



# MultiDAC™ System

For Dense Phase Fly Ash Handling



# Fly Ash System

## MultiDAC Pressure System

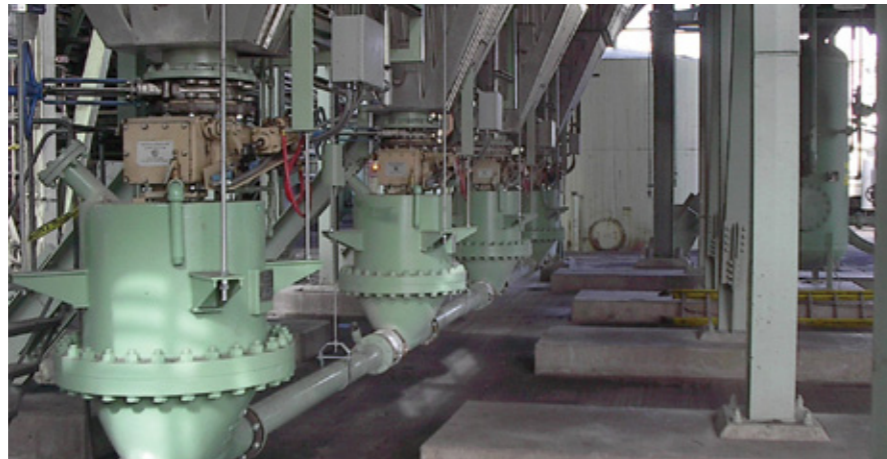
The MultiDAC™ fly ash handling system is a pneumatic conveyor designed for short distance applications with minimal headroom below the collection hoppers. The MultiDAC dense phase positive pressure system is an alternative technology to the NUVEYOR vacuum system, delivering higher capacity and performance advantages when conveying high density fly ash. Both systems from United Conveyor Corporation (UCC) are simple, economical and reliable.

The MultiDAC pressure system is designed to reduce both capital and operating costs for short distance conveying. The MultiDAC feeder has only one valve per hopper and its low conveying velocity reduces power consumption while minimizing pipe and elbow wear. With over 50 installations worldwide, the MultiDAC system delivers overall cost-effective performance and reliability.

### Dependable Operation

The MultiDAC positive pressure system offers a simple, economical solution for short distance conveying of fly ash.

- The feeder geometry size is calculated to minimize material hang-up and provide optimal flow into the conveying line
- Constant mass air flow provides stable system operation and reduced wear during purge cycles
- No outlet gates are required on the feeder
- UCC inlet gates and valves are designed specifically for ash handling applications and deliver long life, dependable service and easy maintenance



- LOW CAPITAL COST
- LOW HEADROOM REQUIRED
- LOW POWER CONSUMPTION

### The MultiDAC System Advantage

MultiDAC conveying systems have proven reliable for several types of fly ash including oil ash, oil shale fly ash and other powders like cement, hydrated lime, etc.

#### • Low Capital and Operating Costs

The MultiDAC system uses only one valve per hopper (no outlet valve required), small diameter carbon steel conveying line and a small bin vent filter on the silo or transfer vessel.

#### • Low Headroom

Lower headroom requirements compared to other pressure systems allow for easy maintenance and lower erection costs.

#### • Low Maintenance Cost

The controlled, low conveying velocity reduces component wear and power consumption, especially when conveying abrasive material.

### Typical System Capabilities

Maximum Distance*	450 m
Maximum Capacity*	130 TPH
Ash: Air Mass Ratio	25-60: 1
Air Velocity	180 - 800 m/min
Maximum Conveyor Line Pressure	20-50 psi
Maximum Prime Mover Pressure	50-100 psi

\*material characteristics affect distance and capacity

NUMBER OF INSTALLATIONS **50+**



# Fly Ash System

## Typical MultiDAC System Arrangement



### CONVEYING LINE

Conveying lines are carbon steel. High abrasion resistance is not required due to low conveying velocities. Channel-back elbows can be installed where the line changes direction for increased wear resistance.

### ISOLATION VALVE

Designed for open/closed service, valves provide pipeline isolation.



### CROSSOVER VALVE OPTIONS

Sheardisk Valves are used in high pressure systems. Knife Gate Valves are used in low pressure systems.

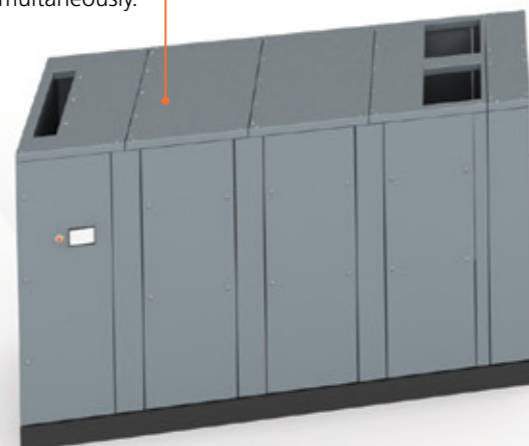


### AIR FLOW CONTROL VALVE

The air flow control valves regulate each line independently and use differential pressure sensors to maintain a constant mass air flow in each line.

