

CASE STUDY

MICRODYN *iSep*™ 500 UF

Coal-Fired Power Plant: Ash Pond Water



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Project Goal

Treating ash pond water to remove sub-micron sized coal particles to meet discharge permit requirements.

Feed

- Ash pond water
- Feed TSS: 3,000 mg/L

Membranes

- MICRODYN *iSep*™ 500-PES UF modules

Parameters Measured

- Permeate TSS: <1.0 mg/L
- Operating flux: 43 lmh (25 gfd)

Objective

A coal-fired power plant in the Midwest faced a problem of dealing with water run-off from their coal piles. The run-off stream, generated from both storm events and dust control spray systems, is collected in a large holding pond to allow the coal particles to settle before discharge. However, due to the finely dispersed sub-micron sized coal particles, sedimentation was ineffective at reducing their TSS discharge levels. Other methods, such as flocculation/coagulation and filtration, proved ineffective as well.

Materials & Methods

The power plant conducted an ultrafiltration (UF) pilot study using MICRODYN *iSep*™ 500-PES UF modules on river water to qualify an alternative water source for their boiler water make-up system. At the end of the successful river water pilot study, the power plant decided to test the feasibility of using UF membranes to treat their ash pond water.

Conclusion

In order for a technology to be a viable treatment option, the TSS of the pond had to be reduced from 3,000 mg/L down to 10 mg/L. Despite the severe TSS loading, the *iSep* UF pilot module was able to successfully handle the coal fines loading while providing high quality effluent that far exceeded their discharge permit requirements. No UF pretreatment was required for the modules to successfully operate on the ash pond water.



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