



GAS CONDITIONING TOWERS

Gas conditioning towers (GCT) are used in industrial applications to cool gases upstream, ahead of bag filters (baghouses), electrostatic precipitators or our Dual-Action Filters. They are considered to be the most effective type of cooling systems in treating exhaust process gases. Our GCTs offer unequalled effectiveness: our team has three decades of experience designing these towers and customizes every one to suit our customers' specific process parameters.

WHY CHOOSE OUR GAS CONDITIONING TOWERS?

Unparalleled efficiency

We use model tests and CFD simulations to calculate the ideal timing and gas distribution parameters.

Even mixing

We have mastered our Gas Distribution System (GDS) to ensure even gas/water mixing, avoiding the creation of mud.

Reduced energy costs

Our optional Dual-Nozzle System allows you to reduce the number of nozzles in operation when operating with lower gas volumes.

Smaller tower size

Our special nozzles, coupled with our GDS, increase evaporation, reducing the gas retention time in the tower and thus the tower's size. Our GDS can even be applied as a retrofit to improve our competitors' installations.

Optimized control system

Our Temperature Control System is designed to optimize reaction times, allowing you to cope with new process conditions at the tower inlet rapidly to ensure continued efficiency.

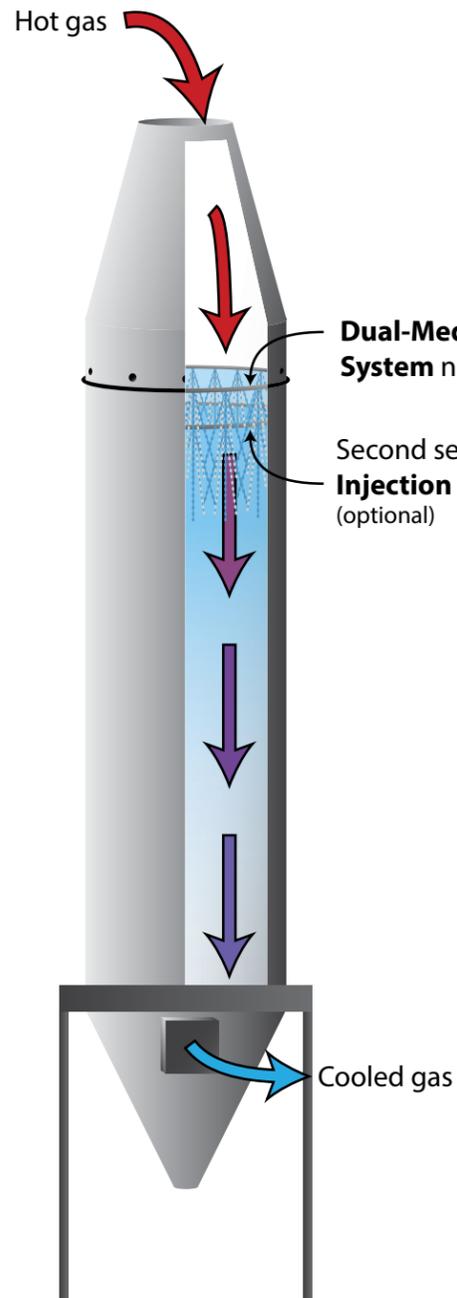


REDECAMGROUP

GAS CONDITIONING TOWERS: SYSTEMS & FEATURES

Our Gas Conditioning Towers are used to lower the temperature and increase the moisture level of the dusty exhaust gas before it passes through a bag filter (baghouse), electrostatic precipitator (ESP) or our Dual-Action Filter. Its purpose is to cool the flow and optimize the uniformity of the gas and its temperature, in order to make the air filtration device more effective at extracting the dust.

We offer two models, based on different water injection systems: a Spillback Injection System, based on spillback nozzles, and a Dual-Media Injection System, in which water is atomized by water pressure and compressed air.



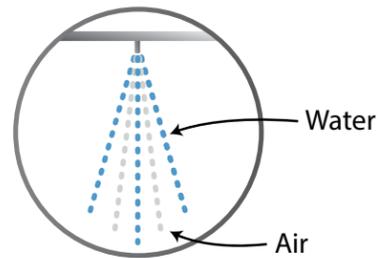
OUR SPILLBACK INJECTION SYSTEM

Our Spillback Injection System works with a high-pressure centrifugal pump, which forces water through our special nozzles located inside the conditioning tower, producing a fine mist.

