



THE DETROIT[®] COMBINATION FUEL FEEDER

Now you *really* can have the best of both worlds by combining the coal distributing capabilities of the...



Detroit[®] Underthrow Fuel Feeder



And the refuse distribution benefits of the...

The Detroit Combination Fuel Feeder provides today's boiler operator with increased fuel flexibility by providing the option of burning coal and biomass/refuse fuels—**individually or in combination.**

As a result, boiler operators are able to take advantage of cost effective fuel options for meeting their energy requirements and substantially **lowering their operating cost.**

Detroit[®] Airswept Distributor Spout



The best of both worlds...in one fuel feeder

THE DETROIT® COMBINATION FEEDER

The newly redesigned Detroit Combination Fuel Feeder combines the many features and benefits of Detroit's Air Swept Distributor Spout and the Detroit® Underthrow Fuel Distributor.

The Detroit Air Swept Distributor Spout was designed specifically for Biomass and Refuse fuels. Many industrial processes result in solid waste streams of high calorific value, which is ideally suited for energy recovery. Waste products such as bark, wood waste, sawdust, bagasse, grain hulls, coffee refuse, RDF, and tire chips, have all been burned successfully utilizing Detroit's Air Swept Distributor Spout technology.

The Detroit Underthrow Fuel Distributor is used primarily for coal distribution for spreader stokers. The underthrow design of the rotor coupled with pneumatic assistance is a revolutionary change for fuel distributors. Due to the unique design, operators have been able to reduce their fuel cost by utilizing less expensive, run-of-mine coals which contain a high amount of fines. Due to the high fines and varying moisture content these fuels have traditionally been difficult to distribute evenly and consis-

tently over the fuel bed using conventional coal feeder technology. The Underthrow has been found to be the ideal choice for solving this problem.

In the past it was not uncommon for stoker operators using two different fuels to require separate fuel distributors for each fuel type. With this being the case one distributor would often be mounted higher than the other distributor and the fuel entry points would be at different elevations within the boiler. With one distributor high in the boiler, excessive suspension burning and carry over occurs — resulting in less ash cover to protect the grate surface.

The new Detroit Combination Fuel Feeder design allows for both fuels, coal and refuse, to be introduced into the boiler at an elevation that allows the fuels to be spread evenly over the entire stoker grate surface. Fine particles are rapidly burned in suspension while heavier particles are spread evenly on the grate forming a fast burning fuel bed. The combination of suspension burning and fast burning bed improves combustion which can improve furnace efficiency, emissions and makes the stoker extremely responsive to load demand.

Features & Benefits:

- **Combination Hopper / Distributor can be retrofitted to existing DSC coal feeders.**
- **Baffle design in air chamber of spout provides even air distribution across the width of the distributor.**
- **New combination feeder design provides better fuel distribution by lowering the air outlet point closer to the exit point of the distributor.**
- **Rugged construction / superior materials – stainless steel for areas susceptible to heat. Chromium carbide used at wear points. Factory constructed, assembled and tested.**
- **Distributes fuel more consistently and evenly than other feeders.**
- **Improved distribution of fuel promotes less carry-over resulting in lower loss of ignition.**
- **Innovative design makes the Combination Feeder the ideal choice for increasing fuel flexibility.**
- **Utilizes the smallest furnace opening possible to alleviate damage caused by radiant heat.**
- **Ideal for distributing fuels inconsistent in size and moisture content.**

ILLUSTRATED FEATURES OF THE COMBINATION FEEDER

1. BAFFLED AIR CHAMBER

in the distributor spout maintains uniform air distribution across the entire width of the distributor.

2. AIR OUTLET LOCATION

has been lowered closer to the exit point in the furnace to provide better fuel distribution over the stoker grate surface.

3. ADJUSTABLE DISTRIBUTOR PLATE

directs the fuel by the position of an adjustable plate. It can be rotated from the horizontal position up to a 10 degree incline to project fuel to the rear of the stoker.

4. MOTORIZED ROTARY & BIASED AIR DAMPERS

controls the air to each air swept spout by alternately increasing and decreasing both volume and pressure of the air assuring even fuel distribution within the furnace. The action of these dampers varies the trajectory and spread of the fuel front to rear.

5. CHAIN CONVEYOR CARRIAGE

measures the fuel feed by varying the speed of the motor from the combustion control system.

