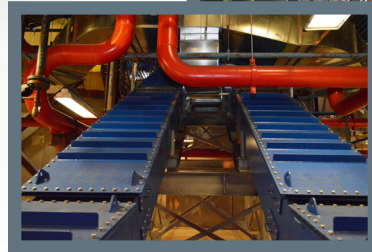


# Allen-Sherman-Hoff® Ash and Material Handling

Proven technologies, reliability and durability



BABCOCK  
& WILCOX

ENERGY | ENVIRONMENTAL

***More than  
2,200 material  
handling system  
units installed  
worldwide.***





Through its Allen-Sherman-Hoff® (A-S-H®) ash handling product line subsidiary, Babcock & Wilcox (B&W) is a leading global supplier and manufacturer of customized material handling solutions. Combining the strengths, history and experience of these two great industry names, B&W's extensive knowledge of the physical and chemical properties of various material combinations has made us an integral supplier of customized solutions.

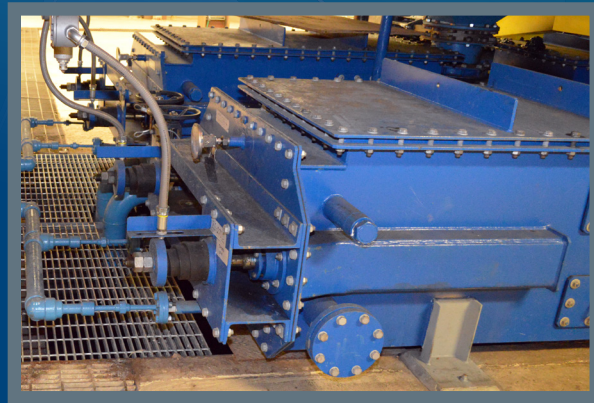
Each project begins with careful analysis and planning to meet scheduling, execution and performance goals. We also provide dependable after-sales support, with spare or replacement parts, maintenance services, and component and system upgrades to maximize the life of your material handling equipment.



# Ash and Material Handling Capabilities

# Industries and Materials

With more than 150 years of experience, the B&W name is synonymous with providing engineered system solutions and reliable technologies to a wide range of industries and applications.



## ■ Fossil Fuel Power Production

Boiler bottom ash

Fly ash

Wet and dry scrubbing system sorbents (e.g., limestone and gypsum) and byproducts

Powdered activated carbon

## ■ Renewable Fuels Power Production

Solid fuels including biomass, municipal solid waste (MSW) and refuse-derived fuel (RDF)

Bottom and fly ash

Wet and dry scrubbing system sorbents (e.g., limestone and gypsum) and byproducts

## ■ Pulp & Paper

Bark ash, wood chips, kaolin, pulp, waste paper, salt deposits

## ■ Steel and Metal

Ore, slag, coal, concentrate and mixtures

## ■ Chemical Plants

Powder, granulate, minerals and mixtures

## ■ Petrochemical Plants

Pet coke ash, coker vessel unloading, transport, dewatering

## ■ Construction

Rock, gypsum, lime, soil, sand, stone and other materials

## ■ Mining

Salt, limestone, slag

## ■ Food

Salt, grain, oil seeds, sugar beets, processed sugar, mill projects



## Fuel Conveyors

The reliable, safe and uninterrupted supply of fuel for boilers is essential to power generation. B&W provides a range of solid fuel conveyance and in-feed technologies to transport and process fuel for power, heat and process steam generation. Fuels include coal, biomass, and waste fuels including MSW and RDF.

## Reagent/byproduct Transport

B&W's material conveying systems can support the conveyance, injection, processing and storage of reagents and byproducts of environmental systems, including limestone, lime, sodium, or other sorbents, as well as gypsum byproduct from the wet scrubbing process.



# Bottom Ash

In addition to providing operational and environmental benefits, B&W's Allen-Sherman-Hoff bottom ash systems are a reliable and cost-effective alternative to ash storage ponds. Our bottom ash systems are available in either wet or dry types.

