



CATALYST REGENERATION, NORTH CAROLINA

THE CHALLENGE

An energy management company on the east coast operates a facility that employs selective catalyst regeneration technology for the reduction of nitrogen oxides (NOX) emissions in coal and gas fired power plants. Catalyst cleaning and regeneration is a multistep process that involves ultrasonic deep cleaning, soaking and washing, regeneration and heat treatment.

Wastewater is a mix of spent cleaners, catalyst debris, rinse water, regeneration solutions. The primary metals in the waste stream are those found in catalyst poisons, cleaning and regeneration chemicals. Such metals form stable complexes with chelating agents present in cleaners used for removal of metal oxide scale from heat transfer surfaces and boiler water treatment systems.

Current treatment with lime, DTC and flocculent does not meet discharge requirements and the facility is looking for a new chemistry or technology to achieve and maintain compliance.

THE SOLUTION

AQUASIL® makes use of existing batch setup where the product is added directly to reaction tank. The fast reaction leads to formation of a large floc that settles efficiently once mixing has stopped. This treatment generates clear effluent and meets local discharge requirements as shown in the Table below.

Parameter	Discharge Limits (mg/L)	Before (mg/L)	After (mg/L)
Arsenic	1.84	1.87	0.01
Vanadium	----	135.04	2.95
Tungsten	----	26.76	6.34
Chromium	0.26	3.52	0.21
Copper	0.26	1.45	0.01
Nickel	0.52	21.36	0.18
Selenium	0.12	0.41	0.08
Zinc	1.19	11.62	0.04

AQUASIL® treatment was able to lower the concentrations of nickel and zinc along with most of the iron; color of treated water is faint yellow compared with dark brown. Furthermore, the treatment is successful in removing more than 97% of vanadium and 76% of tungsten, both of which are present in boiler steel.

A single-product treatment eliminates the need of all treatment chemicals, generates a high quality effluent.

Great Chemistry At Work™