

CONICAL® NON-SEGREGATING DISTRIBUTOR

Part of the Coperion Product Line



The Conical Distributor provides reliable, uninterrupted coal flow for the power industry.

Efficient boiler plant operation requires a uniform mixture of coarse and fine coal across stoker hoppers to insure even combustion. Conical® nonsegregating coal distributors will distribute the coal in a nonsegregating manner across the stoker hopper inlet, thus producing a uniform fuel bed, high average CO₂, low combustibles in ash, higher boiler capacity, and lower maintenance. In order to understand the operation of Conical nonsegregating coal distributors, coal flow in a flat chute should first be analyzed.

Coal Flow in Flat Chute

If a flat plate was inclined to the horizontal, as shown in **Figure 1**, and a piece of coal placed at its upper edge and then released, it would follow the

steepest slope down the surface of the plate, as indicated.

A number of such pieces of coal released successively from the same starting point would form a pile at the bottom, as shown in **Figure 2**. The coarse coal would roll over this pile away from the center of the plate, while the fines would sift through the coarse coal and remain at the center.

The addition of a second plate placed parallel to the first, with side plates, as indicated in **Figure 3**, would form the usual straight fan-shaped chute which should never be used to feed a stoker. The resulting segregation is obvious.

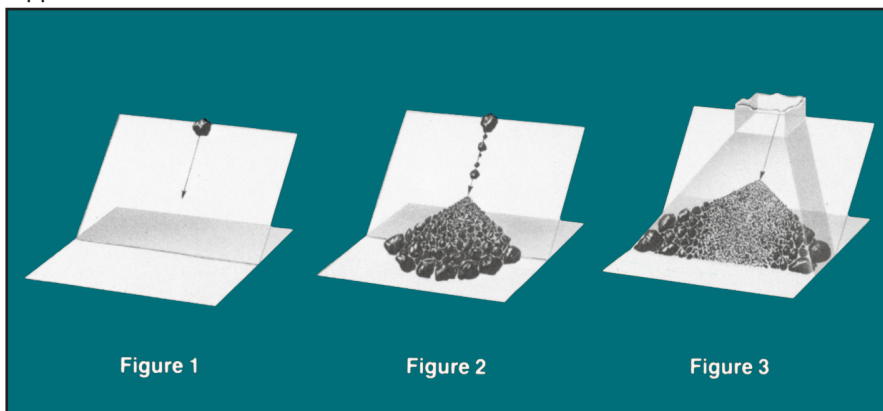
With this segregation of the coal going to the stoker, the portions receiving the coarse coal burn rapidly with considerable excess air. Arches are quickly eroded and stoker parts are soon uncovered and exposed to damaging heat. The portions of the stoker receiving the fine coal burn slowly and are not completely burned by the time cinders are dumped resulting in a high percentage of combustible material in the ash.

Proven Results

Conical® nonsegregating coal distributors are purchased for new installations and to replace existing equipment. Better boiler and stoker operation have justified the expenditure.

Nonsegregated coal feed assures a uniform fire which has high average CO₂ and which produces an ash low in combustibles. A uniform fire makes increased boiler rating possible. Maintenance of arches and stoker iron is decreased.

Coperion distributors are not just theoretically correct; thousands of Conical distributors installed in central stations and industrial plants demonstrate that these distributors operate quite satisfactorily in practice.