### AIR COMPRESSOR

Rotary screw, centrifugal, and reciprocating type compressors may be used. A compressed air header is maintained between 50 - 100 psi with the capacity to operate multiple lines simultaneously.



Second Row of Precipitator

First Row of Precipitator

### DRYER

A dryer is recommended in cold climates or high humidity environments.

### MULTIDAC FEEDER

The feeder is part of the conveying line and transfers material from the collection hopper to the line.

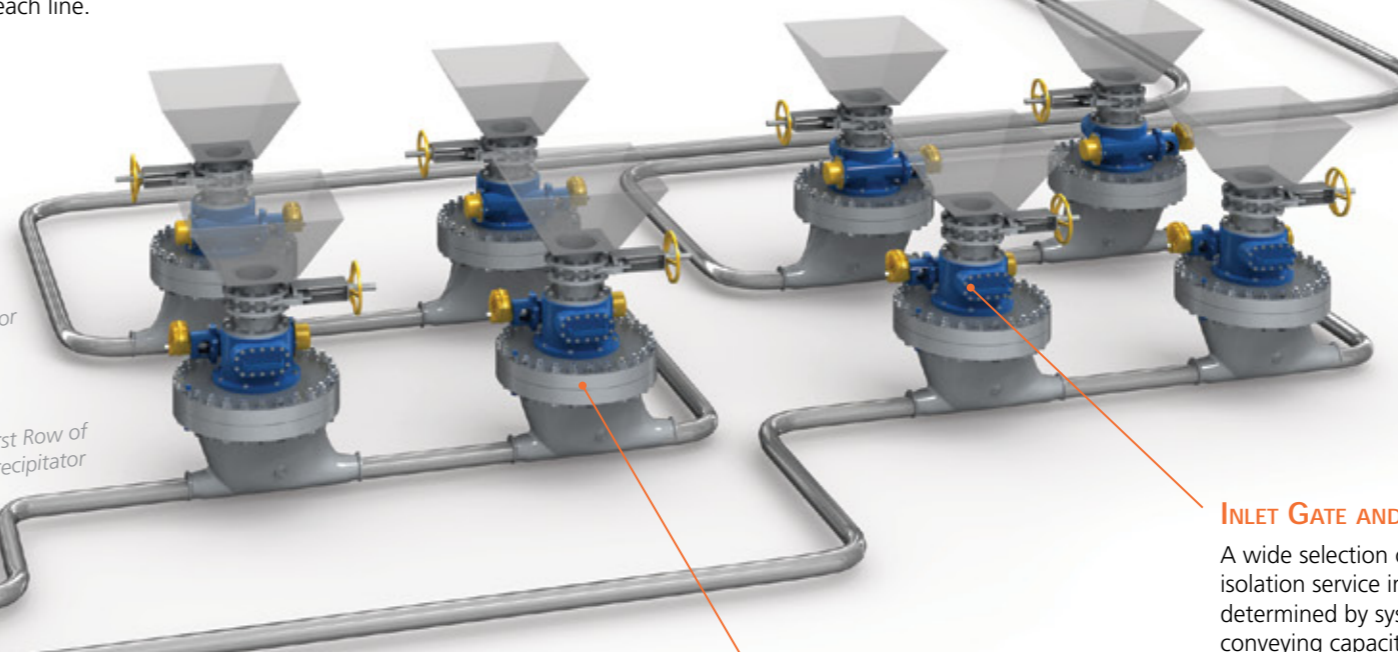
### INLET GATE AND VALVE OPTIONS

A wide selection of gates and valves are available for vessel isolation service in a MultiDAC System. Valve selection is determined by system pressure, ash characteristics and conveying capacity.

**TITAN™ HP** valve utilizes proven UCC swing-disc technology and requires the least amount of headroom.

**TITAN™ SD** straight drop gate is a cost-effective alternative for low pressure systems.

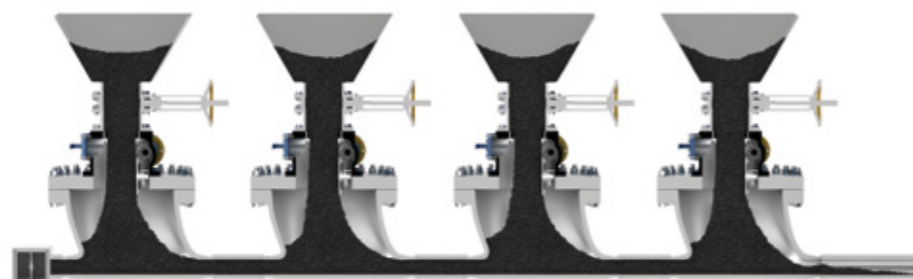
**UCC Diffuser Feeder** maintains ash above in a fluidized state for consistent, high flow discharge when the valve is open.