OUR DUAL-MEDIA INJECTION SYSTEM

Our Dual-Media Injection System uses both water and compressed air to produce an extra fine mist. This is our highest-efficiency model, allowing for an even smaller conditioning tower size as the gas has a shorter required retention time in our GCT.

Our **Dual-Media Injection System** uses both water and compressed air to produce a fine mist, resulting in a shorter retention time in our conditioning towers.



OUR DUAL-NOZZLE SYSTEM (OPTIONAL)

For both our Spillback and Dual-Media Injection Systems, we offer the option of our Dual-Nozzle System, which reduces energy costs and prolongs the lifespan of your equipment. Since a lower volume of gas requires less cooling water, you may not always need all nozzles in operation. The system therefore entails installing two nozzle levels on your system:

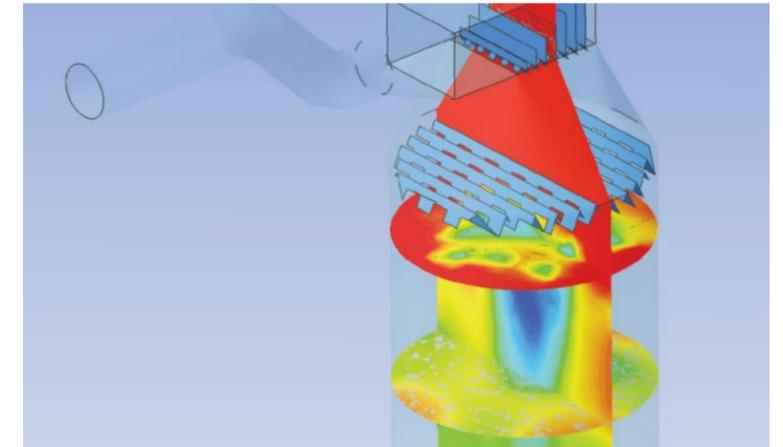
- 1 One set of nozzles, preferably close to the tower centre, is used when the gas and water volume requirements are low
- 2 A second set of nozzles is put into operation to supply additional water when the system is operating at higher capacity

OUR GAS DISTRIBUTION SYSTEM

We constantly search for new ways to further improve our market leading Gas Conditioning Towers' (GCT) flow distribution. We use model tests and computer simulations to optimize timing and gas distribution. Our GCT design is distinctive due to our carefully designed inlet deflectors that optimize the distribution of the gas in the tower.

Our Gas Distribution System design:

- 1 Reduces the evaporation height and therefore your tower height, without risk of creating mud in the hopper, as the hot gases are properly mixed
- 2 Evenly distributes the gas flow to reach the required outlet temperature of the GCT and to avoid mud at the bottom
- 3 Prevents condensation, as our gas distribution liner prevents the spray from reaching the casing of the GCT



Gas distribution system

OUR OPTIMIZED TEMPERATURE CONTROL SOLUTION

- ! **Common Weaknesses in Other Gas Conditioning Towers**
The gas treatment time (from a few to 10-12 seconds) causes a change in the thermal inertia of the system since there is a time gap between what is happening at the tower outlet and inlet. This affects the temperature control of the tower. In certain plants using an electrostatic precipitator (ESP), such a delay would cause unsettled conditions and poor ESP performance. For some systems with a bag filter, these transient conditions could negatively affect filter bags.
- ✓ **Our Innovative Solution**
Our Temperature Control System overcomes this time lag by controlling the amount of water required based on the gas conditions at the inlet. The control system analyzes the incoming gas mass's temperature, pressure and I.D. fan speed. Once the enthalpy of the gas mass is entered, the system calculates the amount of water to be sprayed. In our system, the gas outlet temperature is only used to adjust any possible under- or over-regulation effects.



