Get it Fast, Get it Early: Extracting Solids from Wastewater to Maximize Energy Recovery
A Prize Entry for US DOE Water Resource Recovery Prize, May 2020

Conventional activated sludge (CAS) is fundamentally resource inefficient, consuming energy to burn valuable organic material into carbon dioxide and to lock the remaining organics in hard-to-use microbial cells (biosolids). Most of the materials in wastewater are fine particulates, which can be readily converted into valuable resources if they are removed from the water early in the process. Our proposed solution uses microscreens and continuously-backwashed sand filters to achieve highly efficient solids separation at the front of the plant. The filtered water is simpler to treat downstream. The solids are dewatered, dried, and burned in a boiler, producing steam to drive a steam turbine and produce electricity . The final result is to flip the energy balance of a treatment plant from energy consumer to green power plant, exporting 539 kW to the grid for a 12.4 MGD (47,000 m3/d) plant while reducing footprint by 72% and solids production by 96%.

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