



mp combustion process ltd.

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PRODUCT BROCHURE



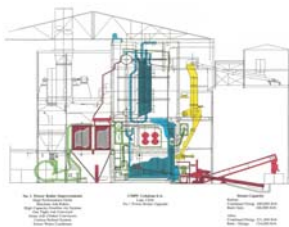
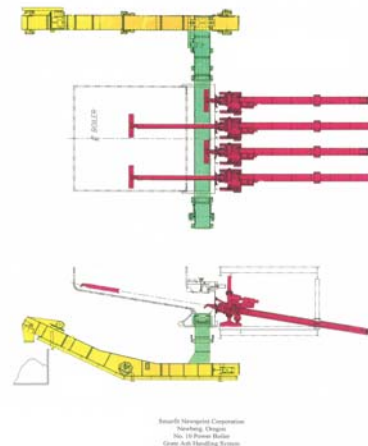
mpcp equipment

mpcp supplies highly-reliable, high capacity custom materials handling equipment, that *out-performs and outlasts* other commercially available equipment.

Our expertise covers a broad range of equipment, including but not limited to:

mpcp ash/grate ash/sand handling systems:

- gas-tight, high-temperature, *back-end ash* conveyors
- high & low capacity dual chain *grate ash* conveyors
- all-in-one *ash* conveyors
- high & low capacity dual chain *water-impounded grate ash* conveyors
- *water-cooled* conveyors
- *salt cake* conveyors
- trommel and water bath separation systems
- slide gate systems (in-line and perpendicular)
- double flap gates for high-temperature *back-end ash*
- double dump gates for *grate ash* conveyors
- high temperature and standard screw conveyors
- *carbon* re-feed conveyor
- mobile machine ash rakes
- stationary machine ash rakes
- *ash* blender systems
- man-safe ash doors and access doors
- valley hoppers



mpcp bark/sludge handling systems:

- bark distribution conveyors
- dual screw bark feeders
- rotary bark feeders
- high temperature, adjustable trajectory bark distributors
- single shaft, no contact pulsing dampers

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TESTIMONIALS

QUALITY THAT WILL SAVE YOU MONEY

Whether you are deciding on new project requirements or upgrading a current system that is not performing up to capacity, every supply company will tell you they have the perfect solution for you. Below is the opinion of the mpcp equipment from the Mills themselves.

After 35 years of struggling to keep consistent wood supply to the unit, we reached out to mpcp for solutions. The quality and craftsmanship of our new conveyor exceeded our expectations. The new design has stabilized the fuel deficiency to the unit thus increasing output to our process.

Installed: One wood eating mammoth beast of a conveyor system.

Greg Wiggins, Plant Manager, Avista Utilities, Kettle Falls Generating Station, Kettle Falls, U.S.A.

Installed: 1 x Bark Distribution Conveyor (2015)

We fought with our old system for a couple of years and decided to invest in mpcp's system. We have not regretted the decision. It runs smooth, steady and without breakdowns. There was great care and thought put into this conveyor and it shows in how well it started up and continues to operate. mpcp has been very helpful through the installation process and continues to check in to see how things are going.

Russ Blumenstein, Maintenance Manager, Freres Lumber Company, Lyons, OR, USA

Installed: 1 x Grate Ash and 1 x Back-end Ash Conveyor, 1 x Screw Conveyor, 1 x Trommel System (2010-2014)

The quality of workmanship and materials are excellent. The conveyor has far exceeded the expectations of the operating group. I would recommend this system to any facility that may want to upgrade their existing system.

John Boyd, Utilities Superintendent, Nippon Paper Industries, Port Angeles, WA, USA

Installed: 1 x Single chain Grate Ash and 3 x Back-end Ash Conveyors, 1 x Double Flap Gate (2009-2011)

Other designs had previously been trialed in the Elk Falls mill, but always required maintenance and significant repairs after one or two years of service. The initial cost was higher than competitors; however, the benefits were realized pretty quickly with reliability of service and longevity of parts/equipment. ...the quality and thoroughness of design into all aspects of the conveyor has been superior to the competitors we dealt with.

Andreas Weckesser, Utilities Operation Specialist, Catalyst-Crofton (previously with Elk Falls), BC, Canada

Installed: 2 x Grate Ash Conveyors (2006)

What really surprises is the high resistance of the equipment installed already 10 years ago! It has been working hard along that period of time with minor maintenance work. I think it is because of the robust structure and the quality of materials employed by mp combustion process ltd.

Jose Manuel Vazquez, Engineering Manager, CMPC Celulosa, S.A.

Installed: Over-Fire Air System, 2 x Grate Ash Conveyors (1 x Wet), 1 x Gas-Tight Back-end Ash Conveyor, 2 x Bark Distribution Conveyor (1 x Belt Re-Circulation), 1 x Double Flap Gate, 2 x Access Doors, 1 x Screw Conveyor (1999)

During my 22 years at the Crofton Division of Catalyst Paper, we have been through 3 generations of ash handling conveyors for our hog fired power boiler. ...we have experienced a great improvement in reliability. In the 7 years we have been running these conveyors, we have yet to break a chain or have a sprocket fail.

The conveyors run virtually trouble free from shut down to shut down.

Michael Skinner, Power & Recovery Mechanical Maintenance Supervisor, Catalyst Paper, BC, Canada

Installed: 3 x Back-end Ash, 1 x Submerged Grate Ash, 2 x Grate Ash Transfer Conveyor, 3 x Bark Distributors , 1 x Distributor Pulsing Damper System (2004-2012)

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mpcp Gas-tight® Back-End Ash Conveyors



mpcp Gas-Tight® Back-End Ash conveyors

mpcp Gas-Tight® Back-End Ash conveyors are specifically designed for application on bark and sludge fired power boilers ***where the ingress of ambient air has to be prevented to avoid fly-carbon fires*** in the ash hoppers and the conveyors. The mpcp Gas-Tight® conveyors are designed to:

handle very high, instantaneous fly-ash loads. The mpcp Gas-Tight® conveyor design employs a positive displacement conveyor chain/flight arrangement. The conveyors can, therefore, be arranged to *utilize idler-free bends* to feed uphill or downhill with slopes in excess of 30 degrees. These positive displacement conveyors offer great versatility in the design of back-end ash systems.



mpcp conveyor body

The mpcp Gas-Tight® conveyors are constructed of high hardness, abrasion resistant steel. All conveyor bodies are designed with bolted construction. This mpcp feature accommodates very high temperature differences between conveyor components without thermal overstressing or distortion to prevent air leaks.

These systems handle high back-end flue gas temperatures (to in excess of 1,000 deg.F), which can occur when high excess air levels in the flue gas are combined with high fly-carbon loads. The high temperature resistance of these Gas-Tight conveyors permits continued operation even with burning back-end ash, without losing their effectiveness.

mpcp conveyor components

mpcp 140T® all-cast alloy, through-hardened conveyor chain is specifically designed to work in abrasive, high temperature applications. This chain has an ultimate capacity of 139 tons. This chain design retains a capacity of 27,000 lb, even when worn to 10% of it's original chain cross-section.



