



Plant Name and Location
Sensient Flavors
Harbor Beach, MI

Stainless Steel Shaftless Screw Conveyors for Filter Press Cake

General Description of the Application

Sensient Flavors is one of the world's leading flavor and fragrance companies. The Sensient name defines what they do; "Enhance **SENS**ory experiences through specialized ingredi**ENTs**". In 2015, Sensient Flavors underwent a \$30+ million project to expand their plant in Harbor Beach, Michigan. The purpose of this expansion was to increase capacity, reduce emissions and improve the quality of their products. As part of this project, Sensient Flavors required two shaftless screw conveyors to transfer cake from two filter presses to a dumpster. The presses contain filters with activated carbon and diatomaceous earth. Flavored liquids are pumped into the presses and pressure is used to force the liquid through the filters to purify, decolor, and concentrate them. The spent carbon and diatomaceous earth is washed and scraped off the presses to the KWS shaftless screw conveyors and then moved to disposal. Since Sensient had already ordered the presses and wanted everything onsite together, it was imperative that this project be executed quickly.

Design Parameters of Application

Product Type: Filter Press Cake consisting of water, activated carbon, diatomaceous earth (wet, sticky, sluggish)

Material Density: 40 Lbs. per Cubic Foot

Conveyor Capacity: 62.5 Cubic Feet per Hour

Duty: 2 Hours per Day, 7 Days per Week

Advantages Provided by KWS

Sensient Flavors contracted with Process Plus, a prominent engineering firm in the Mid-West to assist with the design of the plant. Process Plus made initial contact with KWS after running a Google search on shaftless screw conveyors. The KWS website is a wealth of information for Customers. An engineer from KWS was able to educate the project engineer from Process Plus on KWS's capabilities with subsequent communications and a personal visit to the firm's office. Since this project involved interfacing with existing filter presses and conveyors, KWS recommended custom-designed shaftless screw conveyors to ensure the system would work perfectly. KWS worked closely with Process Plus to completely understand the process and to make sure that no important dimension or detail would be missed that would cost valuable installation or operation time. KWS always strives to provide a high-quality solution with a front end approach; the extra engineering and design at the beginning of the project saved an enormous amount of time during installation and start up. Time was of the essence for this project. After all of the layout issues were resolved, Sensient Flavors required the equipment in four short weeks. The first shaftless screw conveyor was shipped for extremely rapid delivery and the second unit followed shortly behind. KWS met the delivery challenge with no problem and the installation went flawlessly.

Special Features of KWS Design

The KWS shaftless screw conveyors are excellent for conveying wet, sticky filter cake. The abrasion-resistant shaftless spirals are kept in stock at KWS to meet our Customer's delivery requirements. The screw conveyor troughs, covers and product-contact components were manufactured from 304 stainless steel for corrosion resistance. The KWS shaftless screw conveyors were designed to easily interface with the existing equipment. Each new conveyor had a drain connection at the inlet end so



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excess liquid could be piped away. KWS provided all necessary connecting chutes and structural supports. KWS engineers modeled the system in 3D Autodesk Inventor, making fit up easy and eliminating any interferences. flexible fabric silos. The slide gates allowed for easy accessibility so the flexible fabric silos could be filled with a precise amount of sugar and then the gates would be opened so sugar could enter the screw feeders. Engineers at KWS created a 3D representation of the existing installation site and supports to make sure the new screw feeders fit perfectly into the existing structure. The screw feeders were engineered to operate at relatively low speeds to reduce product degradation.

"Thanks for all your input on this project! Your attention to detail really helped us get things turned around in a hurry."

Mike Berkshire, Project Engineer – Process Plus



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