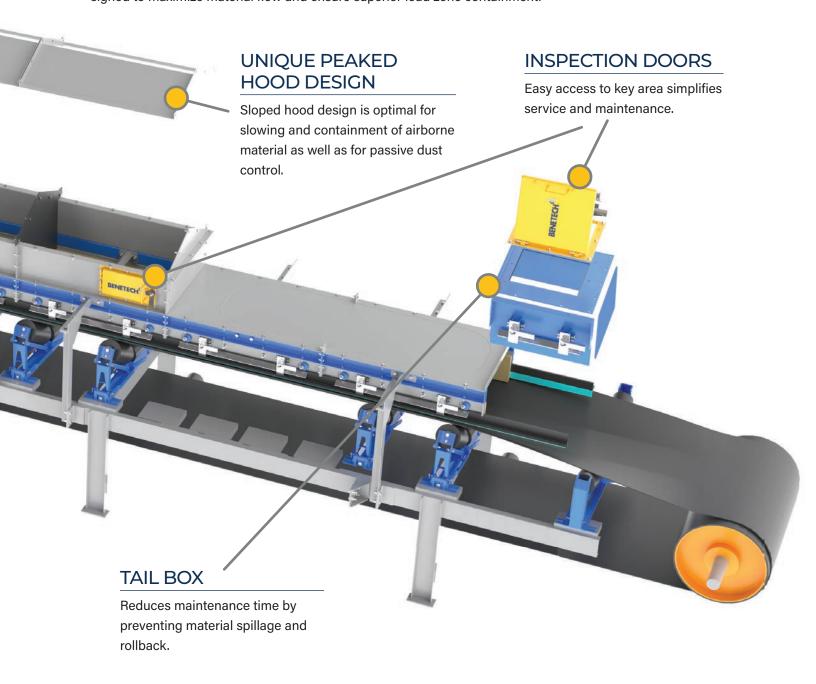
downtime and eliminates the need

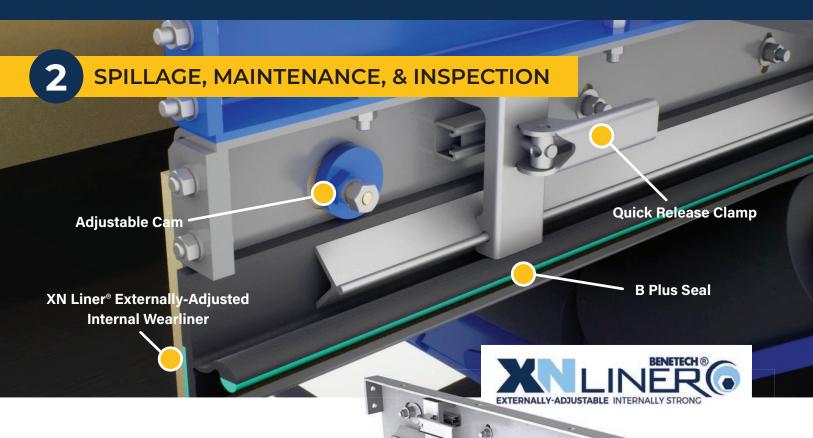
for confined space entry.

# **Modular Skirtboard System**

Optimum productivity is impossible to attain without the proper load zone containment in place. Damaged belts, material spillage, and increased downtime hurt your efficiency and make the job of moving material more difficult.

Based on extensive knowledge and hands-on experience, the MaxZone® system has been designed to maximize material flow and ensure superior load zone containment.





# XN Liner® Wearliners

The XN Liner® is placed in the conventional position inside the skirtboard while the adjusting mechanism can be accessed from the outside.

This patented technology gives you instant advantages, including no confined entry requirements and easy visible cam adjustment with immediate performance results.

The XN Liner® is available in straight or deflector style with a standard thickness of 1/4 inch and factory-welded mounting studs for ease of installation. Custom lengths and thicknesses also are available.

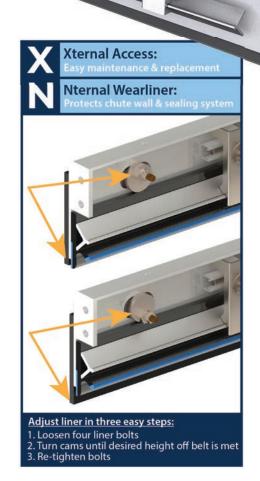
#### Features & Benefits

- No confined entry requirements
- Easy visible adjustments
- Instant performance improvement
- Reduces early wear and erosion of skirt rubber
- Extends life of usable wearliners
- No more cutting/welding
- Available in straight or defector style
- Standard 1/4-in. thickness

# **Wearliner Material Options**

- AR400 (standard)
- UHMW
- Stainless

- Chromium Carbide
- Rubber



# **Skirtboard Systems**

# **QUICK RELEASE CLAMPS**

- Simple maintenance without the use of tools
- Skirting adjustments and replacements are quick and easy
- Comes in standard 4-ft sections

#### EASY FOUR STEP INSTALLATION PROCESS

- 1. Weld channel strut to skirtboard
- 2. Slide clamp through channel strut
- 3. Slide on aluminum angle brackets
- 4. Twist clamps to tighten, then pull down to lock



# XN Liner® Premium

- (1) 4-ft. XN Liner® skirt clamp panel
- (1) 1/4" AR400 studded liner
- (1) Clamp Kit Assembly —
   Includes (1) 4-ft. aluminum bar, (2) swivel handles
- (2) Cams
- (1) 2" X 2" mating angle to attach to XN Liner skirt clamp panel and existing structure
- Hardware

# XN Liner® Standard

- (1) 6-ft. XN Liner® skirt clamp panel
- (1) 1/4" AR400 studded liner
- (1) Clamp Kit Assembly Includes (1) 6-ft. aluminum bar, (3) swivel handles
- (2) Cams
- (1) 2" X 2" mating angle to attach to XN Liner skirt clamp panel and existing structure
- Hardware

# SKIRTING SEALS



#### ■ B Seal

Simple, but superior seal.



#### ■ B-Plus Seal

Polyurethane provides lower friction than rubber, lasting twice as long.



# ■ Classic Plus Seal

Exceptional sealing when the distance to belt edge is minimal.