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mpcp Gas-Tight® Back-End Ash conveyors



mpcp conveyor components (continued)

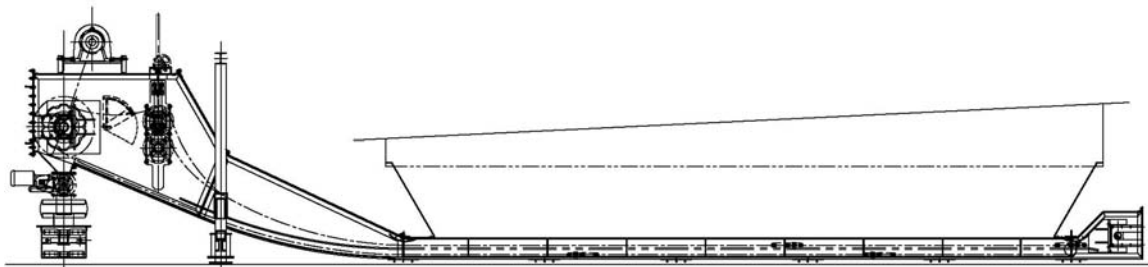
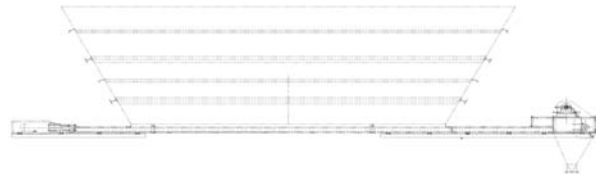
All mpcp-designed abrasion resistant sprockets are either segmented or split for easy removal and are fitted to oversize shafts. The sprockets engage the full chain barrel for low contact pressures.

A key feature of all mpcp conveyors is the catenary tensioning system at the drive end, which ensures that no component of the drag chain goes slack and prevents the drive sprocket from being hooked and “grabbing” the drag chain.

mpcp conveyor capacity

The mpcp Gas-Tight® conveyor were originally designed to function as live hopper bottoms when utilized in combination with valley hoppers, though also work extremely well with pyramidal hopper configurations.

By using the mpcp 140T® chain, mpcp can design these conveyors for any volume capacity and conveyor lengths.



mpcp on-the-fly® take-up

The mpcp on-the-fly take-up is a proprietary system that allows maintenance crews to adjust the tension of the chain during operation. The design has allowed for continued gas-tight operation.

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mpcp dual chain
high & low capacity
Grate Ash Conveyors®



mpcp High and Low Capacity Grate Ash Clinker Conveyors®

mpcp's High and Low Capacity Grate Ash Clinker Conveyors® are high-temperature conveyors that can handle large amounts of ash, rocks, clinker and burning bark. They can both operate under continuous loads with ash temperatures in excess of 1,400 deg.F. This makes these conveyors suitable for application to the very high ranges of ash outfeed temperatures encountered in ash and bed material from discharging fluid and bubbling beds.

To understand the strength of these systems, the mpcp *High Capacity Grate Ash Clinker Conveyors®* were originally designed for use with U&R High-Performance Grates®, where mpcp Machine Ash Rakes® are used to remove, on 2 to 3 day ashing intervals, ash beds of 20 to 30 tons in a few minutes.

mpcp conveyor performance

The mpcp High & Low Capacity Grate Ash Conveyors® are designed for an instantaneous ash handling capacity from 140 up to 200 tons per hour. These conveyors are designed for very high strength to cope with rocks and other tramp materials without stoppage.



mpcp conveyor design

Utilize either dual mpcp 70T or U&R 100T® cast alloy, through-hardened chains, with ultimate capacities of 70 and 139 tons respectively. This type of strength ensures high reliability. The conveyor structures and the drive designs are matched to their chain capacity, making both mpcp Grate Ash Conveyors exceedingly reliable grate ash and back-end ash handling systems.

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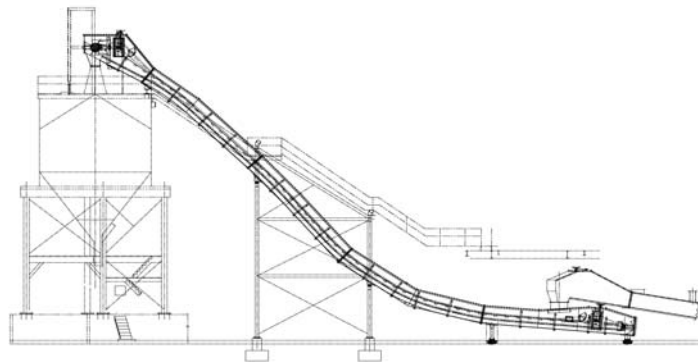


mpcp High and Low Capacity Grate Ash Clinker Conveyors®

mpcp conveyor capacity

These conveyors are specifically designed to handle large loads while operating at slow speeds. They are equipped with self-centering chain flights up to 10 inches deep. They are constructed to continuously convey high temperature material directly discharged from a grate including burning fuels, without water-cooling.

mpcp has also designed a water-cooled system if specific applications require.



mpcp conveyor components

On-The Fly Take-up

The on-the-fly proprietary take-up system allows the adjust on the dual chains while in operation. With correct tension, the mill will see extended life of wear plates, chain and sprockets. The initial shutdowns are a sign of the part to take out links. Wait for the annual shutdown and save money on maintenance.



Maximum capacity

The capacities of the drives, reducers and chain drives are designed to handle the starting loads of fully loaded conveyors.

All mpcp-designed abrasion resistant conveyor sprockets are split or segmented for easy removal and are fitted to oversize shafts. To maintain low contact pressures, the sprockets are designed to engage the full width of the mpcp 70T, 140T and U&R 100T® chain barrels.

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mpcp All-in-One® Ash Conveyors



mpcp All-in-One Ash conveyors

mpcp All-in-One Ash conveyors are specifically designed for application on power boilers *where height and capacity is an issue.*

These systems are designed to handle smaller sized grate ash than the mpcp Grate Ash Conveyor and larger quantities of back-end ash than the custom mpcp Gas-Tight Conveyor.

This makes this mpcp conveyor an economically versatile system for any mill.



mpcp conveyor body

The mpcp All-in-One conveyor is constructed of high hardness, abrasion resistant steel. The body can be designed with either a formed or bolted bottom plate and has an easily removable return chain runner.

The thickness of the mpcp systems plates, allow them to accommodate very high temperature differences between conveyor components without thermal overstressing or distortion, preventing ingress air and possible fires.

mpcp conveyor capacity

The mpcp All-in-One conveyors were designed to handle smaller sized grate ash and high volume back-end ash in any condition. The natural bends and open inner design allows for maximum fill.

By using the mpcp 140T® chain, our design is simple, but highly effective. No where will you find a conveyor of this size able to handle the same capacity.



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mpcp All-in-One Ash conveyors

mpcp conveyor components

mpcp 140T® all-cast alloy, through-hardened conveyor chain is specifically designed to work in abrasive, high temperature applications. This chain has an ultimate capacity of 139 tons. This chain design retains a capacity of 27,000 lb, even when worn to 10% of its original chain cross-section.



All mpcp-designed abrasion resistant sprockets are either split or segmented for easy removal and are fitted to oversize shafts. The sprockets engage the full chain barrel for low contact pressures.

