



WesTech **Horizontal Belt Filters** provide a continuous vacuum on a horizontal plane. Slurries are fed onto a filter cloth supported by a traveling drainage belt. They are especially adaptable to applications where low cake moisture is desirable. WesTech Horizontal Belt Filters have been developed and improved in mechanical design by working closely with engineers and operators with widely variable applications worldwide.

Coal Preparation Circuit

Three quarters of American coal is mined east of the Mississippi River. Half of this is “prepared” coal. Coal preparation offers a number of commercial and environmental benefits. These include increased quality and commercial value of saleable coal by achieving 75-80% ash reduction and 15-80% trace element reduction. Cleaned coal reduces transportation costs as well as reduced quantities of combustion ash requiring disposal. Coal preparation can also make marginal coal supplies suitable for sale.

Conventional coal preparation involves cleaning and separation of coal-rich from mineral-matter-rich particles by size. Typical processes include:

- **Raw Coal Pretreatment**
- **Coal Cleaning**
- **Coal Sizing and Classification**
- **Coal Dewatering**
- **Tailings Treatment and Water Clarification**

Tailings Treatment and Water Clarification

The majority of coal preparation processes require large quantities of water. Exceptions to this include crushing, screening, and transportation. Coal is separated from inert materials using flotation. This yields wastewater rich in coal fines. This water must be treated for solids removal before it can be reused in the plant or discharged.

Horizontal Vacuum Belt Filters

Horizontal vacuum belt filters dewater froth overflow from flotation cells and other process streams. Flotation overflow contains washed and classified coal which must be dewatered prior to sale. Horizontal vacuum belt filters can process large amounts of prepped coal with minimum operator attention.

Thickener

Hydrocyclone overflow and flotation unit underflow solids are removed in a high-rate thickener. The thickener also receives horizontal vacuum belt filtrate that is rich in fine solids. The thickener allows the solids to settle and produces a clarified water stream which can be recycled back to the plant. Polymer is used in the thickener to facilitate large floc formation and increase effluent quality. Thickener underflow has traditionally been sent to an impoundment or tailings pond.

Paste Thickener

Paste thickeners have been placed downstream of conventional thickeners as a result of recent improvements in paste technology. Paste thickeners produce thick underflow “paste” which is stable and will not flow or leach material when exposed to rain. This allows coal waste impoundment elimination along with the associated costs and risks of maintaining such waste ponds.