



Existing KWS Gather Screw Conveyor Under Dust Collector



Existing Belt Conveyor was Removed and Replaced with KWS Shaftless Screw Conveyors

End User or Owner

Howard County Department of
Public Works and Beureau of
Utilities
Howard County, Md

Consulting Engineer

HDR Engineering
Denver, CO

Contractor

Clark Construction
Savage, MD

Plant Location

Little Patuxent WRF
Savage, MD



**Design
Engineering
Manufacturing**

KWS Manufacturing

3041 Conveyor Drive
Burlleson, Texas 76028

Toll Free: (800) 543-6558

Phone: (817) 295-2247

Fax: (817) 447-8528

www.kwsmfg.com

Dual Shaftless Solids Load Out System for the Little Patuxent WRF in Howard County, MD

General Description of the Application

The Little Patuxent Water Reclamation Plant serves the central part of Howard County, which contains 56% of the County's population. This includes the towns of Columbia, Savage, and North Laurel. There are 820 miles of gravity and force main sewer pipe that carries wastewater to the plant. Most of the western part of Howard County is rural. Waste from septic tanks in this area is transported to the plant by truck. The plant is permitted for treating up to 29 MGD (million gallons per day).

The Little Patuxent Water Reclamation Plant produces upwards of 35 tons of dewatered biosolids each day. The biosolids process currently utilizes lime stabilization of undigested primary sludge and waste activated sludge to create Class A solids. The Addition No. 8 upgrade eliminates the need for lime stabilization, and adds anaerobic digestion, direct heat drying, centrate treatment, enhanced odor control facilities, and other process and electrical upgrades. Once the upgrade is complete, biosolids leaving the Little Patuxent facility will be of high enough quality to be used on local farmland. As part of the second phase of this addition, KWS Environmental provided two 85-foot long shaftless screw conveyors with three diverter valves to replace belt conveyors in the system.

Design Parameters of Application

Product Type: Dewatered Biosolids

Material Density: 45 Lbs. per Cubic Foot

Capacity: 648 Cubic Feet per Hour

Duty: 5 Days a Week, 8 Hours per Day

Advantages Provided by KWS

The previous layout utilized belt conveyors that were messy, hard to maintain, and being uncovered put extra odors into the plant environment. KWS Environmental was selected by the consulting engineer to provide shaftless screw conveyors to replace the belt conveyors. KWS provided engineering support during the design phase and helped the consulting engineer redesign this area of the plant.

A licensed professional engineer from KWS Environmental assisted in selecting the right features, layout, and materials of construction for the new shaftless screw conveyor system. The new system was designed with two side by side shaftless screw conveyors capable of handling the full load of dewatered biosolids. This redundancy allows the plant to stay operational at all times now.

The KWS design team worked with the contractor and engineer during the design phase to ensure the new conveyor system would seamlessly mate to the support structure left over from the existing belt conveyor. KWS was easily able to meet the tight design and manufacturing schedule due to our lean processes. KWS sent two engineers to the site for the "blitz", which was the three-day period where the belt conveyor was dismantled and the new shaftless screw conveyor system was assembled and put into operation. KWS provided leadership during this critical install period and ensured that the new system was handled, installed, and started up correctly. After the blitz the new system worked as required.



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Special Features of KWS Design

KWS designed the new shaftless screw conveyor system to ship in sections so it was easy to install given the tight layout. The KWS high-strength alloy shaftless spirals were field welded in accordance with KWS instructions and supervision. The KWS design had to adapt to three different upstream centrifuge chutes and was accomplished by designing and manufacturing the mating equipment with adjustment ability to account for field conditions.

KWS provided three diverter valves to divert dewatered biosolids from the three centrifuges to one new shaftless screw conveyor or the other. Each diverter valve had a special access port and sample scoop to ensure the operators can view and maintain the equipment easily along with obtaining data they need on the dewatering process. KWS also provided one curved slide gate so cake could be diverted to a downstream conveyor in a future phase. Curved slide gates are ideal for sticky products since the gate blade fits the contour of the U-trough and there are no gaps for dewatered biosolids to build up.

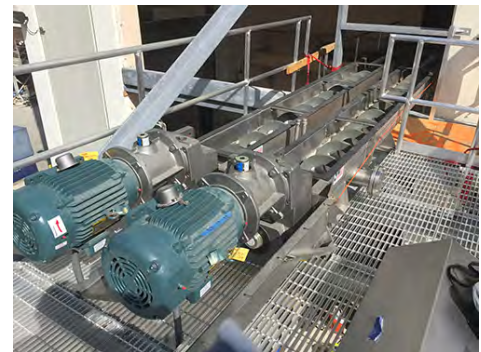
Testimonial

"It was great to see the KWS Environmental equipment delivered to the site on time. We look forward to getting it up and running. Thanks for efforts to date."

- Ben Miller, Project Manager – Clark Construction



Dewatered Biosolids are Discharged from Three Centrifuges and Diverted into Shaftless Screw Conveyors



Two Identical KWS Shaftless Screw Conveyors Provide Complete System Redundancy



KWS Problem Solvers



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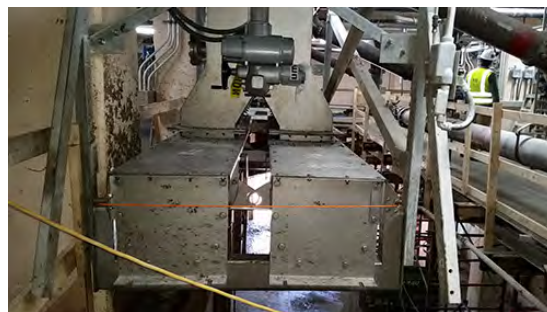
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Drive Ends of KWS Shaftless Screw Conveyors are Protected from the Environment with Special Covers



KWS Exclusive One-Piece Drive Shaft is 100-Percent Guaranteed for Life



End View Shows Close Proximity of KWS Shaftless Screw Conveyors and Diverter Valves



KWS Provided a Curved Slide Gate to Discharge Dewatered Biosolids to Another Area of the Process



Trucks Drive Under Load Out Area and are Filled



Complete System Redundancy is Provided with Two Load Out Shaftless Screw Conveyors

More on Next Page »



KWS Problem Solvers



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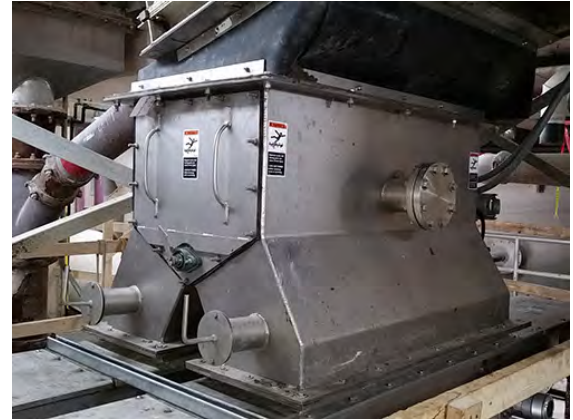
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Intermediate Discharge Diverts Dewatered Biosolids to Another Area of the Process



KWS Diverter Valves Divert Dewatered Biosolids from Centrifuges to One of Two Shaftless Screw Conveyors



Three Existing Centrifuges Deliver Dewatered Biosolids to the KWS Shaftless Screw Conveyor Load Out System



A Licensed Professional Engineer from KWS Environmental Provides Hands On Training to the Operators