A key feature of all mpcp conveyors is the catenary system at the drive end, which ensures that no component of the drag chain goes slack and prevents the drive sprocket from being hooked and "grabbing" the drag chain.

The mpcp on-the-fly take-up system is utilized to maintain correct chain tension during operation. This feature will not only elongate the lifespan of the mpcp 140T chain, but all the wear plates.



mpcp conveyor location



These systems handle fuel and gas temperatures in excess of 1,000 deg.F., which can occur when the mpcp All-in-One System is connected directly below a furnace or hopper.

The high temperature resistance of these conveyors permits continued operation even with burning grate ash or airheater ash, without losing their conveying effectiveness.



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mpcp Water-Impounded®
(Submerged) high & low capacity
Grate Ash Conveyors



mpcp High & Low Capacity Water-Impounded® Grate Ash conveyors

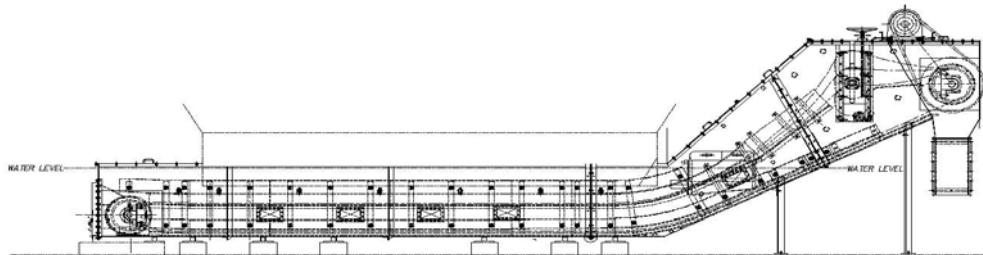
As opposed to the dry, high temperature mpcp Grate Ash Conveyors®, which are directly attached to the discharge point of the grate and are sealed mechanically by means of an mpcp Double Flap Gate®, the mpcp Water-Impounded® Grate Ash conveyors are utilized where a water seal between the furnace and the atmosphere is required.

These conveyors have the advantage of extinguishing burning embers that may be discharged from the grate.

mpcp conveyor performance

The mpcp Water-Impounded® Grate Ash conveyors are designed for extreme loads to handle rocks and other tramp materials with out stoppage.

Mud outfeed during boiler water-washing and starting under full load presents no problem.



mpcp conveyor chain

The conveyors use either dual, mpcp 70T or U&R 100T® cast-alloy chains, each with an ultimate capacity of 70 and 100 tons pull respectively, ensuring high reliability.

The conveyor structure and the drive design are matched to the chain capacities, making the mpcp Water-Impounded® Grate Ash conveyor an exceedingly reliable grate ash handling system.

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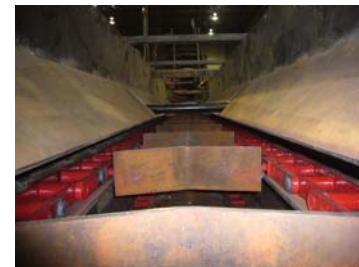
mpcp High & Low Capacity Water-Impounded® Grate Ash conveyors

mpcp conveyor design

To match the abrasion resistance of the high strength chains, we design the chain and flight tracks from a very high-hardness AR plate.



These high and low capacity conveyors utilize a proprietary, self-compensating catenary take-up system that maintains a constant chain tension. The adjustable catenary take-up, drive shaft and chains are accessible for easy inspection. By utilizing the chain weight to control the tension in mpcp conveyors, **we are able to eliminate all idler sprockets in conveyor bends.**



These mpcp features and others, guarantee high reliability and performance.



mpcp conveyor connections

These Water-Impounded conveyors are normally applied to traveling or vibrating grates. Sluice lines or conveyors from the grate siftings hopper are easily integrated into this design to discharge directly into the conveyor.



mpcp conveyor components

All mpcp-designed abrasion resistant sprockets are either split or segmented for easy removal and replacement and are fitted to oversize shafts.

All shafts and bearings are sized to handle high shock loads. The submerged shafts are manufactured from stainless steel to handle the high pH and the packing glands are water-purged for long life.

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mpcp Water-Panel®
Grate Ash / Sand Conveyors



mpcp Water-Cooled Conveyor

mpcp developed a conveyor system capable of cooling material down to a specific temperature.

Perfect for a Mill that has heat sensitive equipment upstream

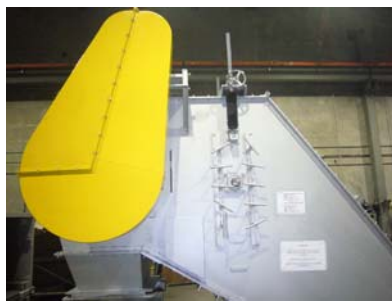


Design

Made specifically for a Bubbling Fuel Bed (BFB) boiler system utilizing a Sand Filter System rated for a maximum temperature.

Sand is discharged, from the boiler chutes, into the mpcp conveyor system and cooled down from 1,200 deg.F to a maximum of 500 deg.F, without adding any moisture to the sand.

The mpcp engineered water panel systems allow a specific amount of flow to cool not just the material, but also the wear plates.



Key Features

- In mpcp typical fashion, thought was taken into not only designing the conveyor to last as long as possible, but consideration was taken to simplify the inevitable maintenance aspects.
- mpcp custom designs include, but are not limited to: removable water cooling panels, segmented and bolt-on sprockets and chain access ports.
- Now standard to most all mpcp systems is the proprietary on-the-fly take-up system, elongating the lifespan of your wear components by ensuring the chain tension is always correct.
- A By-Pass Gate is designed and installed mid-way along the conveyor to allow boiler clean-out during shutdowns, without mass amounts of sand going through the upstream Filter System.



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mpcp Salt Cake® Conveyors



mpcp Salt Cake Conveyor®

The mpcp Salt Cake Conveyor® is a specially designed conveyor able to transport hot salt cake on a continuous basis from valley or pyramidal Hoppers.

Based on the mpcp Gas-Tight Back-End Ash Conveyors®, the design will have no problem withstanding Salt Cake temperatures. The conveyors are nominally 24 inches wide and capable of moving 4,000 lb per hour of hot salt cake.

The mpcp Salt Cake Conveyor® is continuously maintained at a pre-set tension. Thus any change in chain tension, caused by debris getting between the sprockets and chain or by chain stretch, is immediately compensated for. To increase the chain life, the mpcp Salt Cake Conveyors® are equipped with a catenary tensioning devise at the drive end of the conveyor. We also utilize the proprietary automatic Thermal and Mechanical chain tensioning devise at the take-up end.



The mpcp Salt Cake Conveyors® are formed out of high hardness AR plate.



The upper wear plate chain runners are 1.0 inch thick and supported by solid steel rods spaced approximately 3 feet apart.

All wear strips and chain runners are designed in a manner that will allow for easy replacement. Where the drive end and the take-up shafts extend through the conveyor side plates, the shafts will be seals with a packing gland designed with 3 layers of graphite packing for 700 deg.F.

