Low-cost FGD WWT and Non-thermal ZLD
Low-Cost FGD WWT and Non-thermal ZLD Technology

AECOM can provide utilities with a significantly lower cost alternative to meet the new Effluent Limitation Guidelines.

New Effluent Limitation Guidelines (ELG) proposed by the EPA will place strict limits on plant water discharges. Some plants may install expensive, end-of-pipe zero liquid discharge (ZLD) system and operate as a ZLD plant to meet new regulations. Others may install expensive wastewater treatment (WWT) systems to treat liquid wet flue gas desulfurization (wFGD) purge streams to be able to meet the stricter effluent limits of the new regulations. The current end-of-pipe WWT and ZLD technical solutions are all capital intensive with high operating and maintenance requirements and costs.

AECOM provides utilities with a significantly lower cost alternative to meet the new ELG regulations. Our approach and technology is partly based on our deep level of experience and know-how in the design and operation of wFGD systems. AECOM has been an FGD industry leader for almost 40 years helping utilities operate their FGD systems and maximize performance and reliability. We understand the complex chemistry within the FGD system and the relationships of the FGD system with the other systems and processes within the plant. We have worked with utilities for many years studying and analyzing the water usage and water balances within a power plant.

Our team of experts understand the relationships and interactions of the various systems and processes that consume water and how the demands of these systems and processes can affect the chemistry and quality of the various process streams. We have extensive experience developing strategies and practices to improve water management and resolve water issues at power plants.

The AECOM advantage.

Advantages of AECOM’s approach for meeting new ELG regulations:
- Does not require expensive, end-of-pipe WWT and ZLD systems
- Allows plant to operate in ZLD mode
- Reduces use of fresh water
- Optimizes reliability and performance of FGD system
AECOM’s Approach for Water Management and Treatment to Meet New ELG Rules

Our approach to identify the best and lowest cost strategy for meeting the new ELG rules involves a number of tasks.

Conduct Plant-wide Water Balance Study: To begin, AECOM will identify and quantify various influent, process, and effluent streams throughout the plant. We will evaluate composition and quality of process streams and identify bottlenecks in water balance and water management. The information and data obtained in the study will be used to develop an overall strategy for the plant water management, identify and prioritize areas for optimization and resolve water balance issues.

Optimize Plant Water Balance: Based on the results of the water balance study, AECOM will develop, design and help implement new and improved water management practices and processes to optimize the plant’s overall water balance. This may involve designing and installing systems to direct current plant water discharges to the FGD system where it will be used to provide a portion of the makeup water.

Optimize FGD Water Balance: AECOM will analyze the performance and operation of the plant FGD systems to identify opportunities to optimize the water balance, reduce or eliminate requirements for use of plant service water as makeup and maximize the amount of plant process water, low volume waste and landfill leachate and contact water that is consumed. The analysis of the FGD system will also evaluate the resulting chemistry from optimization of the water balance and will identify and evaluate opportunities to optimize the performance and reliability of the systems and resolve any process problems. AECOM will work with the plant to implement improvements providing engineering, procurement and construction service, as required, as well as startup, tuning and training support.

Process and Dispose of FGD Wastewater: AECOM will employ its non-thermal ZLD technology to process and dispose of wastewater that is purged from the FGD system to control chloride levels. This technology involves mixing the FGD wastewater with FGD solids (gypsum or sulfite), fly ash and, if necessary, lime to produce a fixated and stable waste material which is suitable for placement in a dry landfill. The technology has the following advantages:

- Much lower capital and operating costs compared to other ZLD technologies such as thermal or reverse osmosis (RO).
- Much simpler to operate and more reliable than other technologies.
- Fixated waste material immobilizes the soluble ions and hazardous constituents so that they do not leach out.
- Technology is lowest cost approach to allow plant to operate as ZLD.

AECOM Non-thermal ZLD Technology

Mix FGD wastewater with scrubber solids, gypsum or sulfite, fly ash, and lime (if necessary) to produce a stable and fixated waste material.

Place fixated waste material in dry landfill.

Return leachate and contact water to FGD.
About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM had revenue of approximately $18 billion during fiscal year 2015. See how we deliver what others can only imagine at aecom.com and @AECOM.

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