## ■ Hydraulic (wet) systems

Remote submerged chain conveyor

Hydrobin® dewatering systems

Submerged chain conveyor

## ■ Dry bottom ash conveyors

Submerged grind conveyor

## ■ Auxiliary components and equipment

Hoppers, slag tanks, boiler skirt seals, bottom ash gates, clinker grinders

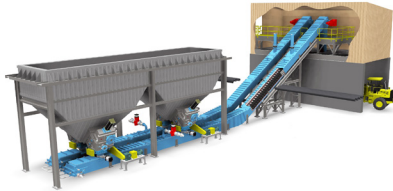


# Bottom Ash System Features & Benefits

**Product**

**Features/Benefits**

Submerged Grind Conveyor



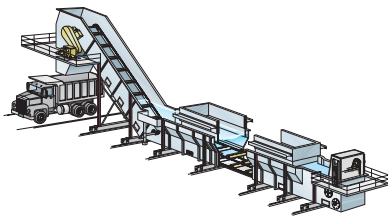
A retrofit design of the submerged chain conveyor, designed for low headroom spaces

Flexible design

Capable of providing 100% redundancy

Capable of 100% online maintenance

Submerged Chain Conveyor



Eliminates storage ponds

Removes material using less power

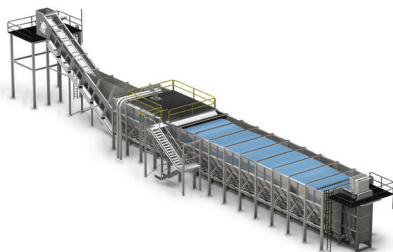
Uses less water to operate

Automatic ash dewatering

Less maintenance with fewer components

Easy access for inspection or maintenance

Remote Submerged Chain Conveyor



Eliminates storage ponds

Simple design for ease of maintenance

Flexible design allows multiple ash disposal options

Up to twice the storage time of a submerged chain conveyor system installed under the boiler

Located remote from the boiler

Easy retrofit to plant having an existing bottom ash slurry transport system

Hydrobin Dewatering Systems



Engineered for efficiency, durability and reliable operation

Self cleaning decanter screens provide ease of maintenance

Decanting is automatically sequenced and controlled

Inflatable seal tube prevents water leakage between gate and frame

Floating decanter quickly siphons off standing water above the material

# Fly Ash

B&W's Allen-Sherman-Hoff fly ash systems are a reliable, low maintenance, cost-effective means of conveying and collecting fly ash from a boiler and its emissions control systems. Four basic types of pneumatic transport systems and related components are available from B&W depending on your specific application.

## ■ Vacuum systems

Collection hoppers, dust valves, segregation valves, piping and pipe supports, vacuum producers, silos, rooftop collectors, collector filters, silo aeration, pugmills, dry dust unloaders, truck loading bay fugitive emission collection, system controls (PLC or DCS)

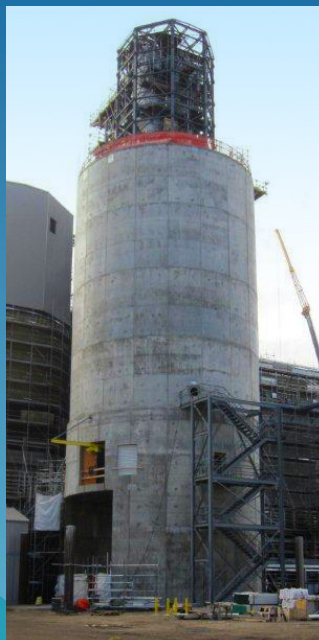
## ■ Pressure systems

Collection hopper, airlock valves, blowers or compressors, piping and pipe supports, bin vent filters, silo aeration, pugmills, dry dust unloaders, truck loading bay fugitive emission collection, system controls (PLC or DCS)

## ■ Vacuum/pressure combination systems

Transfer stations

## ■ Dense-phase pressure systems



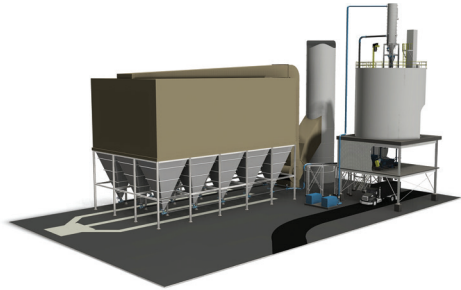


# Fly Ash System Features & Benefits

**Product**

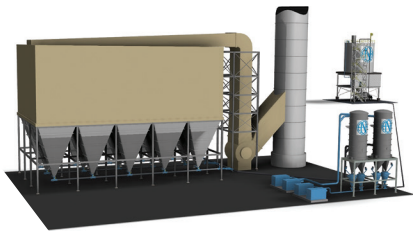
**Features/Benefits**

Vacuum System



- Uses air as transport media below atmospheric pressure to entrain and convey material
- Vacuum source is located at the discharge end of the conveying system
- Ideal for shorter transport distances (< 1500 ft [500 m])
- Safest design for indoor and hazardous environments
- Uses fewer components
- Less clearance required under hoppers
- Low initial system cost