Our mpcp 140T all-cast alloy, through-hardened, chain® complete with integral cast flights, allow us to use this chain in extreme temperatures and conditions. The barrel and pin clearances are chosen to prevent the chain from binding, due to salt cake build-up. All mpcp-designed abrasion resistant sprockets are either split or segmented for easy removal and are fitted to oversize shafts. The sprockets engage the full chain barrel for low contact pressure.



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mpcp Bark Distribution Conveyor



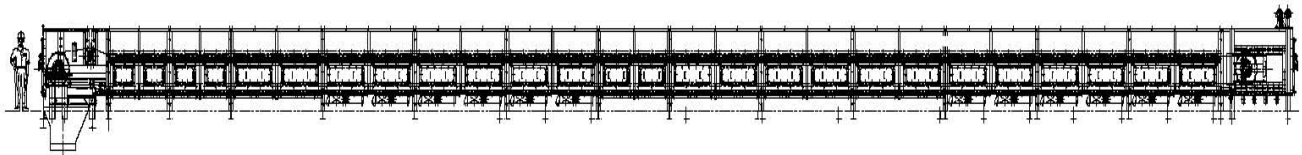
mpcp Bark Distribution Conveyor®

mpcp Distribution conveyor® designed to handle material capacities up to 15,800 cu ft/hr to two Power Boilers.

Like all mpcp conveyor systems, the mpcp Bark Distribution System is custom designed to handle harsh material, such as bark.

mpcp works hard to supply a system that will operate smoothly, without non-scheduled shut-downs, allowing the mills to keep their hoppers and boilers running to full capacity.

With future Maintenance a necessary evil, we look at our systems with a outlook for ease of change-outs and access.



Chain life in a conveyor, apart from abrasion, is controlled by the chain tension. By controlling and limiting the chain tension, it is possible to double the conveyor chain life. To enable this to happen, mpcp conveyors are all equipped with both a catenary system and a on-the-flyt proprietary take-up system at the drive end of the conveyor.



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mpcp Bark Distribution Conveyor®



The conveyors use dual, U&R 100T® cast-alloy chains, each with an ultimate capacity of 100 tons pull which ensures high reliability. The conveyor structure and the drive design are matched to the chain capacities, making the mpcp Bark Distribution conveyor an exceedingly reliable bark handling system.

All mpcp-designed abrasion resistant conveyor sprockets are either split or segmented for easy removal and are fitted to oversize shafts.

No matter what style of boiler, mpcp can design and supply slide gates to fully control the operation and flow of the material. Utilize either the in-line slide gates or perpendicular, each allows full, no air access operation.



All chain runners are equipped with low friction liners.

The drive and the take-up shaft cavities (conveyor ends), have full height-and-width swing-out access doors.



Large access panels facilitate inspection of the space between the top and bottom bark wear plates.



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mpcp 70T, mpcp 140T[®],
U&R 100T[®] Chains and
mpcp custom Sprockets[®]



mpcp 70T, mpcp 140T®, U&R 100T® Chains and mpcp Sprockets®

mpcp ash, clinker and bark handling conveyor designs have been utilized in the Pulp and Paper and in the Waste-to Energy Industry for more than 25 years. The exceptional service life of our conveyors is the result of many man-years of on-the-job time spent in mills and power plants during maintenance shutdowns and refurbishing. Customers benefit not only from our technical conveyor developments, but equally important, from mpcp service.

mpcp 70T, mpcp 140T® & U&R 100T® Chains



Now and then

In drag chain conveyor applications, the key measure of performance is the life cycle of the rotating equipment. Premature wear causes high costs: unscheduled equipment shutdowns, loss of production, emergency maintenance. **Because the highest cost for every mill is the cost of an unscheduled outage, we have concentrated our improvements on preventing outages.**

Many years ago, we utilized commercially available, forged chain with hardened pins and clip rings. High-temperature stretch and inadequate wear resistance changed our focus to cast Promal® chains and to other commercially available chains that use a combination of chain castings together with surface hardened steel pins. The poor life cycle of these alternatives caused us to develop both the U&R 100T, mpcp 140T® & mpcp 70T Chains.

Strength and Design

All the custom mpcp designs of chain are a cast alloy, through-hardened chain with capacities from 70 to 100 tons.

Through-hardening means that the entire metal cross-section of the chain retains this hardness.

mpcp 70T and U&R 100T® chain incorporates an integral cast side link for bolting on flights. mpcp 140T® chain has integral flights c/w holes, ready to attach bolt-on replacement. flights.



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mpcp 70T, mpcp 140T®, U&R 100T® Chains and mpcp Sprockets®



Running distance

In back-end ash system chain service, we have averaged a 5 year life cycle. In bark distribution conveyor systems, with a conveyor that operates at 85 ft/min handling 15,800 cu/ft of bark per hour, we have experienced no noticeable wear after 8,000 miles (13,000 kms) of drag chain operation (this conveyor supplies two, 400,000 lb/hr bark fired power boilers).

Over this drag distance, this one conveyor has handled 1.0 million tons of bark.

mpcp Sprockets® & Hubs

The right mix

The combination of mpcp Sprockets® and mpcp 70T/ 140T® / U&R 100T® Chains will achieve the maximum life out of your rotating equipment.

The mpcp split and segmented Sprockets are manufactured from high-hardness, work-hardening, heat resistant manganese steel.



Hubs and Catenary

Permanently located mpcp Hubs are used on the drive and tail-end of our conveyors, allowing the jig drilled replacement sprockets to fit the chain pitches within 10/1000 in. This fit prevents premature wear of the chain and sprockets.

Considerable chain and sprocket wear results when the chains are permitted to go slack between tensioning. mpcp uses a proprietary, Catenary Chain tensioning system to ensure that the predetermined chain tension and sprocket tooth load remain essentially unchanged.



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CHAIN COMPARISONS

MANUFACTURER (CLASS)	SIZE PITCH/ IN.	MATERIALS OF CONSTRUCTION	HARDENING HEAT TREATMENT	MAT'L ULTIMATE STRENGTH	MAXIMUM WORKING LOAD	WEIGHT PER (FOOT)
U&R 100T (Integral side link)	6.05	Cast alloy links Cast Alloy Pins	100% Thru	214,000	32,800	29.5
mpcp 140T (Integral flinibs)	6.05	Integral w/Side Bars	100% Thru			20.1
CAM CHAIN WRC-132XHD	6.05	Welded Steel Links	--	120,000	17,000	15.3
I'ANCO H132-S	6.05	Alloy Steel Links Alloy Pins	100% Thru 100% Thru	145,000	24,700	18.0
mpcp 70T	4.06	Cast alloy links Cast Alloy Pins Integral w/Side Bars	100% Thru 100% Thru	148,600	22,800	13.0
CAM CHAIN WRC-124 XHD	4.06	Welded Steel Links	--	85,000	14,100	14.6
I'ANCO H124-S	4.00	Alloy Steel Links Alloy Pins	100% Thru 100% Thru	81,000	13,500	11.0
CODEMA CHAIN 142 Hvy	142 mm 5.591 in.	Alloy Drop Forged	--	99,000	18,000	8.03

Information Sources:

mpcp Data
I'Anco Cast Alloy Product Catalogue
Cam Chain Co. Ltd. Catalogue
Codema Incorporated Catalogue

sce: rsw/mpcp hardware, rev.5

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supplier of: material handling equipment



mpcp Trommel System and Water-Bath Conveyor®



mpcp Trommel System®

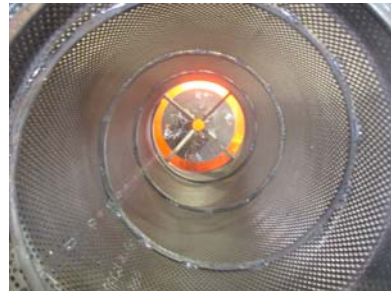
To allow the separation of coarse and fine material from the boiler or any collection system.