How it Works

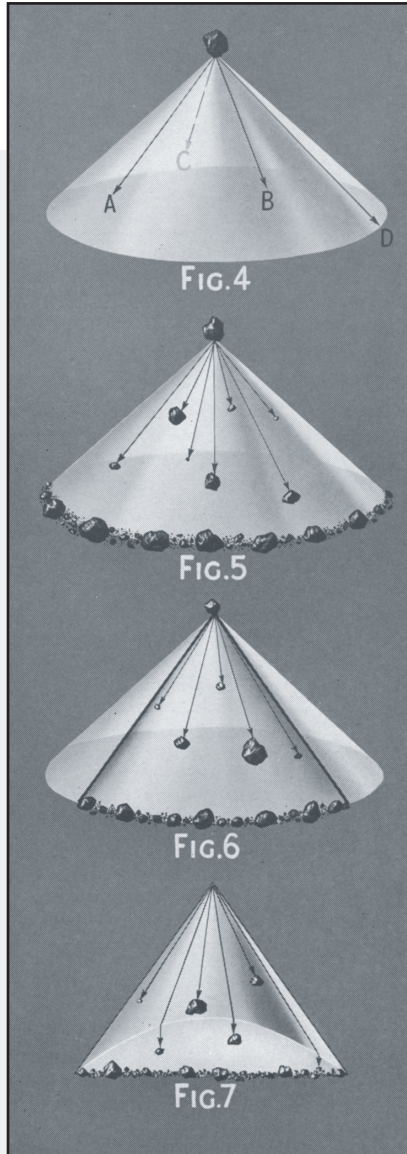
Coal Flow in a conical Distributor

If a lump of coal was placed at the apex of a cone, the axis of which is vertical (**Figure 4**), and then released, it might slide down any element of the cone, such as to point A or B, or down the back side to point C, or over to the right to point D.

If a number of pieces of coal were placed at the apex of the same cone and released, the condition shown in **Figure 5** would result, wherein all the coal, regardless of its size or shape, would be equally distributed around the cone.

A segment of a cone, as in **Figure 6**, would produce the same result. In order to deposit the coal along a straight line, the conical segment is cut by a vertical plate, as shown in **Figure 7**. The coarse and fine coal remain uniformly mixed in this vertical drop since the flow of the coal particles is parallel.

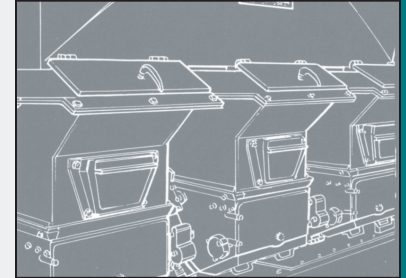
The Conical nonsegregating coal distributor is formed by adding two side plates, an entrance flange, and another similar conical segment to act as a cover plate. The result is coal distribution without segregation.



Optional Features

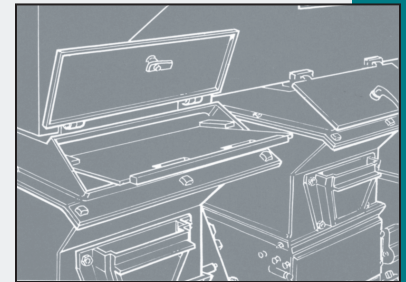
Dust-Tight Slip Joints

Coperion dust-tight slip joints can be furnished to make a dust-tight flexible connection between the Conical nonsegregating coal distributor and the stoker hopper. These slip joints are provided with dust tight steel doors for coal inspection or for removal of foreign matter. Doors are equipped with the same heavy duty hinges and latches as used on Coperion coal scales.



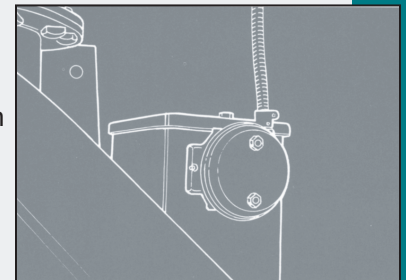
Drive Gates

Stock dust-tight slip joints may be equipped with drive gates for shutting off the flow of coal to each individual stoker hopper section. (Not available for all stokers.) These gates are equipped with handholds to allow the operator to withdraw them.



Coal Stoppage Alarm

Coperion paddle-type coal stoppage alarm can be installed in dust-tight housing mounted on the top cone of the distributor. This alarm gives a reliable and immediate report of the absence of coal in the distributor. It is recommended for every distributor installation, particularly those equipped with dust-tight slip joints.



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