Venturi Scrubber
High-Efficiency Particulate Removal

www.durr-megtec.com
Venturi Scrubber

Optimum Performance

The Dürr Megtec venturi scrubber combines low maintenance with high-efficiency performance to handle high temperatures, heavy dust loading, and abrasive, sticky, and difficult particulate.

The venturi scrubber features de-watering capabilities that ensure virtually no liquid droplet carryover — a crucial advantage, especially considering increasingly stringent environmental requirements. This level of performance matters even where a small amount of liquid carryover can adversely affect emissions test results or downstream equipment.

Applications

Every venturi scrubber is engineered to handle high inlet temperatures and process high particulate concentrations, where the required level of particulate removal can be attained by applying the correct pressure drop.

These performance characteristics are proven daily by our extensive applications experience. And with virtually zero maintenance, a venturi scrubber can operate for years without a shutdown, thereby helping maximize system uptime.

Venturi Scrubber Product Versatility

While the venturi scrubber is primarily a particulate removal device, it is versatile enough to use in a variety of applications to effectively treat difficult emissions, as well as large or fluctuating gas flows.

The venturi scrubber can be designed to capture SO₂ and HCl from the gas stream, together with particulate.

The versatile venturi scrubber can be designed to operate from 5 in. w.g. (1.25 kPa) to 5 psig (0.34 bar gauge) pressure drop. In applications where extremely low particulate concentrations are required, the scrubber can be designed as a pre-scrubber with low pressure drop, preceding a wet electrostatic precipitator to achieve the required removal efficiency and maximize energy savings.

Constant pressure drop means constant removal efficiency. To ensure constant pressure drop in applications with fluctuating gas flows, the venturi can be equipped with either a butterfly or dual-leaf throat damper.

Venturi Scrubber Pilot Plant

A pilot system is available for on-site performance demonstrations and data collection. This cost-effective approach provides actual process results prior to scale-up to a full-size commercial installation.
Performance Principles

The primary purpose of the venturi scrubber is particulate control. The principle of particulate removal is based on particles colliding with, and becoming entrapped in, liquid droplets. The smaller the dust particles, the smaller the liquid droplets required for removal. The direct relationship between gas velocity and pressure drop in the venturi throat determines the relative size of the particles that are removed. The venturi imparts momentum on the particles to be removed via acceleration in the throat, effectively making smaller particles act like larger particles.

How It Works

• Gas from the process enters the venturi vertically downward. Scrubbing liquid is introduced through tangential inlets at the top of the venturi, blanketing the walls as it swirls down the converging section of the throat, eliminating particulate buildup and protecting the venturi from high temperatures.

• This falling film of swirling liquid increases in thickness as it converges and is atomized by the high-velocity gas stream in the venturi throat, thereby entrapping the particulate for separation from the gas in the cyclonic separator.

• A flooded elbow between the venturi and the separator holds a liquid reservoir, which absorbs the impact of particulate in the high-velocity gas stream, which minimizes erosion of the metal surfaces.

• A cyclonic separator centrifugally separates the particulate and liquid from the gas stream.

• The liquid drains through the bottom cone to the recycle pump(s) and is circulated back to the venturi.

• The cleaned gas exits from the top of the separator.

Superior Solutions

Dürr Megtec products are proven to help meet stringent emissions regulations, improve process performance, and protect downstream air pollution control and process equipment. Our scrubbers, wet electrostatic precipitators, and evaporative gas cooling systems are engineered to meet your specific performance requirements. With patented solutions and over 45 years of application experience, our engineers have a thorough understanding of how equipment operation and variations in process relate to the design of air pollution control systems.

Complete Service

The Dürr Megtec project scope can range from equipment supply (including fans, ductwork, pumps, and instrumentation) to complete turnkey contracts. We handle the installation and manage the start-up and commissioning services, as well as provide on-site operator training, spare parts, and post-installation maintenance services. Upgrades and repairs to competitor products are also available.

Single-Source Responsibility

Through strategic alliances with leading companies, we have extended our international reach and expanded our range of solutions to provide solutions for most industrial air emissions control requirements.