Eliminate the need and cost of disposing the boiler grate ash material to the landfill.

Fines can be utilized in agriculture and coarse material can be used in road construction or fill.

Trommel Screen sized for Fine requirements (based on location) and manufactured in A-36 or SS 304



Diverter Gate allows work on systems further down line of the system without shutting down the boiler.

Coarse material dropped into separate conveyor or bin located at one end. Fines dropped through Trommel screen into Screw conveyor to discharge conveyor or bin.

Size of Trommel is determined by Boiler Capacity and usually preceded by a double flap gate system to eliminate any influx of air back to the boiler.

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mpcp Water-Bath Conveyor

To allow separation of coarse and fine material from the mpcp Trommel or any collection system.



Dual purpose conveyor system that allows movement of material in two separate directions

Unburnt Carbon will float on the surface of the water bath allowing the material to be drawn to a wear plate surface just below the depth of the water



The heavier, coarse material will drop directly to the bottom on the water bath onto a lower runner surface. This material will be drawn in the exact opposite direction as the carbon and be delivered to a second discharge chute.

Key Features

mpcp utilizes simple take-up system allowing enough take-up to maintain correct tension between shut-downs.

AR bottom flight and chain Runners are used for longevity and allow space for overlays.

Drive and Tail end sprockets are split for ease of replacement.

Bearing at Drive and Tail are offset from the conveyor body to allow no heat distribution.

Design

mpcp Water-Bath Conveyors are designed for maximum use for minimum size and cost.

This dual chain system allows the mill to get the benefits of dropping material through the parallel sets of chain.

mpcp will custom design your Water-Bath Conveyor to meet the capacity requirements of your output.

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mpcp Ash Blender System



mpcp Ash Blender System

mpcp ability of mixing and controlled wetting of materials



Design

mpcp ash blenders are designed and build for long lasting, tough service.

Custom built systems have many features the competition fails to install or recognize.

mpcp knows that the blender is at the end of the run and if it blocks up here, it will block everything upstream

When working with our clients, we take pride in our system and don't walk away once the unit is installed.



Key Features

- *Removable* SS liner allowing the original body to last many years
- Heavy-duty flange bearings supplied such that material will never enter the bearing internals
- Custom built spray system allowing the mill a variety of options for wetting down the material
- Paddles made of abrasion resistant steel to increase longevity
- Cover plates designed for simple access to internals of the system



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mpcp Air-Tight Double Flap Gates® & Dump Gates®



mpcp Air-Tight Double Flap® & Dump Gates®

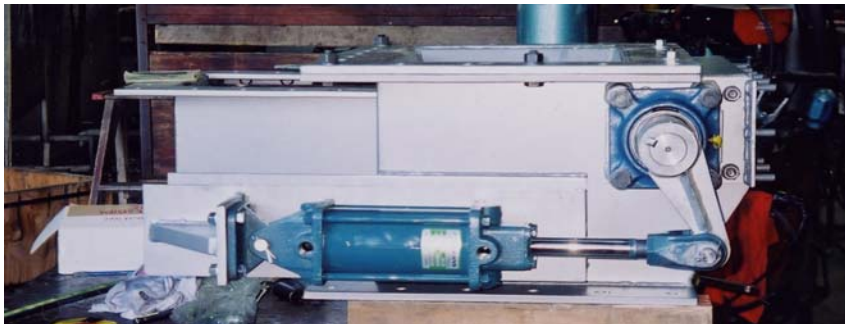
mpcp Air-Tight Double Gates® are utilized to seal back-end ash and grate ash systems against the ingress of air at their discharge or transfer points.

In back-end ash applications:

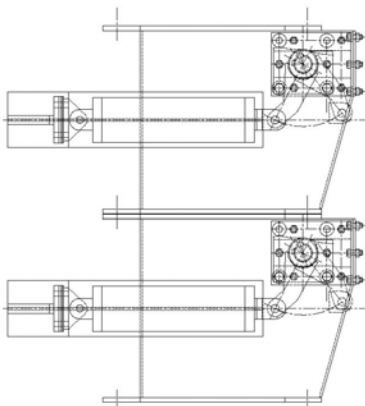
Design

These mpcp Double Flap Gate® systems handle fly-ash and combustible fly-carbon. They are normally under high negative pressures and at high gas temperatures. Temperatures can range as high as 800 deg.F.

To prevent fires in the ash handling system, as well as to prevent excess air from entering the downstream electrostatic precipitators, or other gas cleaning systems, *it is imperative that back-end ash handling systems remain air-tight under all operating conditions.*



Low head room design



Construction, Capacity & Control

The high-temperature construction of the mpcp Air-Tight Double Flap Gates® utilizes a timed pneumatic cylinder drive to open and close the two gates in sequence by means of a direct connection between the cylinder rod and the air seal gate.

The gates and shafts are easily replaceable. The mpcp Double Flap gates can be designed for any capacity range, as well as for low head-room and for any attachment flange configuration. Any cycle frequency and duration can be used for the upper and lower flap.

Each gate is driven individually and directly, unlike most

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mpcp Air-Tight Double Flap® & Dump Gates®

In grate ash applications:

*Grate ash **dump** gates require larger equipment to handle rocks and tramp materials.*

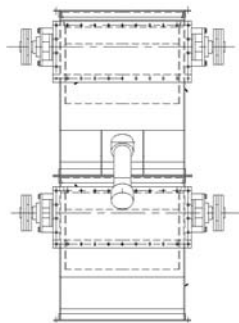


Design

The mpcp Air-Tight Double Dump Gates® for grate ash service are designed to handle rocks, clinker and tramp materials coming in with the fuel.

As the instantaneous quantities of ash being discharged from a grate are highly unpredictable, mpcp designs the upper gate counter-weighted and self-dumping. This triggers the pneumatic cylinder, which operates the lower gate and which is interlocked with the triggering mechanism to seal the dump gate between cycles.

These dump gate systems have very large capacity. They are designed for connection to 30-inch wide ash conveyors and to handle large clinkers, rocks and other debris that is introduced with the bark.



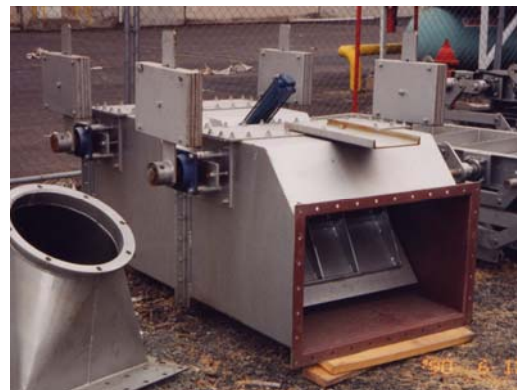
Construction

The grate ash Dump Gates are designed to handle high temperature, burning material and ash. They are constructed, therefore, with bearing and cylinder supports that are separated from the dump gate body to facilitate sealing and air-cooling.