Vacuum/Pressure Combination System



- Used for long conveying distances where vacuum system benefits are desirable in confined or hazardous locations, then transfer to pressure system for long distance
- Initial material discharge from hoppers is by a vacuum system
- Requires an intermediate collection vessel/transfer station
- Pressurized conveyance system to storage silo

Pressure System



- Can convey over longer distances (1000 to 10,000 ft [300 to 3000 m])
- Simpler ash/air separation equipment at the storage silo
- Airlock is required to transfer material from collecting hoppers to high pressure conveying line (higher clearance under hoppers is required)
- Lower cost silos and related equipment
- Lower operating costs
- Eductor-based pneumatic system available for special applications

Dense-Phase Transport System



- Variation of pressurized system but operates at higher ash-to-air ratios
- Smaller transport line sizes, for intermediate material transport rates, will often be the lowest initial and operating cost system
- Long distance conveyance, same capabilities as pressure transport systems

# Replacement Parts and Performance Upgrades

B&W provides high performance parts and upgrades for our Allen-Sherman-Hoff® line of ash handling equipment, as well as most other brands. Inventory is maintained for a wide range of critical parts, which means fast delivery of the parts you need most.

An experienced product support staff will provide the correct parts for your specific application, vintage, model and brand of ash handling equipment. Our engineered upgrades are evaluated for potential improvements in system performance, ease of maintenance, and reduced operational costs.

A network of worldwide regional service centers, field service engineers and technical support personnel are available to provide customized services and aftermarket solutions for your requirements, including:

- System assessment, walk-downs
- Technical assistance with operations issues (fuel changes, pluggage problems, etc.)
- Startup support, commissioning
- Control system support
- Component and system upgrades
- Replacement and spare part supply
- Inventory management programs



## Bottom Ash Components

### Ashflo® valve

Provides reliable shut-off operation in pyrites removal systems, bottom ash transport systems, and many other slurry transport applications. Able to handle severe operating conditions.

### Ni-hard grinder rolls

Provides wear-resistant crushing to pulverize bottom ash material to a suitable transport size. Our grinder rolls are made of hard-as-cast Ni-hard for a longer wear life.

### PowerASH single-roll clinker grinder

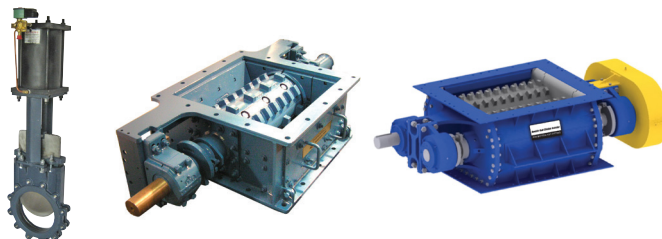
Designed to handle the highly abrasive bottom ashes generated by coal-fired boilers. Its high crushing force and unique roll tooth pattern are highly effective for the remaining larger slag falls.

### Double-roll clinker grinder

For applications requiring even higher crushing force and more output particle size options than our PowerASH single-roll grinder.

### Hydrobin® dewatering bin gate

Efficiently regulates the discharge of material from the Hydrobin dewatering bin once the dewatering cycle is completed.



# Fly Ash Components

## 3600 Style II pugmill

Effectively combines dry fly ash from a silo with water to form a moist mixture which is readily transferable and transportable with minimal dust emissions.

## Pugmill recycler

Uses wastewater from a flue gas desulfurization (FGD) system for blending into the ash for processing. Provides a unique solution for ELGs.

## CycloASH™ 60

Multiple chamber design allows for continuous ash collection—even when ash is being loaded into the storage silo.

## Style IV airlock

Used primarily for the transfer of fly ash or other dry, free-flowing, granular solids, the Style IV airlock design is available for both pressure and vacuum system applications.

## Style III equalizer valve

Used in pressure systems for airlock equalization and in vacuum systems for collector equalization applications, the Style III equalizer valve is compact, lightweight and affordable.

## Style IV airlock refurbishment, maintenance and upgrade kits

Refurbishment and maintenance kits for Allen-Sherman-Hoff Style I and IV airlocks, as well as upgrade kits to convert Style I airlocks to Style IV design, these kits come complete with everything needed to refurbish your airlock to original operating condition.

## Retrofit kit for Style IV airlock

Replacement wear part upgrade provides improved wear life, easier maintenance and increased sealing force for greater material head support compared to Style I airlock components.

## Type H material handling valve

Designed specifically to feed ash into dilute-phase vacuum systems on a batch basis, the Type-H material handling valves are durable, efficient and can handle the most severe operating environments.