# QuickSkirt™

#### FOR STACKING CONVEYORS

Benetech's patent-pending QuickSkirt™ solves problems associated with skirting replacement on stacking conveyors.

Maintenance personnel often find it extremely difficult to access nuts, bolts, and/or screws due to poor load zone design.

Additionally, conveyors are stacked on top of each other when being transported, making upper conveyor components elevated above the frame much too restricted to access.

As a result, old skirting doesn't get replaced as often as it should causing excessive material spillage and damage to conveyors.

# HINGED PANELS & QUICK CLAMPS

The patent-pending QuickSkirt<sup>™</sup> solves these problems with its innovative design.

A flip-up hinged panel system using Benetech's quick-release clamps provide tool-free access to efficiently remove old or damaged rubber skirting in 10 minutes or less.

After a simple 2-hr. install of QuickSkirt, skirting replacement time plummets from 1.5 hours to just 10 minutes. That's a 90% savings in time & labor from just one install!





# **FEATURES & BENEFITS**

- Replace old skirting in 10 min. or less
- Incredible 90% reduction in maintenance time!
- Tool-free access No bolts, nuts, or screws
- Improves safety Reduces potential hand, arm, and back injuries





# **Inspection Doors**

# EASY ACCESS FOR INSPECTION AND MAINTENANCE

Benetech's inspection doors have a unique design that enables full access for service and maintenance while providing a dust-tight seal. Benetech's doors are a proven technology that helps minimize airborne dust and spillage while providing easy access. Available in mild steel or stainless steel options.









#### COMMON DOOR SIZES

- 12" x 12"
- 18" x 24"
- 12" x 18"
- 24" x 24"
- 14" x 7"
- 18" x 18"
- Custom sizes available

# PREMIUM PLUS INSPECTION DOOR

- Best performance and savings
- Greased fittings on pinned hinges
- "Never seize" latches
- Patented design
- Dust-tight seal
- Pan, wearliner, & screen options
- Custom sizes available

# PREMIUM INSPECTION DOOR

- Incorporates the patented features of the Premium Plus door, but at a reduced price
- "Never seize" latches
- Dust-tight seal
- Pan & screen options
- Custom sizes available

# STANDARD INSPECTION DOOR

- Most price competitive door for basic performance
- Dust-tight seal
- Low-profile design
- Screen optional
- Custom sizes available
- Pan NOT available

# **Specialty Inspection Doors**

# FOR UNIQUE PROBLEMS & NEEDS

Specialty inspection doors are custom-designed to fit unique situations or specific needs, such as screw conveyors and transfer chutes, to visually inspect and/or service conveyor equipment.

- Curved doors
- Double doors
- Doors with top or bottom hinges
- Plug chute sensor doors
- Stainless steel doors
- Galvanized doors
- Doors with viewing windows

# **AVAILABLE OPTIONS**

- Deflector pan
- Mild steel or stainless steel
- Single or double access doors
- Modified to mount plug chute sensor
- High temperature seal (up to 350°)
- Door screens









# **Full-Sized Access Doors**

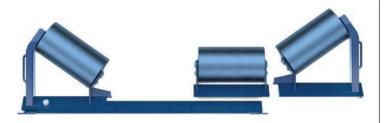
#### MAN-SIZED ENTRANCES

- Full-sized entrance doors
- Grease fitting on pinned hinges for no play or locking up
- Door seals are hidden in a protected groove for longlasting service
- Custom-sized access door styles to meet your needs
- Mild or stainless steel options





# **Carrying & Troughing Idlers**



# SIMPLE SLIDE IDLERS: STEEL OR IMPACT

Benetech's Simple Slide Idlers and frames slide into place without the need to remove adjacent idlers, re-



sulting in ideal serviceability and improved safety.

In addition, the compact size of the frames allows for placement in tight spaces, assuring that you are getting the belt support you need.

# Features & Benefits

- Easy installation and service
- Improved safety
- No need to raise belt or remove adjacent idlers to service or replace
- Roller frames only need 8" (200mm) of width when using 6" (150mm) rollers
- Available in 4, 5, 6, or 7 inch rolls
- CEMA rating B, C, D, E, or F
- Standard or wide base frames



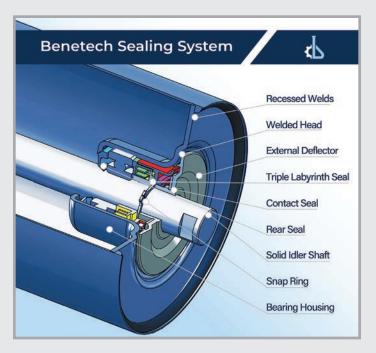
# **DROP & SLIDE IDLERS:** STEEL OR IMPACT

Benetech's patented Drop & Slide Idlers incorporate a retractable side support roller unit that is designed

to provide access from a conveyor's serviceable side. When in a retracted position, the roller unit simply slides out from underneath the existing conveyor belt allowing for easy roller inspection, maintenance, or replacement.

# Features & Benefits

- Patent #11919719
- One-sided serviceability
- Great for constricted or partially blocked conveyor systems, such as, next to a wall or catwalk
- Most commonly placed in transfer point or load zone areas, but can be used anywhere on the carrying side of the conveyor belt
- No need to raise belt or remove adjacent idlers to service or replace
- Available in 4, 5, 6, or 7 inch rolls
- CEMA rating B, C, D, E, or F
- Standard or wide base frames



# **Roller Sealing System**

# TRIPLE LABYRINTH SEALING

Benetech's triple labyrinth sealing system protects the roller from all types of contaminants. The sealing system consists of a vertical triple labyrinth seal protecting against dust, a male and female labyrinth seal protecting against water and moisture, and a metal seal against material with particle size greater than 0.0625 in.

- Recessed Welds Protects the belt from wear with the full thickness of the shell.
- Welded Head Specially formed disc designed to shed water, house inner workings, and create great roller concentricity.
- External Deflector Corrosion and impact-resistant first line of defense. Uses centrifugal force to shed water and abrasive material.
- Contact Seal Protects against moisture, stone, and fine materials.
- **Solid Idler Shaft** Manufactured with 1045 cold-rolled steel and slotted shaft to secure roller to the frame.
- Triple Labyrinth Seal Third line of defense for the bearing. Creates a longer path way for harmful material to the bearing.
- Snap Ring Locks the seals and bearing in a stationary position to reduce wear.
- Bearing Housing As the last line of defense, the housing creates an air-tight seal for all working parts and ensures perfect concentricity of all parts.