Capacity and Control

The mpcp Air-Tight Double Dump Gates® are designed with capacities to match the ash handling capacities of the grate ash conveyors. The units can be designed to utilize a large storage "dutchman" which permits the lower gate to be operated on a slower frequency than the upper gate.

This method of operation may be required; for instance, when the dump gate is employed in conjunction with a traveling grate from which the ash is discharged in small quantities and the final dumping operation of the lower gate may not be required for extended periods.



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mpcp Screw Conveyors and Carbon Re-Feeders



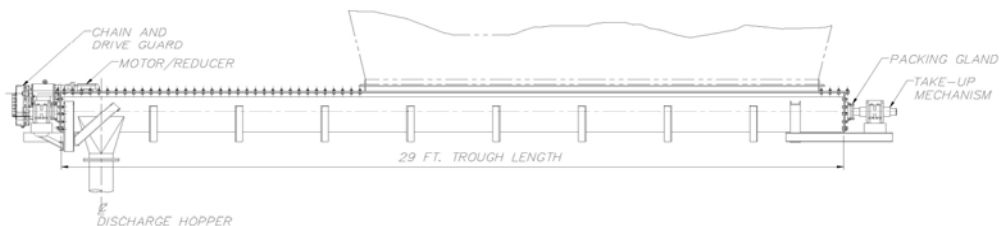
mpcp Screw Conveyors®

mpcp has developed two distinctly different types of screw conveyors: mpcp Screw Conveyors® rated for gas temperatures up to 600 deg.F and mpcp High-Temp Screw Conveyors® for temperatures up to 1,400 deg.F.



Common to all types of mpcp Screw Conveyors®, is that they are designed to minimize wear at low rpm. This is achieved with the characteristically large diameter screws and the large pitch we use to obtain maximum material advance per revolution and minimum relative motion between the material and the screw flights.

These screw conveyors can handle extreme and if necessary, highly localized temperatures that result from the discharge of burning material into this conveyor. Among numerous other proprietary features, the design includes a double shaft arrangement that effectively separates and insulates the screw body from the screw shaft. It prevents thermal buckling or deformation of the screw body from being transferred into the drive shaft, which stays straight.



Large diameter screws are more efficient and stronger. They move more material per revolution than smaller screws, can operate at steep inclines and can span large distances without intermediate bearings.

mpcp Screw Conveyors® use large diameter shafts and self-tensioning packing glands to prevent air ingress even under very high negative pressures. This prevents hopper fires and extends operating time between adjustment and maintenance.



mp combustion process ltd.

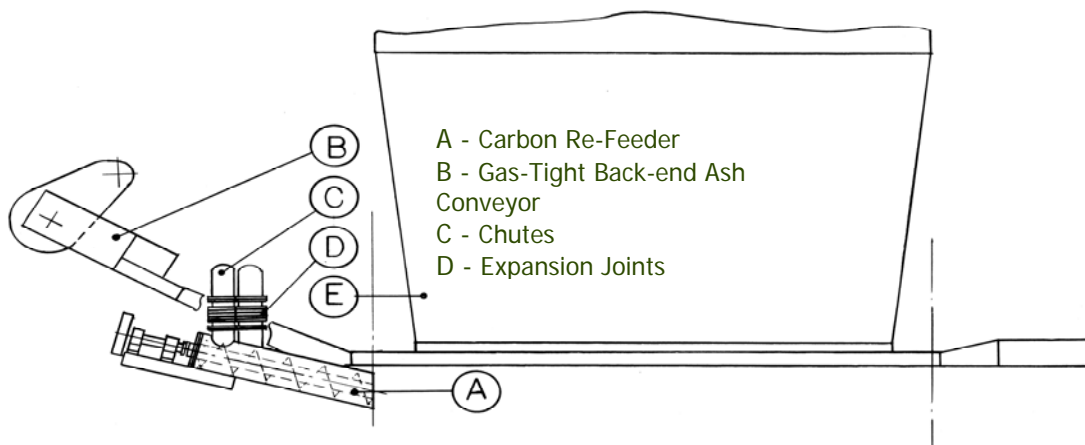
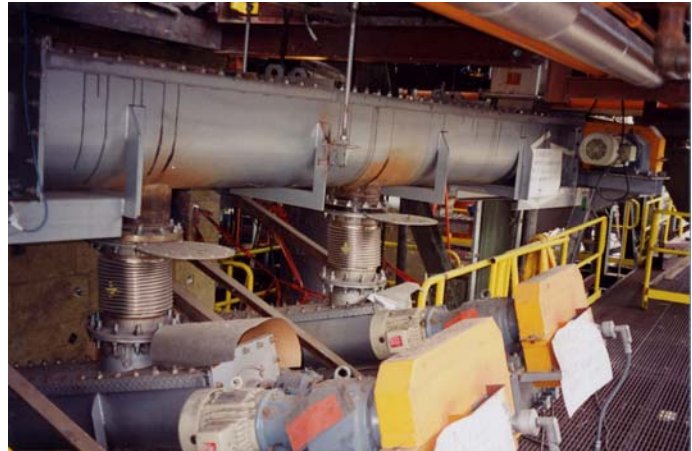
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mpcp Carbon Re-feeders®

The back-end fly-carbon caught from the generating bank and the tubular air heater hoppers are returned to the boiler grate via two High-Temperature Carbon **Re-Feed** Screws.

Using this method of **quietly** returning the fly-carbon to the grate *eliminates the re-entrainment of the fly-ash and erosion*, which characterize conventional re-injection methods.



The Carbon **Re-Feeders** are constructed of heat resistant alloy with air-cooled bearings supporting the feeder screw.

Large packing glands prevent air infiltration and keep the equipment dust-free.



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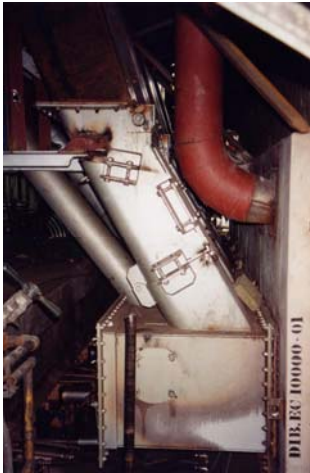


mpcp Bark Distributors®
and Pulsing Dampers®



mpcp Bark Distributors & Pulsing Dampers

mpcp has developed two very distinct systems that work exceedingly well together. The mpcp Bark Distributors® and mpcp Pulsing Damper® System allow the bark, sludge or coal fuels to be *distributed evenly over the entire grate*.