6. CARRIAGE DRIVE AND ROTOR DRIVE

are separate for each distributor and driven by a 1HP motor. Each distributor is controlled independently through the use of an A.C. variable frequency drive or through mechanical devices.

7. DISTRIBUTING UNDERTHROW ROTOR

spreads the fuel in the furnace evenly, longitudinally and laterally, over the stoker grate surface.

8. AIR COOLED APRON TUYERES

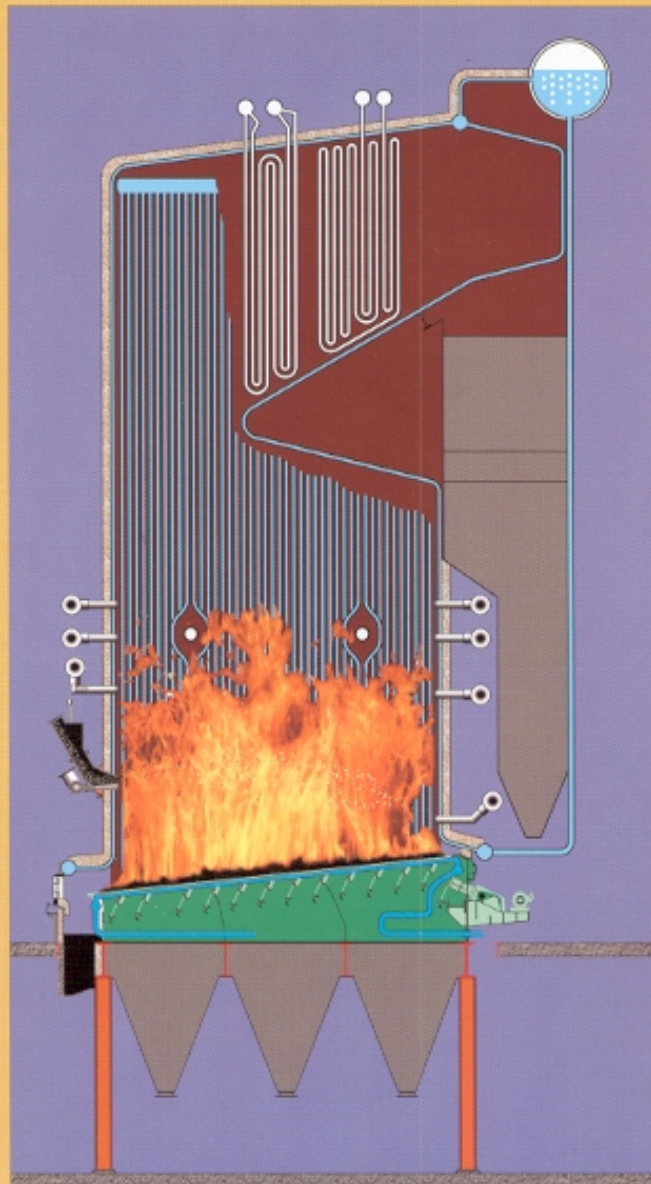
line the bottom of the distributor discharge opening into the furnace to prevent the buildup of fines which could interfere with proper fuel distribution.

Detroit Stoker Company: A complete line of combustion equipment

While Stoker is our middle name, it describes just a part of our comprehensive line of equipment for the steam and power industries. Our expertise includes applications in nearly every type of boiler and furnace configuration. Why not put this extensive experience to work on your combustion challenges? Additional information is available on the following product lines:

- Stokers for combustion of all fuel types
- Low NOx gaseous and liquid fuel burners for auxiliary and full load firing
- Combination feeder for coal, biomass, and refuse
- Rotary seal feeders (rotary valves)
- Fuel feeders (distributors)
- Rebuild programs for Detroit Stoker built products
- Replacement parts
- Engineering services
- Maintenance and repair services
- On-site repair and rebuild, inspection and tune-up, fuel conversion services
- Overfire air systems for staged combustion
- Metering conveyor feeder for biomass and refuse
- Carbon reinjection systems
- Ash receiving/separating equipment
- Sand/char classifiers
- Furnace access doors
- Ash & sludge conditioners - rotary and twin shaft - paddle type

This illustration shows a steam generator fired by a Detroit Hydrograte® Stoker. The adjustable pneumatic distributors are designed to evenly spread fuel over the grate for good combustion and emissions control. A portion of the refuse is burned in suspension. The remainder is burned on a thin, fast-burning bed on the grate. Alternate or auxiliary fuels can readily be burned in the furnace above the grates.



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Since
1898



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