# FIXED FRAME IDLERS: STEEL & IMPACT

Benetech's troughing idlers are on the carrying side of a troughed conveyor belt.

- · Fits standard belt widths
- Troughing angles 20, 35, or 45 degrees
- CEMA rating B, C, D, E, or F



Designed to meet CEMA standards and available in different belt widths.

- Available with 1.5", 4.5", or 7" drop brackets
- CEMA rating B, C, D, or E



# **ROLLERS: STEEL & IMPACT**

Designed with a triple labyrinth seal, Benetech's rollers have advanced sealing protection with long-life bearings that never require re-greasing. Designed in accordance with all CEMA standards.

- Fits standard belt widths
- CEMA rating B, C, D, E, or F

# **Specialty Return Idlers**



# SIMPLE SLIDE FLAT CARRYING IDLER

Simple Slide Flat Carrying Idlers allow for safe and simple installation and maintenance, while providing optimal belt support for the top carry side of the belt. The compact size of the frame allows for easy replacement.

- Single roller to carry belt on the flat top side of the belt
- Capable of servicing from either side of the belt by releasing two (2) bolts to remove roller cartridge
- Great for areas to inspect the belt making maintenance and visibility easier



# SIMPLE SLIDE RETURN

When access is limited, Benetech's Simple Slide Return allows for safe installation and removal of the roller from one side of the belt. One person can easily replace a single roller, or multiple rollers, in tight places thanks to the frame assembly's unique design.

- Single roller to carry back, or multiple rollers on larger belt width conveyors for safe removal on the return side of the belt
- Single roller return frame, with one cartridge to release from the frame. Or for larger belt widths, rollers can be broken down into smaller two or three roller cartridges for easier removal and carrying
- Makes servicing easy from cat walks, restricted areas, or incline conveyors

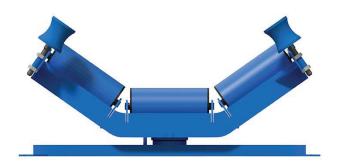
# **Trainers**



# RETURN TRAINERS

Benetech's Return Trainers are self-aligning return idlers that correct excessive forces on conveyor belts and heavy loads in order to keep material on the belt.

- Ensures belt is consistently in position to track correctly
- Can be used in tracking of both return side in reversible conveyor belts and high-load conveyor belts slow moving conveyor belts
- Single pivot bearing includes vertical guide rolls which activate the slowing and reduced friction in misguided belts
- Rated for every 50 feet of the belt to train belt properly



# TROUGHING TRAINERS

Benetech's Troughing Trainers are designed to maintain troughing side alignment for single direction conveyors. The swiveling action of the trainer's central axis automatically realigns the belt. The vertical guide rolls actively slow mistracking and reduce friction of misguided belts.

- Single bearing pivot on the bottom of the frame for guiding the belt
- Rated for every 50 feet of the belt to train belt properly
- Automatically maintains alignment on one-way or reversible belt conveyors

# **Warrior Impact Beds**

# HEAVY BULK HANDLING

Belt support is a critical component when conveying heavy bulk materials. The Warrior Impact Bed is designed to lie beneath the load zone where the most abusive impact occurs. It cradles the belt and provides stability and shock absorption to prevent spillage and minimize premature belt wear.

#### **BENEFITS**

- Durable steel frame is designed to handle heavy bulk material at the load zone
- Rubber bars topped with polyurethane layer greatly reduce friction with conveyor belt and absorb impact to protect conveyor belt
- Bar change-outs are quick, keeping downtime to a minimum

#### **FEATURES**

- 4-ft sections are standard; other options available
- Troughing angles: adjustable to 20, 35, or 45 degrees
- CEMA rating B, C, D, E, or F (rollers only)

# **IMPACT BED**



# STEEL ROLL & GUIDE BED



# IMPACT ROLL & GUIDE BED





# **Support & Seal Beds**

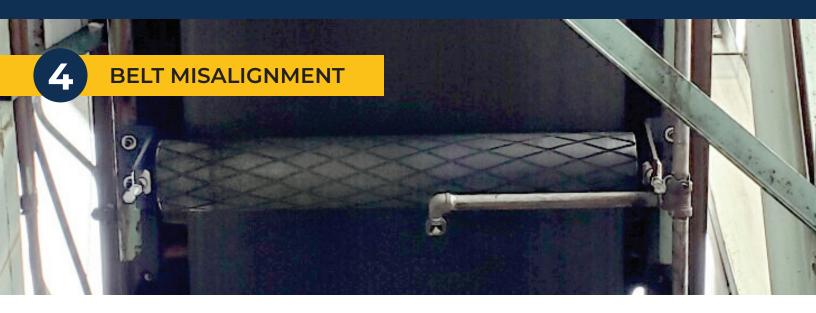
#### CONTINUOUS EFFECTIVE SEALING

Benetech's Support & Seal Bed is designed to fully support the conveyor belt in areas outside of impact zones, particularly along the edges of the belt where it is most essential.

The bed ensures continuous effective sealing between the belt and skirting to eliminate material spillage and prevent belt sag, thereby increasing belt life and seal condition.

#### **FEATURES & BENEFITS**

- Light to medium duty outside of impact area
- Improves conveyor belt condition and lifespan
- 4-ft. assemblies available for 24-60 in, belt widths
- Available with steel CEMA C or D rollers, in 5 in. or 6-in. diameters
- 2 bars/side for belts 24-36 in.
- 3 bars/side for belts 42-60 in.
- Available in any trough angle



# **MaxTrackers**

# CORRECTING BELT MISALIGNMENT

Designed for tough mining industry applications, the Benetech Trackers respond instantly to the misalignment of the belt without any special modifications to the structure. Properly located, the trackers require no maintenance and fit into standard drop brackets.

