



Processing Oil Sands / Tar Sands and Reducing Moisture

Question

We are processing oil sands/tar sands. Currently we are using eductors to remove clean sand from the process, pumping treatment liquid and sand across vibratory shakers, recovering 90% of the liquid with a liquid loss of 10 to 15%. Is there a compression screw that can be arranged to extract 40 tons of sand/hr, reducing moisture to minimum 10% in the sand? The screw would be arranged to convey at an angle of 75°, 12 ft to a receiving belt conveyor.

Answer

A compression screw or screw press for dewatering bulk solids such as sand is a specific type of process equipment designed and manufactured by companies that specialize in dewatering and classifying bulk solids. A screw press reduces the liquid content by compressing the bulk solid and forcing the liquid out through a screen or filter. The volume between the screw press flights reduces and compresses the bulk solid as it is conveyed toward the discharge. Dewatering consistency can be accurately achieved with a screw press by adjusting screw speed, screw configuration and screen type.

Another method would be as you have suggested and use an inclined screw conveyor with an inlet hopper and weir. The sand will settle to the bottom of the hopper by gravity and the free water will rise to the top and drain off over the weir. The sand will convey up the incline and continue to dewater. Maximum recommended incline for a dewatering screw conveyor is 30°. Conveyor angles greater than 30° cause a significant reduction in conveying capacity. Dewatering consistency is less accurate in an inclined dewatering screw conveyor when compared to a screw press.

There are several screw press manufacturers on the market that can solve your sand dewatering issue. KWS designs and manufactures inclined dewatering screw conveyors for your application. The large capacity of 40 tns/hr would require a single-screw 30-inch diam. or a twin-screw 24-inch diam. unit. A complete understanding of your application is important so we can provide a solution that exceeds your requirements.



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