CASE STUDY

CITY OF FOSTORIA WATER TREATMENT PLANT, FOSTORIA, OH

The City of Fostoria, Ohio, Upgrades Water Treatment Capabilities with IMS's Advanced PAC Storage and Feed System to Improve Drinking Water Quality, Streamline Operations, and Enable Remote Integration

The City of Fostoria, Ohio (The City), incorporated in 1854 and located in Seneca County in northwestern Ohio, serves approximately 13,000 residents of the city and its surrounding areas with water and wastewater services. The City's water treatment and distribution system has evolved since its establishment to meet the growing needs of the community. One crucial component of Fostoria's water treatment infrastructure is the City of Fostoria Water Treatment Plant (WTP), situated at the right-of-way and easement south of Francis Ave & Independence Ave, Fostoria, OH 44830. The original plant was brought online in 1898, redesigned in 1957, and has had additional upgrades made to it in 1988.

The City's water treatment plant employs disinfection and filtration processes to provide safe drinking water to the community. The water treated at the plant is pumped to homes and businesses via approximately 100 miles of piping infrastructure. By utilizing advanced treatment methods, the WTP can process up to 4.5 million gallons of water daily, effectively purifying it for safe consumption.

The water undergoes a comprehensive treatment process including filtration, disinfection, and nutrient removal before being distributed for drinking.

These processes allow the City to meet stringent regulatory standards and ensure the provision of safe drinking water to the community. The City's commitment to public health and environmental stewardship is evident in its water treatment practices.

As part of its most recent upgrades for the plant, the City of Fostoria sought powdered activated carbon (PAC) equipment, which included a PAC storage silo and solution feed system from Integrity Municipal Systems LLC (IMS) to address taste and odor issues in their drinking water. The IMS equipment not only expanded the plant's PAC storage capacity significantly but also simplified the feed process and enabled remote integration, increasing the contact time from 20-30 seconds to 30-45 seconds. Prior to implementing the IMS equipment, the plant utilized a standalone screw feeder and a small remote slurry feed pilot with a premixed PAC solution for feasibility studies.

The decision to acquire IMS equipment was influenced by the reliability of the two IMS lime slakers previously installed at the plant in 2016 and 2018, coupled with IMS' exceptional customer service, as emphasized by Rob Shaver, City of Fostoria Water Superintendent.

The IMS PAC Storage Silo and Solution Feed system is designed to store and feed powdered activated carbon. It consists of a storage silo with an enclosed skirt that houses feed equipment. The silo fill operation involves the delivery of dry chemical by way of a self-unloading pneumatic bulk truck which connects to the inlet adapter on the silo fill pipe. This process pushes the product up through the silo fill line to the top of the silo where a target box ensures even filling of the storage section. To prevent overpressure conditions, a silo pressure/vacuum relief valve allows air into the silo in case of under-pressure. During the pneumatic fill process, dry product that is agitated and becomes airborne is managed by a roof-mounted dust collector, which runs continuously to filter dust from the air and prevent emissions. Activation of the dust collector is triggered by a limit switch when the fill cap on the fill pipe is removed for truck connection. Level switches monitor material levels, generating signals when thresholds are reached. A high-level switch triggers alarms to stop the fill operation. Controls for the operation and monitoring are accessible via a truck unloading operator panel located on the silo's exterior.

The PAC feed operation begins with the discharge of PAC by gravity through the silo, facilitated by a bin activator installed at the bottom of the silo cone to aid material flow. This bin activator transfers mechanical motion to the material column without shaking the silo structure, ensuring uniform loosening and product flow through the discharge cone on the silo outlet. Operating intermittently and interlocked with the feed operation, the bin activator ensures smooth and uninterrupted material flow. A knife gate valve at the bin activator outlet provides positive cut-off of material flow and is operated by a manual chain wheel for maintenance purposes or extended shutdown. An electrically actuated knife gate valve after the outlet of the manual knife gate controls material flow between the silo storage section and feed equipment during automated feeder hopper refill cycles. The PAC enters the feeder hopper where it's metered by a volumetric screw feeder into a wetting cone.

The feeder and feeder hopper are mounted to load cells, which initiate an automated refill cycle once the product level in the feeder hopper gets low. A vibrator on the feeder hopper ensures the PAC continues to flow through the hopper to the feed screw. The screw then feeds the PAC into a wetting cone, which helps wash the PAC into an eductor. The eductor then conveys the resultant PAC solution to the application point.

The IMS staff ensured a smooth startup process for the equipment on August 17th, 2023, demonstrating their expertise and dedication to delivering high-quality solutions. The City of Fostoria expressed great satisfaction with IMS, recognizing their professionalism, technical proficiency, and commitment to customer satisfaction throughout the installation and startup process.

"IMS has been wonderful to work with from the design stage throughout delivery and continued customer service for our PAC silo/feed system. This new system has helped the City of Fostoria reduce tastes and odors in its drinking water. It is refreshing working with a manufacturer that is focused on making sure that our needs were met with this project and their equipment. I would recommend IMS to anyone that is looking to upgrade or replace their PAC feed system. "

- Rob Shaver, City of Fostoria Water Superintendent

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