# Fly Ash System

## Conveying Cycle

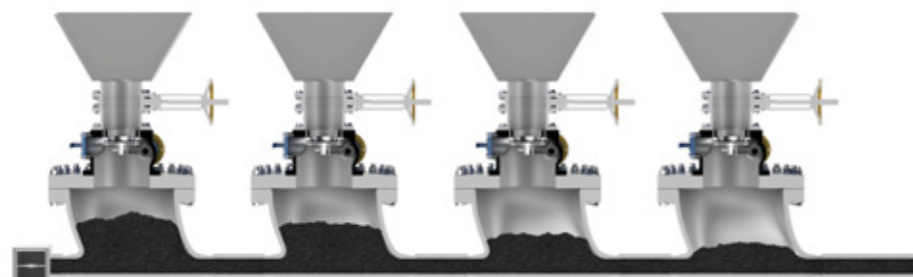
The MultiDAC system operates on a simple three-phase cycle: (1) material fills the feeders and the gates above the feeders close; (2) the feeders are pressurized and the material is conveyed; (3) the feeders and conveying line are purged and the cycle repeats.



*Air Supply Valve Closed*

### FILL

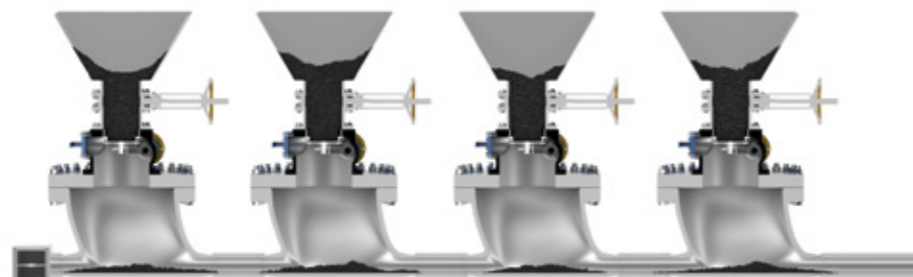
All feeder gates open on the branchline, allowing material to flow from the hoppers into the feeders simultaneously. The air supply valve is closed as material enters the system. A level sensor in the feeder signals when filling is complete.



*Air Supply Valve Open*

### PRESSURIZE/CONVEY

The feeder inlet gates close and the air supply valve opens to pressurize the line. Material begins to flow through the line in full bore slug flow; as conveying continues, the slugs degenerate to dune flow with suspended flow of fines.



*Air Supply Valve Open*

### PURGE

When the feeders are empty, the air supply valve remains open and partially clears the conveying line. When the line is cleared to a pre-determined level, the air supply gate closes and the cycle repeats.

## Advanced Technology and Test Lab

The UCC commitment to quality is backed by thousands of hours of development, testing and evaluation. UCC has one of the world's most advanced research laboratories with conveyor test loops to simulate and determine exact material conveying characteristics.

UCC works closely with customers to test and verify conveying performance in our MultiDAC System test loop. Determining the size and system requirements for each specific installation helps to effectively manage risk.



United Conveyor Corporation has nearly a century of experience and expertise in the design, engineering and installation of fly ash systems worldwide. We understand how the chemical composition and physical characteristics of ash particles play a critical role in material flow and conveying performance. We also understand how different conveying technologies will perform to various plant requirements, such as capacity, distance, routing and economics. At UCC, each system is designed specifically around the individual plant to provide optimal results in performance and reliability.



## The UCC Commitment

As an industry innovator, we have long been at the forefront of ash handling technology. We recognize the importance of providing customers with the best equipment and latest technology that meet their demanding requirements and plant needs.

With our own advanced testing and technology lab, we are able to maintain control over the quality and delivery of our systems and equipment. The result is superior and predictable performance for our customers.

Our dedicated team of engineers, sales, service and in-house designers spans the globe covering six continents, assuring you that we can provide exceptional service whenever needed. This is our commitment to you.

## UCC Material Handling Solutions

### Fly Ash (Dilute, Medium and Dense Phase)

- Vacuum Systems
- Pressure Systems

### Bottom Ash (Wet and Dry)

- Hydraulic Systems
- Pneumatic Systems
- Mechanical Systems
- Vibratory Systems

### Mill Rejects

- Hydraulic System
- Pneumatic Systems

### Economizer Ash

- Hydraulic Systems
- Mechanical Systems
- Pneumatic Systems

### Dry Sorbent Injection

- Predictive (CFD) Modeling
- On-Site Testing and Demonstration
- Pneumatic Systems
- Installation

### Lime Handling

- Truck and Rail Unloading
- Pneumatic Systems

### System Components

- Crushers
- Mixer/Unloaders
- Gates/Valves
- Pipe/Fittings
- Filter/Separators
- Tanks/Vessels

Global Operations in:

United States • Europe • China • India  
Systems in over 60 Countries

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CORPORATION

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