



Case Study
iSep[™] 500 UF
Coal-Fired Power
Plant

Case Study: Industrial Coal-Fired Power Plant Ash Pond Water

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



PROBLEM

Water run-off from coal piles



SITE

Power plant in the Midwestern Region of the USA



OUTCOME

Successful handling of coal fines loading while providing high-quality effluent

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 *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 successfully handled 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.

Table 1 Feed & Permeate Values

Parameter	Value
Feed Source	Ash pond water
Feed TSS	3,000 mg/L
Operating Flux	43 l/mh (25.3 gfd)
Permeate TSS	< 1.0 mg/L



