Bulletin CR-623

Noxious Fumes at TVA Handled By 36" Diameter Scrubber

To keep the work area free of noxious fumes and reduce atmosphere polution, T.V.A. Wilson Dam uses a 36" diameter Croll-Reynolds fume scrubber to handle 12,500 cfm of gas @ 150°F in their high-analysis super phosphate operations. Here's the story as it appeared in Southern Power and Industry, June 1962.

CROLL-REYNOLDS CO., INC.

751 Central Ave., Westfield, N. J.

CHILL-VACTORS® • Steam-jet EVACTORS® • AQUA-VACTORS®
Fume Scrubbers • Special jet Apparatus

Jet Device With a Twist Helps TVA Scrub Noxious Fumes

MANUFACTURING high analysis super phosphate fertilizer at the TVA Wilson Dam operation creates noxious fumes. Most of these fumes are liberated during the first several hours of curing in an enclosed den. The installation of a large jet type scrubbing device is responsible for keeping the working area free of these fumes and reducing atmosphere pollution.

The Croll-Reynolds fume scrubber is very similar in operation to a steam jet ejector, with one major difference — the scrubber has a spinner in the nozzle holder. This spinner gives the motivating fluid a twist or centrifugal action, so that it leaves the nozzle in a hollow cone spray. As a result, a draft is created, which entrains the noxious gases and vapors in the moving stream and absorbs them while the gases are being scrubbed free of dust.

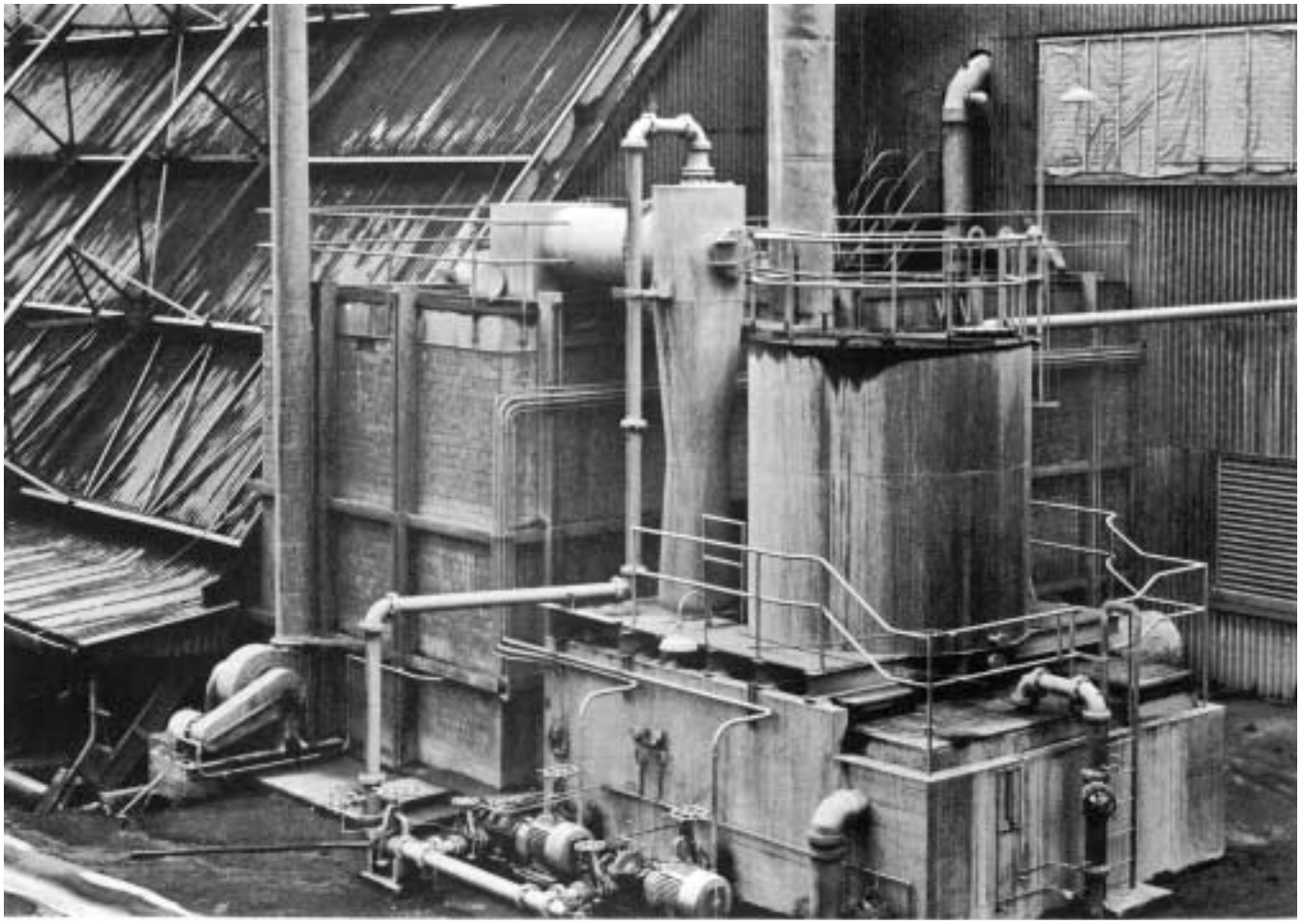
The fume scrubber is useful during removal as well as curing. The curing den is emptied with a backhoe which digs the fertilizer from the den and places it in discharge openings in the floor. From here it is carried away by a pan conveyor below. By pulling fresh air past the backhoe operator and taking the entrapped fumes away from him, the scrubber greatly improves working conditions.

The scrubber is used to pull and scrub 12,500 cfm of gas at 150 F, and to develop a suction head of minus 1″ of water. The gases contain air, silicon tetrafluoride gas and entrained phosphate dust.

The scrubber has a 36″ diameter suction chamber. The draft which draws the gases into the suction chamber is created by a spray nozzle with a 5″ diameter bronze spiral covered with 3/16″ neoprene. The scrubber is located over a brick lined concrete sump.

Liquor is recycled from the sump to the scrubber by means of a centrifugal pump operating at approximately 60 psig. The nozzle flow is approximately 744 gpm of an aqueous solution of liquor at a maximum temperature of 135 F.

The 36″ diameter Croll-Reynolds fume scrubber stands just short of 16′ high and weighs more than 2,300 pounds. It was placed in operation in July 1960 and to date has provided excellent service without any down time.



This 36″ diameter fume scrubber handles 12,500 cfm of gas at 150 F in TVA's high-analysis super phosphate operations.