## Advantage Series 8 and 12 in. material handling valve

Designed for changing or harsher operating conditions, including stickier and more abrasive ash, our Advantage Series valves encourage ash flow and minimize wear. They are available for lateral feed vacuum conveying systems and as a direct replacement for UCC® Tiger™ valves.

# Piping and Fittings

## ASHCore® ceramic-lined pipe and fittings

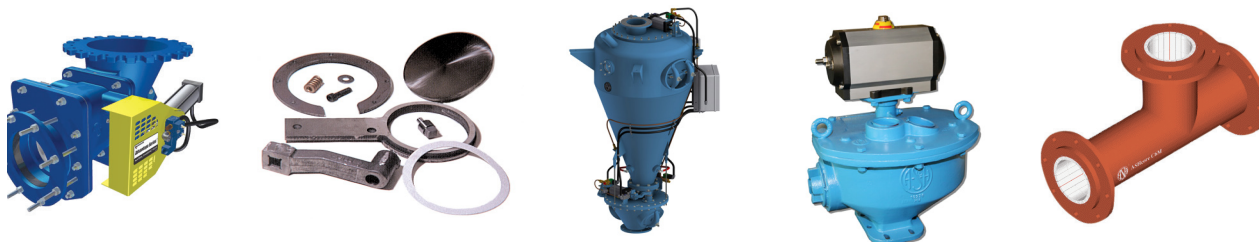
Feature wear-resistant tiled ceramic liners that are custom fit to an outer steel shell for optimum performance and long wear life. Recommended for high-abrasion areas such as elbows, tees, laterals, inlet regions and transfer points.

## Ashcolite™ replaceable wear-back fittings

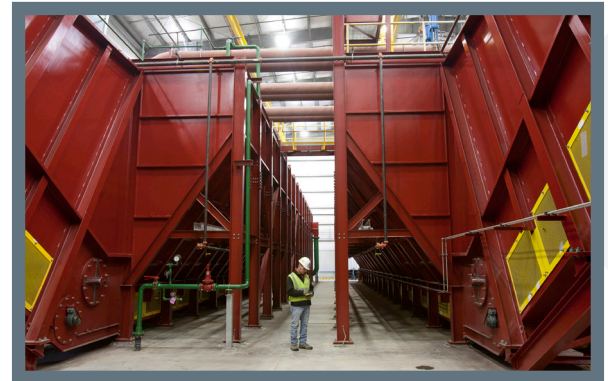
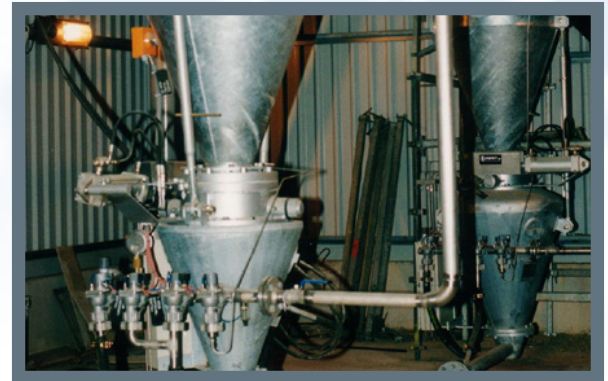
Designed for vacuum systems that convey highly erosive ashes. Made of a chrome-iron alloy, the fitting bodies are available in two grades depending on hardness requirements.

## Ashcolite™ integral wear-back fittings

Standard on all pressure systems, both hydraulic and pneumatic. They are specially designed to withstand the abrasive characteristics of many ashes.



B&W's Allen-Sherman-Hoff® ash and material handling systems are recognized worldwide for quality, reliability and durability to meet the unique needs of a wide range of industries.



## The Babcock & Wilcox Company

1200 E Market Street, Suite 650  
Akron, Ohio, U.S.A. 44305  
Phone: +1 330.753.4511

[www.babcock.com](http://www.babcock.com)    

The information contained herein is provided for general information purposes only and is not intended nor to be construed as a warranty, an offer, or any representation of contractual or other legal responsibility.

*Allen-Sherman-Hoff, A-S-H, Hydrobin, Ashflo, CycloASH, ASHCore and Ashcolite* are trademarks of The Babcock & Wilcox Company.  
*UCC and Tiger* are trademarks of United Conveyor Corporation.



ENERGY | ENVIRONMENTAL

Established in 1867, Babcock & Wilcox is a global leader in advanced energy and environmental technologies and services for the power, industrial and renewable markets.

For more information or to contact us, visit our website at [www.babcock.com](http://www.babcock.com).