DETERMINING TOWER SIZE

DESIGN PARAMETERS

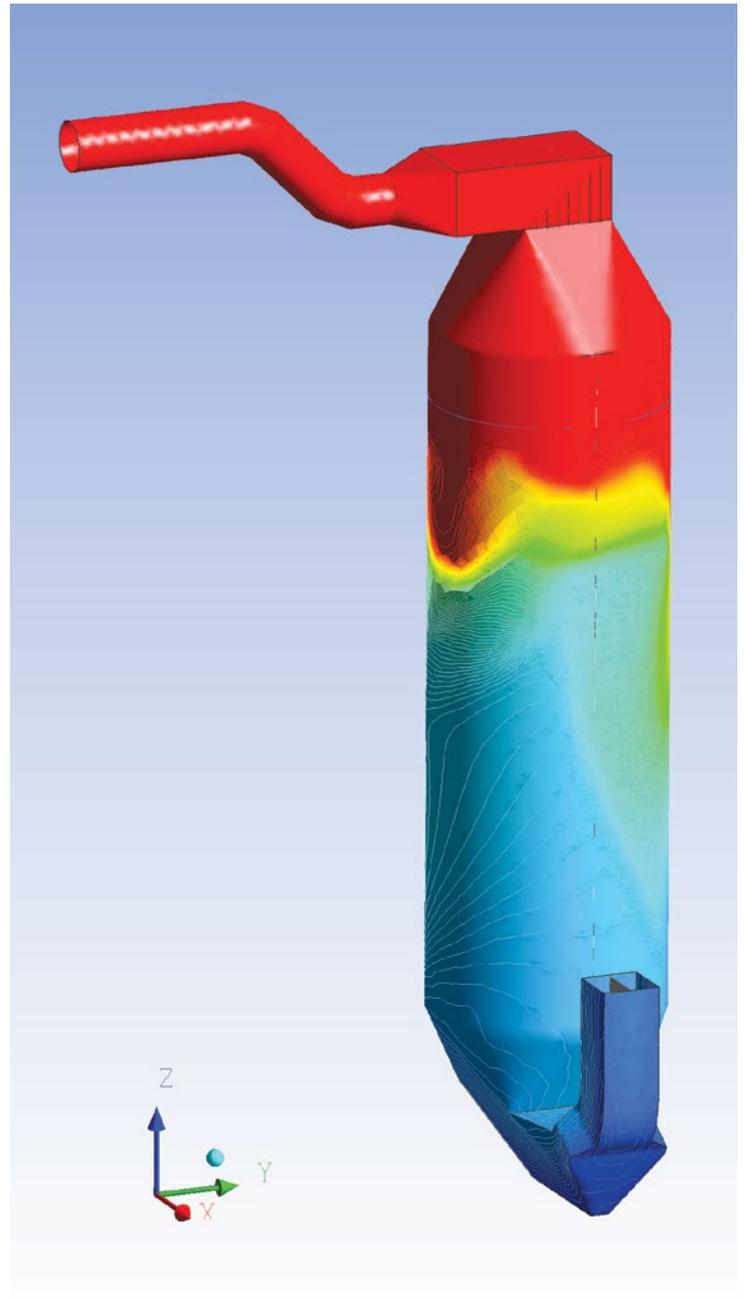
Our engineering team has 30+ years of experience in surveying the output and needs of various plants, and will study your plant and its gas flow to find an appropriate solution to reach your desired emissions reductions. The size of your GCT depends on the process data. The amount of water injected per area unit and the gas velocity along the shell of the tower are the key parameters to consider.

The gas enthalpy will be calculated based on gas temperature, and therefore on the amount of water needed. The tower size required is based on the amount of water necessitated. To avoid the risk of mud at the bottom of the tower, the gas must remain in the tower long enough for the sprayed water to completely evaporate. Nozzle design is essential to perform a complete cooling process without risk of mud. We use top quality nozzles.

We **customize** every Gas Conditioning Tower to suit your specific process parameters.

MODELLING

We use Ansys's well-respected Fluent software to accurately design and study every solution for each customer. The Fluent program allows us to engineer and analyze the system's broad physical capabilities, optimize the fluid dynamics and study the efficiency of pollutants removal. In certain circumstances, when a computerized simulation is not sufficient, we undertake a physical simulation on a 1:7 scale. All physical models are made and tested in Redecam's workshop.



Redecam offers a comprehensive portfolio of air filtration, flue gas treatment (FGT), gas conditioning and transportation, handling & storage products. Please contact us to see how we can take care of all your air pollution control needs.



Visit our website to learn more at
www.redecam.com
or scan this code:



ITALY (HEADQUARTERS)

☎ +39 02 243491
redecam@redecam.com

BRAZIL

☎ +55 11 3044.4125
redecam.brazil@redecam.com

U.S.A.

☎ +1 704 969.8811
redecam.usa@redecam.com

CHILE

☎ +56 2 2789 0358
redecam.chile@redecam.com