

Q-PAC®

Using Reclaimed Water in Scrubbers With Fouling-Resistant Q-PAC

TU Munich fouling tests and semiconductor plant field experience confirm Q-PAC's useful life under fouling conditions substantially exceeds predictions based on dimensions alone.

APPLICATION

Wet scrubbers using reclaimed process water

SECTOR

Semiconductor manufacturing (USA)

OPERATING RECORD

1+ year continuous operation without packing cleaning or replacement

◆ FOULING IS SITE-SPECIFIC

Fouling problems in scrubbers are very much site-specific. There is no reliable way to predict the useful life of packing when solids can form in a packed bed. The operating experience of a scrubber at one plant cannot necessarily be repeated at another — even in identical scrubbers — because they treat different air streams using different make-up water supplies.

◆ HOW Q-PAC RESISTS FOULING

Q-PAC scrubber packing was designed for fouling resistance. Its high void fraction and low initial pressure drop mean it takes more accumulated solids to seriously obstruct the bed compared to other scrubber packings.

When researchers at the Technical University of Munich rigorously compared the fouling resistance of various tower packings under identical, controlled conditions, they found — unsurprisingly — that larger random packings are more resistant to fouling than smaller ones. However, the useful life of Q-PAC under fouling conditions was substantially longer than would have been predicted from its dimensions alone.

[TU Munich Q-PAC Fouling Test Results \(PDF\)](#)

◆ SEMICONDUCTOR PLANT FIELD EXPERIENCE

Those test results have been borne out by real-world experience. At semiconductor plants in the United States, Q-PAC has been chosen in part because it helps plants conserve water: low-quality reclaimed water is used in some large scrubbers in place of fresh water.

Reclaimed water contains calcium, magnesium, silica, and other impurities that gradually deposit on packing surfaces. Even so, scrubbers packed with Q-PAC run 24/7 for more than a year without a shutdown for packing cleaning or replacement. Packings whose pressure drop increases faster would cause

PRODUCT

Q-PAC

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OPERATING INTERVAL

1 year+

Q-PAC scrubbers at US semiconductor plants run 24/7 for over a year without shutdown for packing cleaning or replacement, even using reclaimed water with high calcium, magnesium, and silica loading

APPLICATION CONTEXT

Fouling resistance

Reclaimed water

Semiconductor

Long operating interval

Continuous operation

problems at semiconductor fabs, which require year-round continuous operation without unscheduled shutdown.

NOTE

Q-PAC's high void fraction and low initial pressure drop mean it takes significantly more accumulated solids to seriously obstruct the bed compared to conventional packings of similar dimensions.