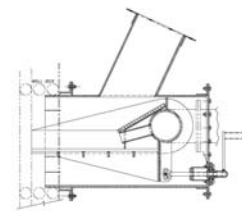
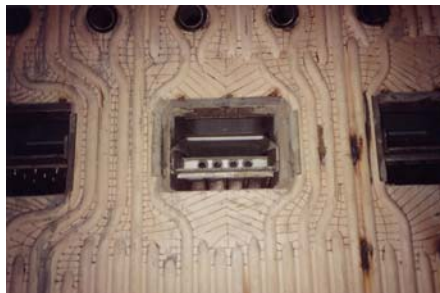
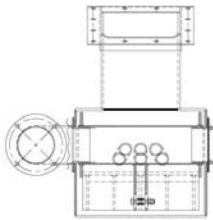


mpcp Bark Distributors®

The mpcp Bark Distribution® system is designed to distribute the bark into the boiler pneumatically, utilizing the high pressure/**high temperature combustion air** as a distribution medium.

Each distributor has an adjustable table with air nozzles. The adjustable table can be pivoted up or down to select the grate area to be covered.

These distributors ***distribute the fuel in a fan shape on the grate and thus avoid the corn-rows*** that are produced by conventional distributors.

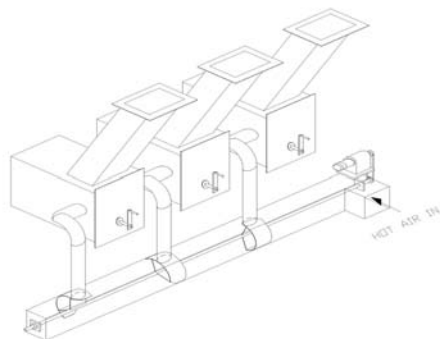


mpcp Pulsing Dampers®

To be able to distribute the bark evenly over the entire grate, mpcp installs Pulsing Dampers®.

Located directly below the Bark Distributors, the Pulsing Dampers® are designed to progressively reduce the air flow (pressure) to each distributor by approximately 40 percent. This results in a pulse duration of 4 seconds every 12 seconds at a rate of 5 cycles per minute.

These Dampers can span any width of furnace through a simple single shaft system.



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mpcp custom Dampers®



mpcp Dampers

mpcp designs Dampers for maximum controllability and reliability

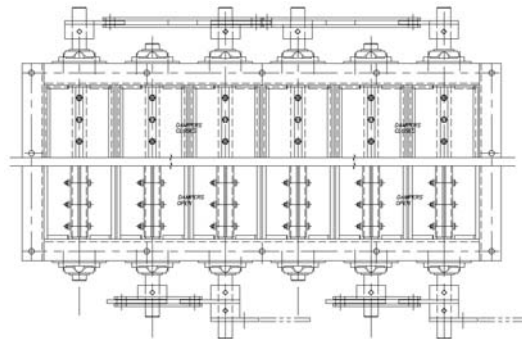


Design

mpcp dampers are designed for maximum tight shut-off without having to resort to machined seats.

They are generally designed for opposed-bladed operation to obtain maximum repeatability as control dampers.

mpcp will build, for special requirements where parallel bladed dampers are required, parallel bladed units. It has to be understood that these units are not control dampers, since their slot control is not controllable.



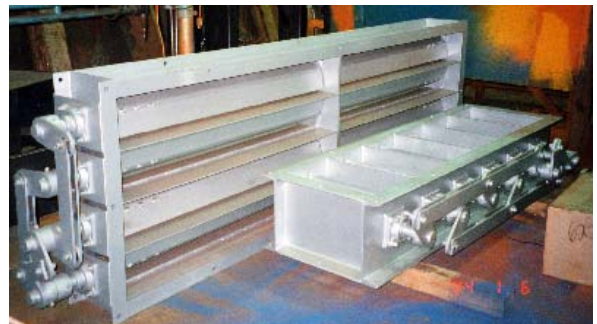
Key Features

mpcp utilizes venturi designed blades for optimum constructability and to obtain minimum pressure drop due to the blade shape.

Our Zero Backlash linkage employs hardened pins and bushings to maintain tight tolerances for long operating periods. We also use a reversing linkage to operate opposed blades.

By using bolted blades, mpcp makes it possible to tighten each blade in sequence and lock-weld the blade, if required, to the shaft to remain permanently in the correct position.

mpcp uses high temperature carbon bearings, designed to permit the whole damper frame and bearings under insulation and cladding.



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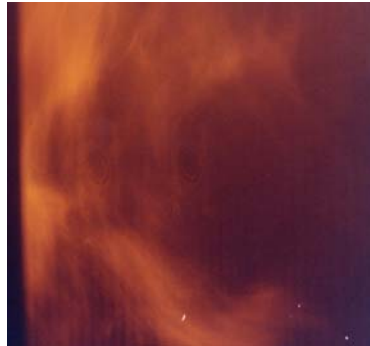
mpcp
Over-Fire Air System®



mpcp Overfire Air Combustion System

mpcp has designed an overfire air system in such a way that the fine particulate will be entrained into the burning gases above the fuel bed.

The production of gas from a fuel bed is inevitably accompanied by the lift-off of very small particulate from the bark bed on the grate, as well as by the entrainment of fuel fines into the furnace via the fuel distributors.



As the combustion and gasification process, in the fuel bed, changes due to the rate of grate combustion air, the *overfire air system requires the same **immediate** responsiveness and precision* to cover the entire furnace cross-section.



While, especially on large furnaces, the large reach requires large capacity overfire air nozzles, their strategic placement is important to generate a large amount of gas recirculation. This provides the necessary retention time to complete combustion of fuel fines.

mpcp uses a highly developed overfire combustion air system that has the capability to exactly match the final combustion of the gas above the fuel bed in the furnace to the rate of gasification in the fuel bed.

This capability is extremely important since the total overfire air mass is only approximately equal to the mass of gases coming from the fuel bed. The very low, 1:1 air-to-gas ratio has made the design of a special, **high capacity overfire air system** necessary to obtain the very high mixing rates that are required to **complete the combustion low in the furnace.**

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mpcp Mobile Atlas Ash Rakes®

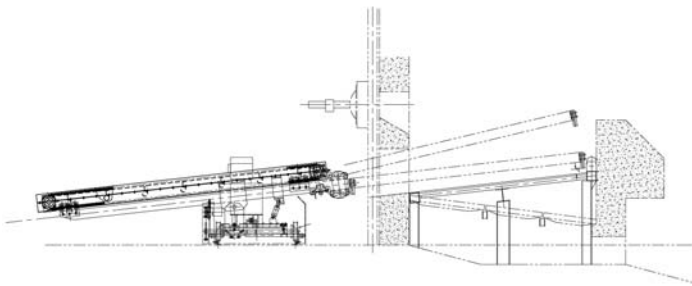


mpcp Mobile Atlas Ash Rake®

The mpcp Articulated Machine Ash Rake®, which we have named the mpcp Atlas Rake® is designed for application on Power Boilers which utilize pinhole grates and which have small ash doors, originally designed for ashing with hand tools.

Due to the increased liability and dangers of hand raking, mpcp designed a mobile, articulating rake that would eliminate the safety/liability concern.

