

# DSI SANDWICH SHOP

## WET BRUSH

### IMPROVED MATERIAL FLOW AND CONTROL



**DSI SANDWICH SHOP**

DSI sandwich belt high angle conveyors are generally able to continuously elevate, at any high angle, any bulk material that can develop internal friction. That is, nearly any bulk material. Only those scarce materials that tend to fluidize cannot be conveyed. Most materials convey, without any internal movement, cleanly from loading to discharge. A few conveyable materials may contain excessive dust or may be of a fine dry nature that tends to migrate towards the belt edges, ultimately leaking out. The normal dry belt to dry material interface fails to arrest this outward migration.

### THE SOLUTION

It was discovered that mere, light wetting of the belt surface changes the material to belt interface and effectively arrests the migration. The amount of wetting required is trivial but the positive effects are dramatic.

## THE WET BRUSH

Early wet brush systems were improvised and manual, using pipe, hoses and valves from the local hardware store. A trickling of water flowed through a wet cloth that brushed the moisture onto the edge surface of the moving belts. Later versions utilized spray heads each followed by a spreader brush. This greatly improved the wetting reaction time to the material flow.

The current commercial DSI Wet Brush is the first to fully automate the Wet Brush operation utilizing precise water flow control and measurement that reacts to precise monitoring of the bulk material flow rate. A sonic, broad level sensor at the bulk material feed point along with a belt speed monitor provide all of the information required to control the wet brush system. System interlocking maintains a perfectly dry system when there is no bulk material or the feed belt speed is zero. From that point we can measure the material flow rate continuously and automatically adjust the wet brush moisture rate for optimal response to the requirements that will ensure no material





migration outward, thus no leakage. A precise proportioning valve to each brush will control the moisture rate. An accurate flow meter will track the moisture rate allowing exact determination of the moisture change to the bulk material.

## **DRAMATICALLY IMPROVED PERFORMANCE WITH TRIVIAL MOISTURE**

From the beginning, field applications of the wet brush systems, in the rare cases needed, have demonstrated that Dos Santos Sandwich Belt performance is improved dramatically with a trivial amount of moisture. To date the most challenging system, a DSI Snake ship loader in southern Australia, elevated bone dry mineral sands (ilmenite) at 1000 t/h up to Panamax class ships. A 0.01% increase in moisture (100 liters per hour) proved to be far more than required to achieve a sealed, clean, complete bulk material flow from loading to discharge.

## **BROADER APPLICATIONS**

Though driven by the Dos Santos Sandwich Belt requirement, DSI wet brushes have found wider application including:

- Belt moistening to suppress dust, and improve belt scraper performance.
- Belt wetting with a siphoned glycol solution for improved traction of slick, frosted wood chips in cold weather operation.
- Belt moistening for applying various siphoned solutions that chemically benefit the bulk material or the belt surface.



**CALL THE SANDWICH SHOP TODAY!**



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