# SINGLE DIRECTION RETURN MAXTRACKER

- For single direction conveyor belts
- Belt widths: 18" 96"

# TROUGHING MAXTRACKER

- Self supporting structure
- Customized for each application
- Belt widths: 18" 96"
- Bolt-together design no welding or cutting required
- Standard-duty and heavy-duty options available
- Heavy-duty steel construction



# REVERSIBLE RETURN MAXTRACKER

- For dual direction conveyor belts
- Belt widths: 18" 96"







# HARDER, STIFFER URETHANE FORMULATION

Provides cleaning efficiency and extended wear-life of a metal blade without the disadvantages.

#### **FLEX ARCS**

Provides blade flexibility for better belt contact, higher wear resistances and lower friction.

# RETROFITS TO COMPETITIVE BRANDS

Sizes available to retrofit any major brand cleaner with the benefits of the AdvantEdge™ blade.

# **WAVE PROFILE**

Ensures a variable attack angle to prevent tip bull-nosing and smooths out pressure changes from the tensioner.

**Visual Wear Indication:** 25% / 50% / 75% / 100%.

#### WORN OUT BLADE CHECK

When the bubbles are gone, the blade is ready to change out. This patented design uses more of the blade's urethane than any blade on the market.

Results: Less waste, less maintenance

#### **WEAR LENGTH**

Our centerline wear path is longer than the competition.

Longer life line = Longer life

# **Retrofit Blades**

We use only premium urethane resins along with specific additives to achieve a superior blade product. Our replacement blades are specifically engineered to eliminate carryback by removing debris from the belt surface.

They are field tested and proven to withstand the most severe conveying environments.

# Our AdvantEdge blade system will match any competitors' blades:

- Arch Gordon Saber
- Argonics Raptor
- ASGCO Skalper IV
- Flexco Conshear
- I lexco Collisilea
- Martin MD QC1
- Martin HD QC1
- Martin Standard QC1
- Martin Pit Viper
- Superior Exterra

# **Primary Cleaners**

Most head pulleys are not exactly round and have a slight wobble. Benetech belt cleaners have the flexibility to account for this and can adapt to most substances on the belt. Our blade tip stays in constant contact with the belt, increasing the cleaning effectiveness of the blade.

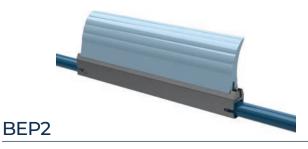
Competitors' flexibility is built into their blades by starting the tip of the blades thinner and getting thicker toward the bottom of the usable blade. Our unique wave profile keeps a sharp edge on the blade throughout the blade's life. As a result, the cleaning edge consistently helps with cleaning efficiency.



The BEP1's compact modular design mounts easily in tight chute applications and can be positioned on the head pulley in a range of locations. The unique wave profile allows for a varying attack angle that reduces blade-edge bull-nosing. Can be retrofitted to other brands.

Belt Speed: 1000 ft/min maximum

Tensioners: Rosta, Spring, Pneumatic



BEP2 is a large (6" x 13"), heavy-duty urethane conveyor belt scraper blade that individually contours against the belt for steady blade-to-belt pressure and superior cleaning. Its longer blade life decreases change-outs and reduces replacement costs.

Heavy Duty, 13" Blade Height x 6" Wide

Belt Speed: 1200 ft/min maximum

Tensioner: Spring

# **Secondary Cleaners**

Secondary belt cleaners are typically installed immediately after the belt leaves contact with the drive pulley. This keeps the material removed by the secondary belt cleaner in the dribble chute area of the transfer point chute work, where it can still be reintroduced back into the main flow of material.



The BES1's design of one blade makes for quick blade replacement. With no spaces between blades, the uni-blade conforms easily to irregularities in the belt and minor belt cupping.

With a simple tensioning system, the Dual Rosta Arm tensioner allows clips to pass through as long as whatever is on the belt isn't protruding excessively high. Simple linear tensioning by a threaded rod is tensioned once for the blade's life.

• Excellent for cupped or worn belts

Blade Options: Rubber, Tungsten

Belt Speed: 1000 ft/min. maximum

Tensioners: Rosta, Pneumatic



Individual blades adapt to worn belts and allow belt clips to pass through. The high-efficiency blades have superior wear-resistance and maintain blade-to-belt contact. Double tensioning equipment gives better pressure distribution. Ideal for use on vulcanized or spliced belts.

Uses overlapping blades for efficient scraping

Blade Options: Tungsten, Ceramic

Belt Speed: 1200 ft/min. maximum

• Tensioners: Rosta, Pneumatic

# **Blade Types**

# STANDARD -**BABY BLUE**

- Example Materials: Coke, Coal, Steel/Ore
- Appropriate for 90% of applications
- Temperature Rating: -20° to 160°F (-30° to 70°C)



# CHEMICAL RESISTANT -**NAVY BLUE**

- Example Materials: Limestone
- Temperature Rating: -40° to 160°F (-40° to 70°C)



# **HIGH TEMPERATURE -HOT PINK**

- Example Materials: Clinker
- Temperature Rating (Continuous): -40° to 375°F (-40° to 190°C)
- Intermittent temperatures up to 450°F (232°C)



# **ABRASION RESISTANT -YELLOW**

- Example Materials: Aggregate, Rock, Stone, Gravel, Dry Sand, Glass, Wood Chips
- Quarry-line
- Temperature Rating: -20° to 160°F (-40° to 70°C)



# **Belt Cleaner Tensioners**

### **ROSTA TENSIONER**

- Self-contained tensioner
- Easy to set up at installation
- Simple to re-tension
- Provides consistent cleaning pressure as the blade wear



# **SPRING TENSIONER**

- Provides consistent force across the width of blades
- Reduces the need for frequent blade re-tensioning
- Unaffected by extreme temperatures



# SELF-ADJUSTING PNEUMATIC **TENSIONER**

- Maintains precise and consistent tensioning on the blade, resulting in a constant cleaning pressure throughout the entire lifespan of the blade
- Automated via the control panel
- Reduces maintenance hours and labor often required to maintain optimum blade position and pressure with other tensioner types
- Extends life of both the belt and the cleaner





# **Specialty Cleaners**

# **DIAGONAL PLOW**

- Can discharge to either side of the conveyor
- Uses rubber scraper blades
- Endures even the harshest conditions
- Includes double steel cables for belt protection

# **V-PLOW**

- 4" tall rubber blade with easy bolt-in blade replacement ability
- Attaches to the mounting pole at two points with a third point connected to a height-adjustment arm for fine-tuning installation
- Includes wire safety cable for belt protection



# BENETECH

# **WASH BOX**

Benetech's Wash Box is designed to provide cleaning efficiency by washing and cleaning carry-back material from the conveyor belt.