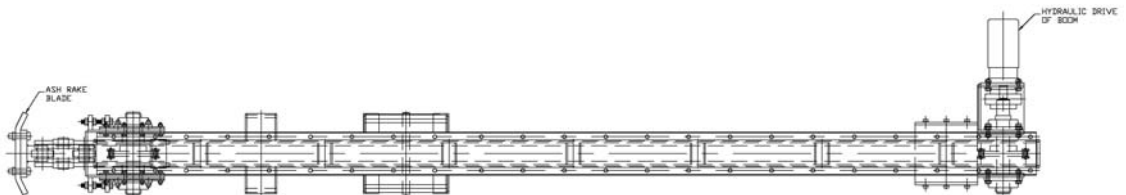
Since pinhole grate boilers require ashing through very small ash door openings or mouseholes, mpcp designed the Atlas Rake Boom to swing through a horizontal arc, covering as large a side-to-side area as possible.



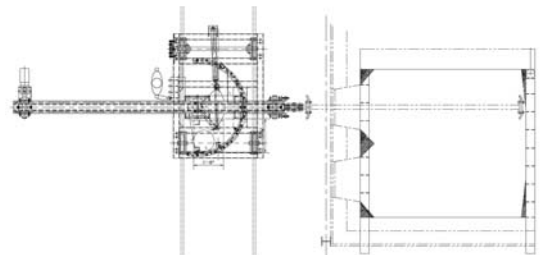
Pin-hole grates are normally designed with a slope downwards toward the ash door opening(s). The Atlas Rake is equipped with an elevating mechanism that permits the angle of the Rake Boom to match the angle of the respective grate.

The shapes and widths of the Rake Blade are selected to clear existing ash door openings.

While large clinkers have to be broken up with lances when hand ashing, the Atlas Rake is able to exert downward force at the Rake Blade to “grab” a clinker and drag it to the ash door opening. Clinkers that are too large to be dragged through the ash door will impact on the inner corners of the door openings which have to be reinforced.



The carriage is equipped with a turntable which permits the Rake Boom to be angled to the boiler front and to be swung out of the way of obstacles for travel along the boiler front. The carriage weight, which includes the Hydraulic Power Unit, four heavy track wheels and track rail hooks, provide the stability required to counteract the overhanging mass of the Rake Boom and the forces exerted when raking.



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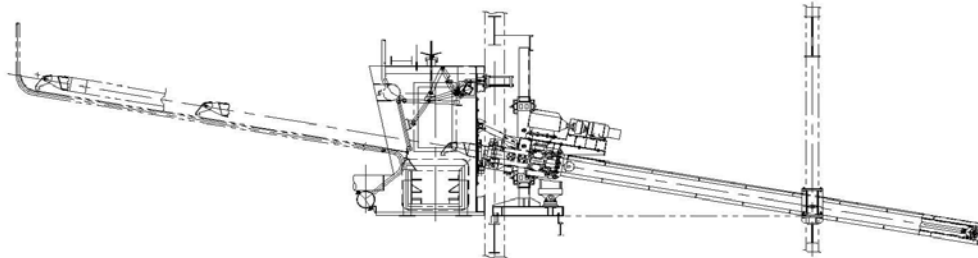


mpcp Stationary Machine Ash Rakes®



mpcp Stationary Machine Ash Rakes®

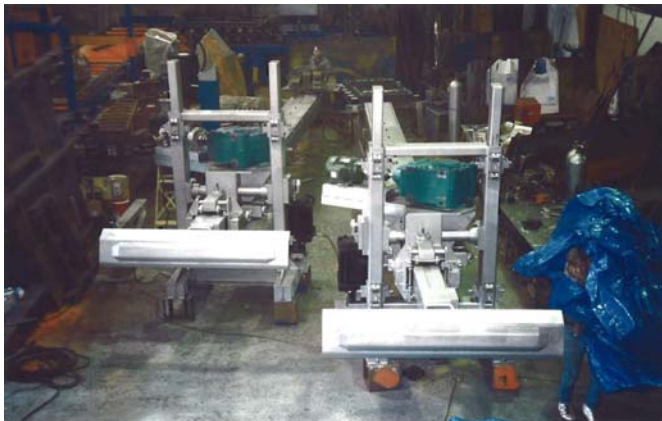
mpcp Machine Ash Rakes® were designed to handle the large ash quantities that are retained between ashing intervals on a U&R High-Performance Grate®.



mpcp Ash Rake® procedure

The mpcp Ash Rakes® enter the furnace through water-cooled ash doors which cover the full width of the U&R High-Performance Grate®. As the ash on the grate is raked out of the furnace through the ash doors, it drops from the grate into a clinker conveyor, which takes the ash through a large air lock dump gate to an ash bunker.

To prevent air ingress into the boiler furnace during ashing, the Water-Cooled doors® and the Grate Ash clinker conveyor® are enclosed in a Gas-Tight Ash Vestibule, which also serves to protect the operators from direct exposure to the ash opening and the raking process.



mpcp Ash Rake® description

Between ashing, the Ash Rake blades are parked in the Gas-Tight Vestibule in front of the boiler.

The complete raking machine equipment is located external, at the front of the boiler. This allows the equipment to be inspected and accessed 100 percent of the time.

mpcp Ash Rake® components

The rake blade and boom are elevated and lowered by a pneumatic cylinder, which carries the entire rake drive on an elevator frame.

The rake drive consists of a 10 hp drive with electric brake, which is connected via a flexible coupling to a right-angle gear reducer. The rake boom is driven by a mechanical rack and pinion drive and the boom is supported on spring-loaded wheels on a cradle.

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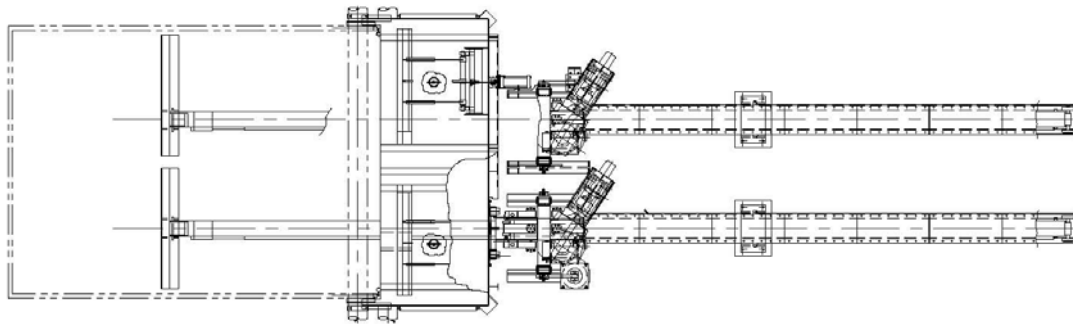
mpcp Stationary Machine Ash Rakes®

mpcp Ash Rake® operation

The Machine Ash Rakes® on a boiler are interlocked with the operation of the Water-Cooled Ash Doors® and the Grate Ash Clinker Conveyor®. Once this equipment has been proven in the safe operating position, the rake enters the furnace in a position above the ash bed. This position is always taken on the "insert" stroke. When the operator has decided to lower the rake blade, the "insert" stroke stops until the blade is in the ash bed when the "return" raking stroke commences.



The operator carries out the raking operation from a control panel located on the operating floor from where he observes the raking operation through observation windows located in the boiler sidewalls.



mpcp Ash Rake® construction

The entire rake assembly is constructed to meet extreme service conditions, similar to that of heavy earth moving equipment, except with added design features that make the equipment suitable for extreme temperature service.

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