

PURI-TEQ ChemScrub-V

VERTICAL COUNTERCURRENT SCRUBBER SYSTEM

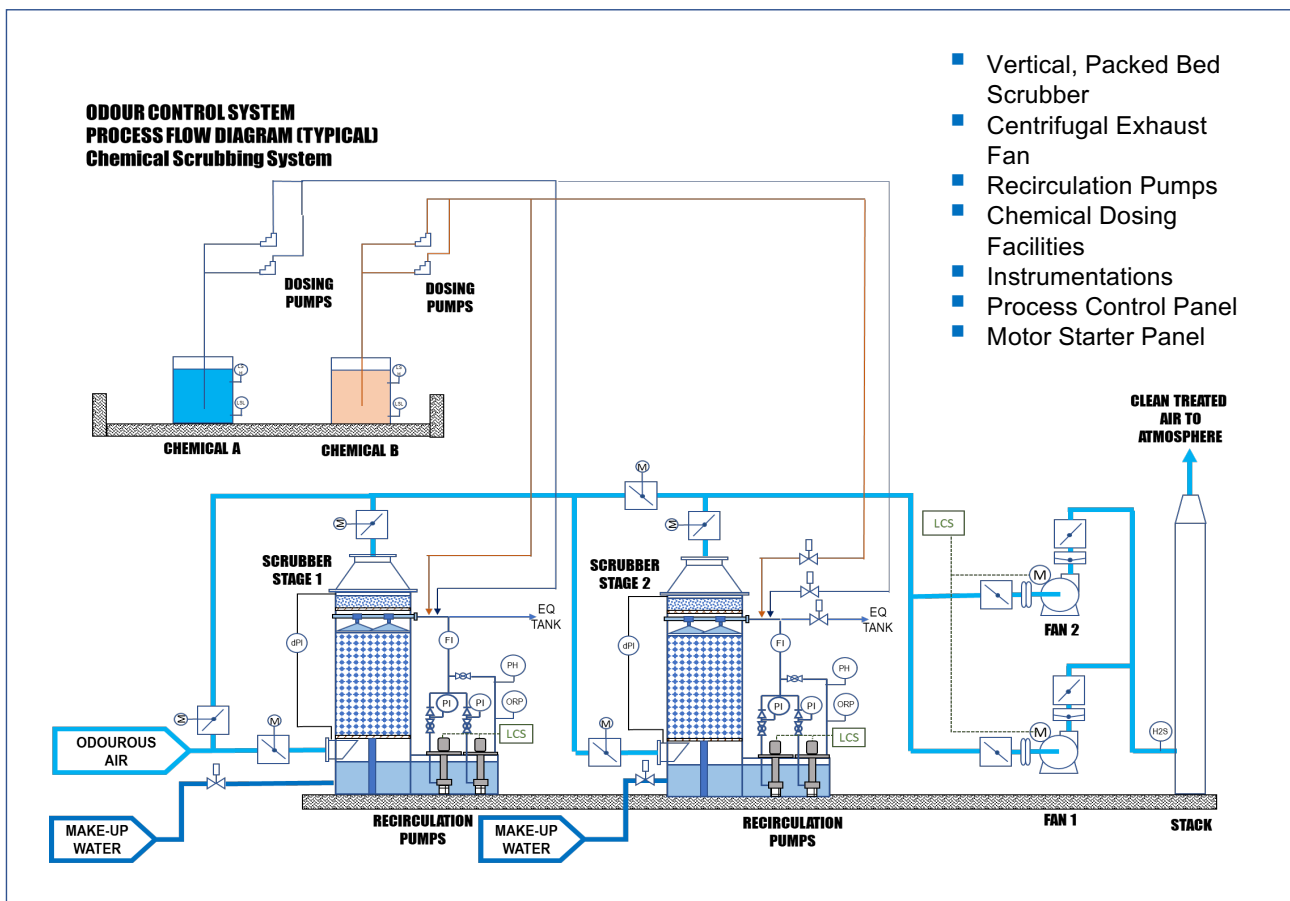
INTRODUCTION

The **PURI-TEQ ChemScrub-V**, Vertical, Countercurrent, Packed Bed Scrubber System is custom designed for removal of water soluble toxic gases and particulates. Users can expect better treatment performances and lower energy costs.

