



**Smart Chute® Transfer System
 with Air Restrictors** (Patent US 8,640,855 B2)

Passive Dust Control Technology for 6,000 tph PRB Coal Transfer Chute

CCC Group, Inc. successfully completed an EPC project replacing a 6,000 tph PRB coal transfer with passive dust control technology, the Smart Chute® Transfer System with *Air Restrictors*.

The Challenge

Due to PRB coal being delivered to the plant by barge, the new passive dust control transfer system had to handle varying moisture content as well as a large variation in material volumes, from 2,500 to 6,000 tph. Typically, when load volumes change from full load to partial load, air is allowed to rush through the transfer with the material, thereby creating airborne dust.

As additional challenges, the head chute design had to retain an existing magnetic separator and the entire project had to be executed under an extremely compressed project schedule of less than three months to complete conception, engineering, fabrication and installation.

Solution

The CCC design team incorporated Smart Chute® Transfer System Technology through the use of Air Restrictor gates which automatically self adjust to material capacity variations. The Air Restrictors cut off the pathway of the induced airflow by closing the gap between the material stream and the inner chute wall. This design restricts the induced airflow directly, stopping the air from rushing through the transfer chute, without interrupting or decelerating the flow of material.

Discrete Element Modeling (DEM) was used to create sophisticated three-dimensional models to simulate smooth coal flow and center loading for varying material volumes.

CCC replaced the entire transfer chute and skirting systems to reduce induced airflow, maintain existing material flow quantities without plugging, and minimize load zone material spillage.



Closed Across Chute

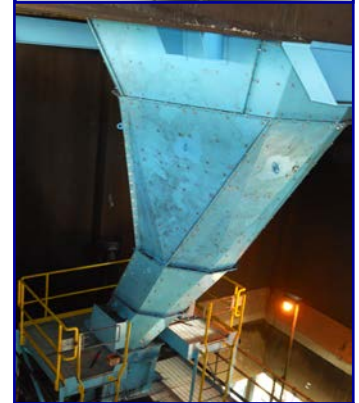
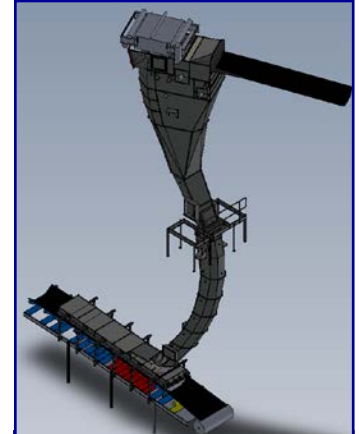


Opened by Coal Flow

Results

CCC Group returned the system to operations safe, on schedule and on budget with No Visible Dust®. Over several days, dust level readings were taken at the tail end of the load zone, the exit end of the skirt wall chute work on the receiving belt, as well as each side of the head chute of the feeding belt. All dust readings were well below the required limits of 2.0 mg/m³.

Plant personnel were very pleased with the new system and CCC Group's dedication to comply with the challenging scope of work, maintaining a very tight schedule, and completing the project safely with high quality results. The client's workers now enjoy a cleaner, quieter working environment.

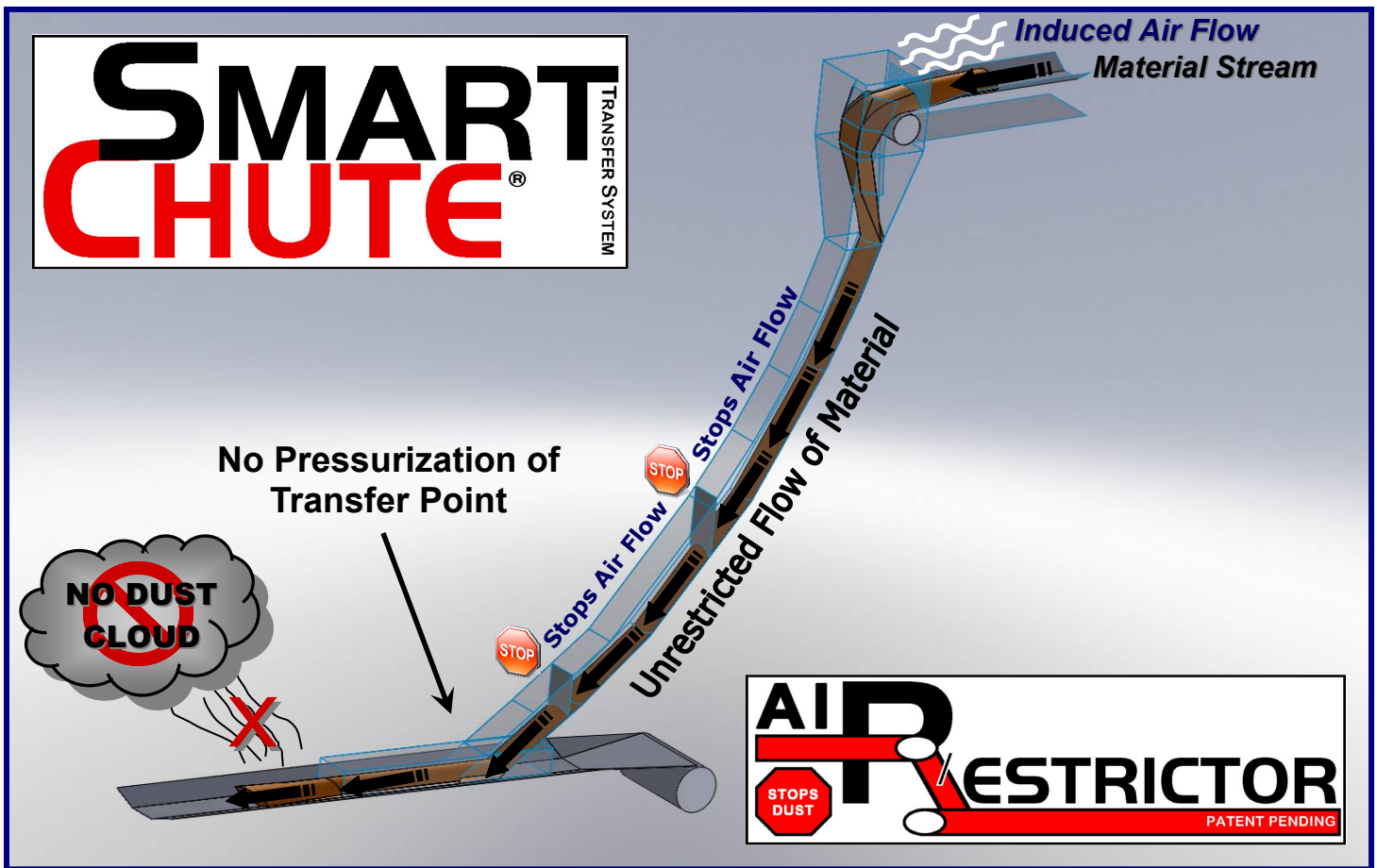


DEDICATED TO DUST CONTROL & MATERIAL TRANSFER TECHNOLOGIES



Smart Chute[®] Transfer Design
With Air Restrictors (Patent US 8,640,855 B2)

Separation of Air Flow from Material Flow



Patent US 8,640,855 B2

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