As soon as the equipment enters the cleaning system, the belt passes through the spray nozzles to moisten all residual material.

Internal secondary cleaners remove excess material and discharge waste through the funnel drainage basins. Rollers remove excess water and help dry the belt before exiting the wash box.

- Stainless steel construction
- Utilizes high-pressure spray nozzles for removing waste
- Internal rollers remove excess water and help dry the belt



# MOTORIZED BRUSH CLEANER

- Rubber bristles remove any residual material on the belt, even in hard-to-reach recessed areas
- Brush rotates only when the belt is moving and the motor turns the brush opposite the belt direction for optimal cleaning
- Cleaner bar makes the assembly self-cleaning
- Installed with a 1HP or 2HP motor, depending on application
- In-line drive shaft and cleaner bar design allow for easier sealing when installed in an enclosure



# **Tool-Free Conveyor Covers**

CORROSION-FREE, ENVIRONMENTALLY-FRIENDLY

Tool-Free Conveyor Belt Covers help protect the conveyor belt and components year-round from elements of sun, wind, rain, and snow. The necessity to protect belt conveyors from the weather, volatile characteristics of the conveyed material, or the type of plant that is in operation, this includes operating in extreme temperatures or turbulent winds that move the conveyor belt off-center from its natural position. These types of severe issues could cause significant loss of conveyed material.

#### Features & Benefits

- Protects belt and components from elements
- Increase lifespan of the belt
- · Reduces dust and noise
- Transparent covers at various points along the line provide easy visual inspection of conveyor
- Tool-free maintenance
- Anti-seize latches
- Open from both sides
- Corrosion-free working hardware

# **HOOPS & COVERS**

- Galvanized or stainless steel hoops
- Polycarbonate (clear) or HDPE (white) covers
- Full, 3/4, or 1/2 covers in standard 4-ft sections

# **CORROSION-FREE LATCHES**

- Anti-seize latches
- Accessible from both sides of the conveyor
- Raise cover by removing latches & clips



# **Belt Safety**

Self-supporting guards are designed for a variety of applications, including guard conveyor tail sections. Personnel at bulk material handling plants spend notable time near moving mechanical parts and material flow. Conveyor guarding helps protect workers from moving parts and pinch points on the conveyor, especially around tail-pulley sections and gravity take-ups.

# **CONVEYOR GUARDING**

- Simple latches for access when necessary
- Safety yellow coating
- Customizable sizes for all applications

# **RETURN IDLER BASKETS & GUARDS**

- · Easy to install
- Self-supporting structure
- · Customized for each application
- Bolt-together design No welding or cutting required
- Heavy-duty steel construction







# **Clean Sweep AC - Material Flow System**

ELIMINATES BUILD-UP & KEEPS MATERIAL FREE-FLOWING

Using standard plant compressed air at 80-100 psi, the Clean Sweep Air Control system proactively removes buildup of dry, wet, frozen, or sticky materials from the walls of chutes, bins, hoppers, silos, and bunkers to avoid pluggage conditions.

The loss of material flow due to pluggage is virtually eliminated by installing Clean Sweep's correctly-positioned nozzles. The nozzles fire automatically and unsupervised — in a predetermined order and at regular intervals — without interfering with normal material handling operations.

Each nozzle is supplied with a precise burst of air through a quick open/close air-operated solenoid as compressed air is delivered sequentially to the nozzles. This process prevents material to crust or layer, dislodging and breaking up any

potential accumulations, so it can be easily carried away by gravity and flowing material.

# Features & Benefits

- Systematically dislodges buildup of wet, frozen, or sticky materials from walls of chutes, bins, hoppers, silos, and bunkers
- Each nozzle directs air 360° along the surface of the chute for a distance of approximately 2-3 feet
- Uses standard 80 to 100 psig (15 SCFM, 0.1 sec.) plant compressed air
- Operates on 120 VAC single-phase power
- Air tank and control station are accessible at ground level No need to install on chutes, silos, or bunkers
- Timing sequence and firing rates can be customized to accommodate various chute configurations



# **Engineered Transfer Chutes**

# FIXING THE PROBLEM AT THE SOURCE

Based on years of experience, Benetech's engineering department provides advanced engineering technologies, innovative solutions, and practical ideas that help eliminate problems, upgrade efficiency, improve safety, and ensure compliance with government regulations.

Our engineered Advanced Flow Transfer Chutes are designed and tested to perform in the most demanding applications. After evaluating your needs, our expert engineering chute team can design, fabricate, and install a customized material handling solution to your exact requirements. Common applications include unique transfer chutes for transfer towers, cascade conveyors, and post-crusher load zones.

By adeptly improving material flow issues, Benetech's engineered transfer chutes help prevent the generation of dust rather than just passively trying to control it.

# **Benefits to Engineered Chutes**

- Maximizes material throughput and ensures meeting of design flow requirements
- Minimizes spillage and airborne dust
- · Reduces turbulence and high-impact for longer chute liner life
- Reduces degradation of conveyed material
- Optimizes belt life due to reduced loading impact
- Provides longer intervals between service and maintenance

# TRANSFER CHUTE WEARLINERS

Benetech offers a complete line of wear-resistant materials to handle all of the impact and abrasion challenges of bulk material. Our years of material handling experience and technical expertise ensure the right solution for you — by providing wearliners for optimal protection and superior wear life.

# **Wearliner Material Options**

- Ceramic Tile
- Stainless Steel
- Chromium Carbide

- UHMW
- AR-400
- White Iron Castings

# Common Applications

- Chutes and hopper liners
- Fan housing liners
- Skirt liners
- Bunker liners
- Slider beds
- Screen plates
- Bucket liners

- Flop gate liners
- Fan cheek liners
- Storage bins
- Silo liners
- Wear strips
- Grizzly bars
- Truck bed strips







# **Discrete Element Method (DEM) Flow Analysis**

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

Benetech's highly trained and experienced chute engineers perform DEM chute designs in-house. All computer modeling 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.

