

PROJECT PROFILE

Key Systems:

pH Control

ETS Model FS-200-P flash mix tanks with Hellbender Process Mixers® for pH control (caustic addition) using PID-based pH controller

Flocculation

ETS Model FC-200-F flocculation mix tanks with Hellbender Process Mixers® for polymer addition (to handle variable flow)

Dissolved Air Flotation

ETS Model RT-180A DAF, stainless steel construction, 800 gpm capacity, recycle pump, top skimmer, bottom skimmer

Float (Sludge) Handling

Rotary gear sludge pump with level control

DAF TREATMENT OF ACID MINE DRAINAGE (AMD)

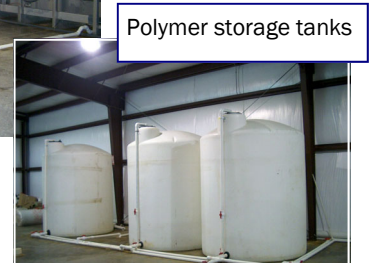
Acid mine drainage (AMD) is a significant problem for coal mining regions of the country. Natural drainage or subterranean flows pass through surface and deep mine coal mining activities and are contaminated with metals and low pH. These flows eventually migrate into streams and rivers and negatively impact the quality of these bodies of water.

The mining industry is required to mitigate these contaminants, usually through the addition of lime in large sedimentation ponds. In many cases, this technology either does not work well, or the systems are not maintained and eventually fail.

ETS provided an RT-180 DAF system (180 ft² of surface area) to provide treatment of an AMD stream in central Pennsylvania prior to discharge to a local stream. The unit was preceded by flash mix tanks for automatic pH control using sodium



Flash mix and flocculation tanks prior to DAF



Polymer storage tanks

hydroxide, followed by flocc mix tanks for polymer addition and flocculation. The system kept the site's owners in compliance with state regulations for their discharge.



ETS RT-180 DAF treating AMD

As indicated in the table below, concentrations of iron, manganese, and aluminum were reduced by 87-89% by the DAF system. The pH of the AMD was raised from a pH of approximately 3 to a pH of 7-9, which was well within permit limits.

COMMENTS: "This sure beats settling ponds!"

- COAL MINE ENGINEER

SYSTEM PERFORMANCE

Parameter	Influent	Effluent	Removal %	Permit Limit
Flow, gpm	60-335	—	—	—
Iron, mg/L	24.8	2.8	88.9	6.0
Manganese, mg/L	10.5	1.3	87.5	4.0
Aluminum, mg/L	25.0	3.3	86.7	10.0
pH, SU	2.9-3.2	7.0-9.0	—	6.0-9.0

