

B. W. SINCLAIR INFORMATION UPDATE

SCREW CONVEYOR FLIGHT TREATMENTS TO COMBAT ABRASION

In material handling terms, the Conveyor Equipment Manufacturers Association (CEMA) defines "abrasiveness" as "a combination of the physical characteristics of a material that enables it to abrade particles from surfaces with which it comes into moving contact." Those physical characteristics are particle hardness, particle shape, bulk density, and particle size.

While non-abrasive or mildly abrasive materials can be handled adequately by standard gauge screw conveyor components, very abrasive products require heavier than standard components, lower cross-sectional loading, and, in some instances, special flight treatments to combat the effects of abrasion.



One potential answer to screw wear is the use of abrasion-resistant plate and pipe materials in the initial fabrication. Standard cold forming of the helix is possible with plate of ~ 250 BHN, and hot forming allows the use of materials rated as high as ~ 500 BHN. However, it is difficult to gauge the service-life extension resulting from using these more expensive materials.

A more common, though more costly, treatment is the application of abrasion-resistant weld metal to the outer tip and the carrying face of the helix. Since abrasion will attack the exposed tips and the submerged face initially, hard-facing these areas is normally sufficient to address concerns.



Of course, weld-on hard facing is substantially more expensive than AR-plate fabrication, as the process requires more expensive weld metal and considerable labor. While it is still difficult to quantify the additional service life from such a treatment, our experience indicates that this weld application results in the longest life.



In some screw feeder applications that entail a compressive head load of abrasive product, some customers can benefit from a hard alloy treatment to the inlet-zone center pipe as well as the helix. While such special treatment adds another layer of capital expense, the increased service life in a critical feeder can justify the cost.

While the rotating helix is the component most affected by abrasion, SINCLAIR can also customize the conveyor housing to increase its life. Such steps include heavier wall construction, AR-plate fabrication, and rectangular trough design.

Please contact SINCLAIR for additional information and cost estimates.

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