Our expert Engineering, Procurement, and Construction (EPC) team will design, fabricate and install a custom material handling solution perfectly aligned with your requirements.

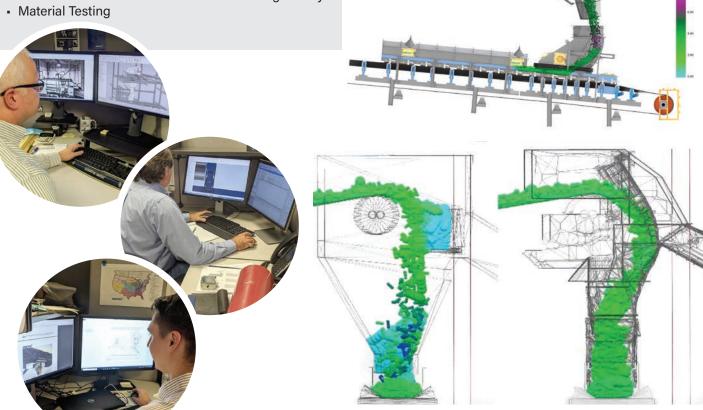
# **Our Turnkey Services**

- Scope Development
- Conceptual Design
- Engineered Solutions
- Fabrication
- Installation
- Startup Support
- System Inspection & Operation Training

# **Available DEM Tools**

- Inventor Modeling Software
- DEM

- Dust Testing
- Performance Testing
- Laser Scanning Surveys



# **Digital Scanning**

# **3D SCAN SERVICES**

Benetech 3D scan services provides field verification of existing systems. 3D laser scanning quickly and accurately captures the current conditions, and the technology allows for the data to be utilized with CAD systems.

3D laser scanning proves itself invaluable to the success of today's fast-paced and technically challenging projects. 3D laser scanning is accurate, from which our engineers create 2D drawings and 3D models for construction planning.

# **Benefits**

- Collects measurements accurately using 3D digital technology
- Saves time and money
- Accurate documentation of current conditions
- Reduces mechanical errors
- Imports directly into CAD Model for easy rendering



3D Scan of Existing Structure



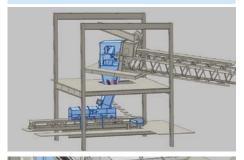


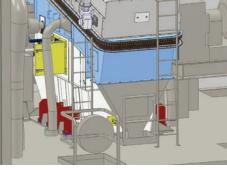
Rendering with New Chute Added





Final Design with Scan Turned Off









# MaxZone Safe+®

#### COMBATING SILICA DUST EXPOSURE

Benetech's MaxZone Safe+® is a powerful silica dust control system that significantly reduces fugitive airborne dust, specifically up to 93% of Respirable Crystalline Silica (RCS) dust.

The patent-pending MaxZone Safe+® is a synergistic combination of three Benetech technologies that effectively contain, filter, and agglomerate airborne silica dust:

- CONTAIN: Its foundation is the MaxZone® Modular Skirtboard System. The MaxZone® effectively contains and seals load zones—reducing fugitive dust and preventing product loss and spillage, while improving material flow.
- 2. FILTER: Installed at the tail end of the MaxZone is the Dustinator® Plus filtration unit. The Dustinator® Plus captures and filters a majority of the fugitive dust generated by the load zone.
- 3. AGGLOMERATE: Finally, the MiniPak completes the system by administering a brief pulse spray that chemically agglomerates any remaining airborne dust from the Dustinator® Plus before the material exits the containment area.

The MaxZone Safe+® was developed under a Research Collaboration Agreement with NIOSH (National Institute for Occupational Safety and Health) and designed to meet MSHA-compliance standards.



# **FEATURES & BENEFITS**

- Achieved up to 93% dust reduction in silica dust testing
- Developed under a Research Collaboration Agreement with NIOSH
- Designed to meet MSHA-compliance standards
- Captures a variety of fugitive dust particles, including fine silica dust



# **HOW THE MAXZONE SAFE+® WORKS**

The MaxZone Safe+® is a synergistic system of three Benetech technologies: (1) bulk material containment, (2) dry dust filtration, and (3) dust agglomeration.

- 1. First, the MaxZone® modular skirtboard system securely contains bulk material as it drops onto the load belt.
- 2. Second, mounted above the discharge end of the Max-Zone®, the Dustinator® Plus functions as a dry dust collection system. The system utilizes an air blower system with a conveyor run signal that generates a powerful vacuum using four (4) micron filters removing nearly all airborne dust. Pressure differential controls determine when filters are near a dust saturation level and automatically activates a self-purge cleaning cycle, continuing until the filters are clear. This purge cycle cleans the filters and discharges the material back onto the belt.
- 3. Third, just prior to the dry dust filter purge cycle, a solenoid valve on the MiniPak is activated. The MiniPak system administers a very brief burst of bio-degradable chemical binding agent during the purge cycle to agglomerate fine dust from the filter cleaning cycle, thereby removing up to 93% of silica dust emissions.
- 4. The entire system cleaning cycle repeats as required, to maintain control of airborne silica dust.



The MaxZone Safe+® is a synergistic system of bulk material containment, dry dust filtration, and fine dust agglomeration.



# **Dustinator® Dust** Filtration Unit

# PASSIVE SILICA DUST FILTRATION

Researchers at the National Institute for Occupational Safety and Health (NIOSH) have identified Respirable Crystalline Silica (RCS) as a particularly serious exposure risk to frac sand associated with hydraulic fracturing operations during oil and gas extraction.

Dustinator® is a weather-resistant, portable, self-purging dust filtration system that captures passive dust displacement using a group of four (4) filter elements housed inside a stainless steel unit.

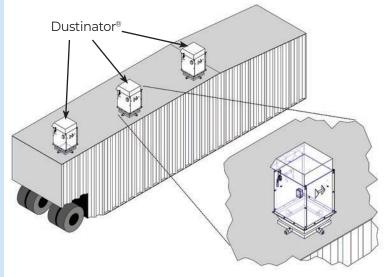
Preliminary results showed that mounting the Dustinator® dust filtration unit to a sand mover's thief hatch significantly reduces over 90% of dust emissions at hydraulic fracturing sites.