The **ChemScrub-V** scrubber is generally used for air treatment in the following applications :

- Removal of acidic and alkaline fumes from chemical processes
- Removal of odourous gases such as hydrogen sulphide and ammonia
- PCB Manufacturing Plants
- Semi-Conductor Plants
- Wafer Manufacturing Plants
- Chemical Plants
- Wastewater Treatment Plants
- Sewage Treatment Plants
- Food Processing Plants
- Fermentation Plants
- Fragrance Plants
- Tobacco Plants

The standard chemical scrubber system is packaged with the following components :



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PRINCIPLE OF OPERATION

Contaminated gas enters through the scrubber inlet which is located near the bottom. The gas flows upwards through a packed bed of randomly dumped packings. Scrubbing liquid enters the top of scrubber and flows vertically downwards through the packed bed. Within the irrigated packed bed, the air/liquid countercurrent flow pattern provides the most ideal condition for air/water interaction resulting in efficient absorption of contaminants from the gas stream.

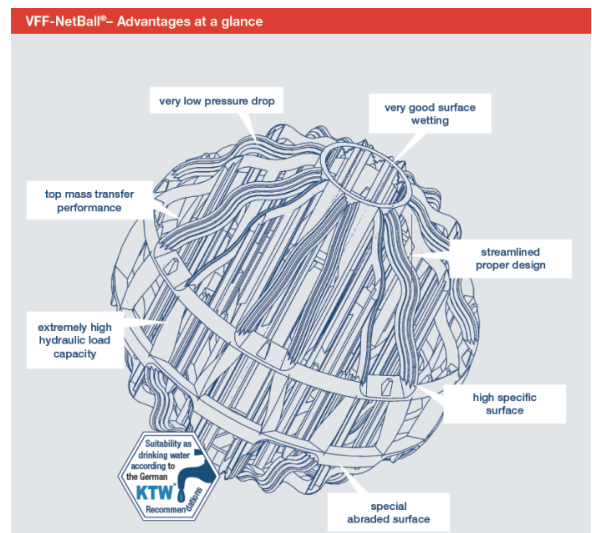
The scrubbing liquid is collected in an integral sump located at the bottom of the scrubber. A pump is used to recirculate the scrubbing liquid from the bottom sump to the scrubber top. For maximum removal efficiency, a liquid distribution pipework fitted with non-clogged type spray nozzles is located at scrubber top. This ensures even distribution of liquid over the packing surface.

As the gas moves upwards, the contaminants are removed. Over 99% removal efficiency of contaminant gas is possible with careful design. The clean air passes over a mist eliminator which can remove above 99% of entrained water mist. The treated air is then allowed to be discharged to the atmosphere

The **PURI-TEQ ChemScrub-V** scrubber operates on principle of mass transfer of gaseous components from the gas phase to the liquid phase through a process called chemical adsorption.

The high performance random packing is setting now new standards. Its favorable flow profile, combined with a high specific surface, offers top mass transfer properties with an extremely high hydraulic load capacity and the lowest pressure drop.

The pH of scrubbing liquid is carefully controlled by chemical dosing facility to enable water soluble components in the gas stream to be adsorbed into liquid phase, converted to inert compounds and eventually purged from the scrubber system.



Note :
Selection of scrubber packing depends on process requirement for the specific application

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SCRUBBER HOUSING

Each **PURI-TEQ ChemScrub-V** scrubber housing is custom designed and fabricated in accordance to the requirements of the project. Space is carefully managed with consideration given to the footprint and maintenance space available.

