



| KLeeNwater®



Case Study

KLeeNwater™ Scrubber Fines Dewatering Optimization

BACKGROUND

A coal-fired power plant had recently commissioned a flue gas desulfurization (FGD) scrubber fines thickening and clarification system intended to support gypsum handling and downstream dewatering. Despite being newly installed, the system failed to operate reliably, resulting in frequent outages, maintenance intervention, and compliance concerns. With no viable resolution offered by the incumbent water treatment provider, design-build engineers, or equipment OEM, the plant engaged EES to diagnose the issues and deliver a sustainable solution.

OPERATIONAL CHALLENGES

CLARIFIER UNDERFLOW COULD NOT BE RELIABLY PUMPED TO BELT PRESSES OR GYPSUM BLENDING SYSTEMS

SLUDGE CONTINUED TO THICKEN DURING TRANSFER, PLUGGING PUMPS AND PIPING

FREQUENT SYSTEM OUTAGES REQUIRED MAINTENANCE INTERVENTION TO UNCLOG EQUIPMENT

SUPERNATANT QUALITY FAILED TO MEET DISCHARGE LIMITS DUE TO INSUFFICIENT SETTLING AND ELEVATED TSS

A GENERIC, ONE-SIZE-FITS-ALL TREATMENT PROGRAM WAS INEFFECTIVE FOR SITE-SPECIFIC OPERATING CONDITIONS

ASSESSMENT & EES APPROACH

EES conducted a detailed evaluation of the scrubber fines waste stream, including laboratory analysis and on-site testing of customized coagulant and flocculant blends. A controlled on-site trial was executed in collaboration with plant personnel to meet the following objectives:



01

RESOLVE SLUDGE PUMPING & TRANSFER LIMITATIONS

02

IMPROVE SUPERNATANT CLARITY & ELIMINATE TSS COMPLIANCE ISSUES

03

INCREASE SOLIDS CONCENTRATION DELIVERED TO GYPSUM BLENDING OPERATIONS

EES KLeeNwater™ SOLUTION

Based on treatability results and field validation, EES implemented a specialty KLeeNwater™ chemical program tailored to the facility's scrubber fines characteristics. The optimized solution balanced coagulation, floc formation, and sludge rheology to prevent downstream thickening while improving settling performance and solids handling.

CONCLUSION

By replacing a generic treatment approach with a site-specific KLeeNwater™ solution, EES restored operability to the scrubber fines clarification system. The optimized program eliminated chronic plugging issues, improved compliance and solids handling, and delivered measurable operational and economic benefits to the plant's gypsum management strategy.

RESULTS



Reliable pumping of clarifier underflow to belt presses and gypsum blending systems



Elimination of system plugging and reduction in maintenance labor and downtime



Improved supernatant quality and elimination of discharge compliance issues



Higher solids content delivered to gypsum blending, improving gypsum utilization and profitability



Successful factory acceptance and sustained operation of the fines handling system