The Dustinator® offers the oil and gas industry a safer, more cost-effective method to reduce worker exposure to RCS on hydraulic fracturing sites that utilize sand movers.

#### **FEATURES & BENEFITS**

- Mounted on top of frac trucks
- Achieved over 90% dust reduction in silica dust testing
- Developed under a Research Collaboration Agreement with NIOSH
- Designed to meet MSHA-compliant standards
- Self-purging sequence pulses four independent filter cartridges
- Captures a variety of fugitive dust particles, including fine silica dust
- Can be retrofitted onto sand mover thief hatches
- Also available as an active unit with attached blower





Dustinator® Assembly on Top of Frac Tank





# **MiniPak**

# PORTABLE DUST SUPPRESSION UNIT

The MiniPak dust suppression system is a self-contained dust suppression unit that requires no electricity to operate and is driven using source water pressure.

The system allows personnel to apply non-hazardous, non-toxic, and biodegradable agents wherever dust suppression is needed at the facility, whether in the load zone or screen system.

MiniPak is extremely useful at fixed locations like conveyor belts, moving operations, or construction vehicles that generate a significant amount of dust.

# Features & Benefits

- Self-enclosed, portable unit; easily transportable
- Easy to install and operate
- One-person operation
- No power supply necessary driven by source water pressure
- Uses Benetech's non-corrosive, non-toxic, non-hazardous dust suppression agents; harmless to skin



# **BenePak**

#### **DUST SUPPRESSION + SUPPORT**

The BenePak Application System in its stainless steel fabricated enclosure utilizes an existing water system and chemical pump to apply Benetech's environmentally-friendly chemicals to conveyed materials.

The system provides a balanced flow of wet surfactant solution to the application points. Chemical rates are adjusted based on the water hardness, the amount of fines in the material, and the type of application.

Using material-on-belt detection and belt running signals, the BenePak system includes an "on-off" operation for performance test automated for permanent installation.

Set-up is simple and inexpensive. Maintenance is minimal, too — you can do it yourself in-house or request routine service from Benetech professionals.

#### **FEATURES & BENEFITS**

- Stainless steel fabricated enclosure protects water & chemical piping
- NEMA 4 control panel
- Equipment startup, personnel training, and support included
- System performance analysis
- Annual dust management reports



# CleanPak

# SELF-CONTAINED DUST SUPPRESSION

The CleanPak application system provides optimum results without expensive and complex equipment. Installation is simple and requires a low initial cost. Ongoing maintenance needs are minimal and can be done in-house or by Benetech professionals.

#### Features & Benefits

- System utilizes an existing water system and a single chemical pump to provide a balanced flow of dust suppression solution to the application points
- Chemical rates are adjusted based on water quality, amount of fines in the material stream, and type of application
- ON-OFF operation for performance test, automated for permanent installation using material on belt detection and belt running signals





# Pile & Haul Road Sealer

SEALER, STABILIZER, & EROSION CONTROL

Protects against rain and wind erosion and helps control fugitive dust from stock piles, haul roads/shoulders, and ash waste piles.

#### Features & Benefits

- Ecologically safe will not pollute underground water supply
- Mixes and cleans easily may utilize own equipment for application
- Excellent penetration characteristics for a thick, resilient, elastomeric film that creates a non-cracking crust.

#### Location

- Stockpile
- Haul Sealer
- Treated Material

- Storage stockpiles
- Haul road dust
- Construction sites

# Treated Material Examples

- Coal
- Coke
- Limestone
- Biomass

- Any material stored in piles for long lengths of time



# GreenTarp Pile Sealer

GreenTarp blends polymeric emulsion binding agents and recycled cellulosic products to help protect inactive piles and ground covers.

Non-toxic and non-corrosive, GreenTarp offers superior cohesion, durable water resistance, and reduced air/water ingress. With its environmentally friendly composition and distinctive color, it contributes to improved community relations.

First, the pile is compacted to prevent erosion and reduce oxygen that could cause spontaneous combustion. Then, GreenTarp batches are mixed on site and loaded into a hydroseeder for application of the pile's surface.

#### Features & Benefits

- Stabilizes in less than 48 hours
- Non-toxic, non corrosive
- Surface forms a crust which is resistant to shifting, sink failures, and material runoff/erosion
- Provides a rain-resistant, windproof surface that minimizes frozen material, oxidation, and inventory and energy loss
- Will not pollute groundwater
- Helps to ensure EPA compliance



**FORMS A** 

# **Chemical Solutions**



# **Foaming Series**

The Foaming Series is a low moisture addition foaming dust control agent recommended as a foamable wetting agent for strongly hydrophobic materials.

This product is recommended for use where low-moisture addition is desired, wetting of the product is sought, and the dust to be controlled is strongly hydrophobic in nature.

Typical application points include transfers, crushers, and screening operations to control airborne dust emissions at the transfer, along the conveyor run, and at the material processing location.

#### Location

Crushers

Conveyor Transfers

Feeders

# **Treated Material Examples**

- Lignite
- PRB
- Biomass
- Limestone

- Ash
- Most moisture sensitive materials



# Wetter Series

The Wetter Series is a concentrated blend used as a wetting agent to reduce dust levels occurring above and below ground in the mining, transportation, and processing materials.

A single application is effective through multiple transfer points in material handling systems.

# Location

- RCD
- Bottom Dump
- Open Hopper

# **Treated Material Examples**

- PRB
- Lignite
- Gravel
- Wood Chips
- Scrap Metal Recycling
- Taconite

- Biomass
- Petroleum & Metallurgical Coke
- Iron Ore
- Clinker





# **Residual Series**

The Residual Series provides excellent, long-term dust control for storage piles and is effective through multiple transfer points in material handling systems, as well as crusting agents to seal storage areas.

A cost-effective dust treatment chemical that controls airborne dust generated during the conveying process and minimizes fugitive dust problems associated with material stackout, stockpiles, and material moving equipment.