Housing material is carefully selected for both mechanical strength and corrosion compatibility with process media. Mechanical calculations are performed in accordance to the relevant ASTM or DIN standard. Material of construction can be selected from :

- Vinyl ester based Fibre Reinforced Plastic (FRP)
- Fire retardant Fibre Reinforced Plastic (FRP-FR)
- Polypropylene (PP)

LIQUID DISTRIBUTION

The liquid distribution consists of an engineered network of spray header and spray nozzles. The nozzles which are non-clogged are carefully selected to deliver the required liquid flow at desired droplet size. Each nozzle is positioned to make sure that the liquid is distributed over surface of irrigated packed bed and there is no dry spot.

One special feature of the **ChemScrub-V** scrubber is the spray nozzles can be removed from the top of scrubber without the need to unfasten many bolts and nuts.

INTEGRAL SUMP

ChemScrub-V scrubber is designed with a scrubbant liquid sump that is integrated with the scrubber body for compactness. The sump provides a reservoir for the recirculation liquid and is calculated with adequate retention capacity.

RECIRCULATION PUMPS

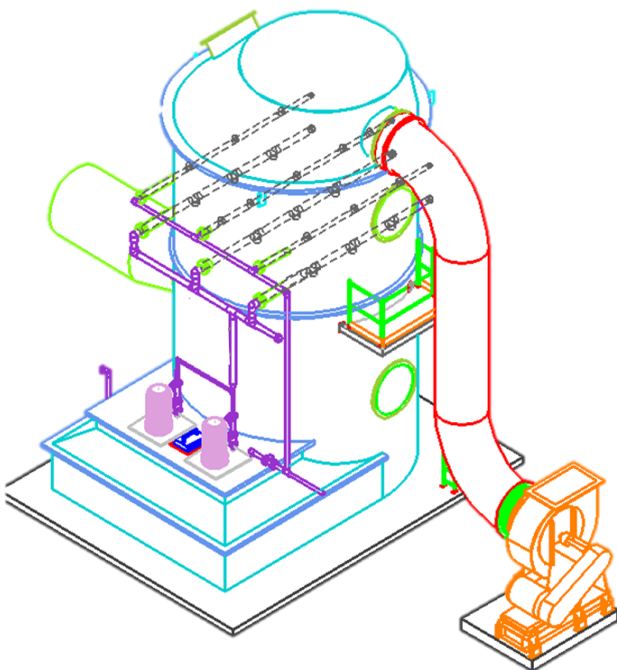
ChemScrub-V scrubber uses vertical, immersion recirculation pumps which are mounted on extension of integral sump. This form of construction offers space savings and smaller footprint.

MAINTENANCE PLATFORM (OPTIONAL)

For taller scrubbers with need for frequent top access

LEAK CONTAINMENT (OPTIONAL)

For containment of potential spills due to leaks especially when scrubber is located at critical areas without drainage such as roof tops.



PURI-TEQ Business Activities

ABOUT US

Puri-Teq is a Singapore registered company with the following business focus :

- Providing technical, process consultancy and project management services for implementation of Water/Wastewater Treatment Projects and Waste to Energy Projects.
- Facilitating plant Hazard and Operability Study (HAZOP), Failure Mode and Effect Analysis Study (FMEA) and plant Reliability, Availability and Maintainability study (RAMS)
- Providing solutions for Air Pollution Control issues especially in
 - Odour Control (H2S, VOC)
 - Chemical Pollution Abatement systems
- Representation of equipment for
 - Water/Wastewater Treatment systems
 - Waste to Energy systems.

Plant Reliability Study HAZOP Study
Environmental Consulting
Quality Assurance Assistance Process Design
Hazard And Operability Study
BioFilter BioTrickling Filter
Air Pollution Control
Water Treatment Process Review
Air Abatement



Chemical Scrubber for H2S Removal
Singapore Sewage Treatment Plant



BioFilter for H2S Removal,
AB Mauri, Vietnam

OUR OFFICE & CONTACT

PURIh TEQ PTE LTD

47 Kallang Pudding Road
#07-03 Singapore 349318
T: +65 6493 7393
E: info@puriteq.com