#### Location

· Long term (to pile)

# **Treated Material Examples**

- PRB
- Lignite
- Gravel
- Wood Chips
- Scrap Metal
- Recycling

- Taconite
- Biomass
- Petroleum & Metallurgical Coke
- Iron Ore



# Belt De-Icers & Freeze Conditioning Agents

Benetech's BT955++ chemical eliminates ice before it has the chance to build-up. It works effectively on all types of equipment, such as idlers, rollers, transfers, and switches. Apply it on entire conveying system to prevent ice forming before the freezing temperatures set in.

BT955++ is an environmentally-safe ice crystal modifier that has been formulated to reduce the freeze point and weaken the ice crystal matrix. By weakening the crystal structure, formed ice readily breaks apart to mitigate material slippage on conveyor belts.

#### Features & Benefits

- Diethylene glycol-based, no oils or chlorides
- Non-corrosive, non-hazardous, non-flammable
- Freezing point: good to -45° F (-43° C)
- Doesn't affect combustion properties of coal or ash fusion temperatures
- No mixing required
- Available in bulk tanks, totes (330 gallons), or nonreturnable 55-gallon drums

# **Benetech Chemicals**

Benetech has a selection of dust suppression chemicals for all types of bulk material needs. Our cost-effective chemicals are formulated to reduce dust levels with PRB, lignite, gravel, wood chips, scrap metal recycling, taconite, biomass, petroleum and metallurgical coke, iron ore, sinter, clinker, and other materials.

# **CHEMICAL FEATURES & BENEFITS**

- Requires less equipment at fewer application points
- · Cost-competitive agent
- Minimizes water addition
- Guaranteed to reduce airborne dust
- Environmentally-safe



# **Washdown Systems**

# IMPROVES SAFETY & EFFICIENCY

As an industry best practice and helping to avoid an OSHA compliance issue, a scheduled wash down of the material handling area is strongly recommended to remove fine dust buildup.

Benetech's Washdown Systems minimize water usage and integrate engineered drainage, curbing, and water shielding. Individual spray heads and nozzle arrangements are positioned strategically to thoroughly clean beam pockets, roof truss, walls, and floors. The entire system is then hydraulically balanced and zoned. Each zone can be manually activated or fully automated through PLC control.

## Features & Benefits

- Spray zones controlled manually or fully automated through PLC controls
- Integrated engineered drainage, curbing, and proper water shielding of equipment
- Minimized water usage while maximizing the effectiveness
- Increases plant safety by creating a cleaner work environment
- Reduces risk of fire and explosions
- Substantially lowers housekeeping labor
- Reduces worker injury due to inferior clean-up methods







# **Dust Collection Systems – Wet & Dry**

Dust collection system design for material handling applications requires specialized knowledge and equipment to ensure airborne dust is effectively captured at the hood, conveyed at proper velocities through the ductwork, and efficiently filtered from the collected air in the dust collector. Our dust collection engineers are specialized n dust control for all types of material handling applications.

Our team has several options that allow system customization to the needs for each application. These include both Wet Extraction and Dry Collection, each with benefits for specific applications, as the driver for collecting dust through customized hoods and ductwork systems.



# WET DUST EXTRACTION

Benetech's Wet Dust Extraction systems utilize an extractor with an integral fan that has various water sprays and mist collection systems to remove the wet dust from the airstream.

Our wet dust extraction solutions provide simplified maintenance engineering and lower installation costs in flexible custom packages.

# **DRY DUST COLLECTION**

Benetech's Dry Dust Collection systems utilize dry filters and separate fans to collect the dust. These can be large baghouse systems that utilize multiple sock-type filters to

collect dust, and use blowers or compressed air to clean the bags.

For more cost effective designs, collectors can use cartridge or envelope type filters. These collectors can have single or multiple hoods with interconnecting ductwork, or can be bin vents/insertable units that are set on top of enclosures (bins, silos, skirting systems, etc.) to collect dust at a localized generation point.

Filters can be customized for fine dusts, abrasive dusts, high temperatures, increased moisture, corrosive airstreams, or other special requirements.

Systems can also be integrated for challenges with combustible dust to maintain a safe operating system.

# **Dust Collection Assessments**

# BENETECH'S ASSESSMENT PROGRAMS

Controlling airborne dust is a requirement for the safety of personnel and the community around your facility. Keeping dust collection systems in proper operating condition is an essential element of airborne dust control.

Benetech offers several types of assessments to help keep the systems running at peak efficiency.

### **OPERATIONAL ASSESSMENT**

Benetech's Operational Assessment reviews the mechanics of a dust collection system. This is a maintenance check of the collector and its components, ensuring that mechanically the system is able to operate as designed.

Checks include review of solenoids/diaphragm valves, timer boards, compressed air supply, hopper/housing damage, rotary valves, filters, cages, and fans as examples. Deliverables include a simple picture report and itemized listing of suggested repairs and parts.

# **ROI DUST ASSESSMENT**

Benetech's ROI Dust Assessment Program provides site personnel a path for improved dust and spillage control focusing on REPAIR, OPTIMIZE, and IMPROVE methodologies.

- REPAIR assessment ensures the dust collection system is mechanically able to properly operate. Includes review of gauges, filter material/condition, solenoids, diaphragms, fan, ductwork condition, etc. Recommendations will also include services including specific maintenance tasks and system airflow balancing.
- OPTIMIZE assessment outlines improvements to the collection system to attain proper duct velocities, improved system design to ensure the dustiest areas are being addressed within the abilities of the existing collector and fan. Includes hood design, hood placement, ductwork velocities, and elimination of unnecessary/improper duct/hoods. This review can also include explosion protection evaluation when dealing with combustible dusts.
- **IMPROVE** assessment addresses shortcomings in the design of the dust collection system by offering other technologies to assist in keeping the material on the belt. Reviews technology including load zone improvements (skirting design, liners, seals, belt support, etc.) belt cleaners, belt tracking, return plows, and engineered access doors.

The goal of the ROI assessment is to ensure proper operation of the dust collection system, offering improvements as possible within the capabilities of the existing dust collection system, while providing additional cost-effective tools that can effectively support a dust and spillage control program.

This assessment is a visual, hands-on review of the system. No changes or alterations to the dust collection system will made during this review. Deliverables include detailed report with pictures, data, and recommendations to address the shortcomings of the system.



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To find your local Territory Sales Manager, visit BenetechGlobal.com/Sales-and-Support-USA/

