Spray Dryer Absorbers
for Acid Gas Emissions Control
Dürr Megtec offers spray dryer absorber (SDA) technology for SO$_2$, SO$_3$, HF and HCl removal from industrial gas streams.

When integrated with our pulse jet fabric filter and dry sorbent injection (DSI) technologies utilizing powdered activated carbon (PAC) injection, our SDA is part of an integrated approach to high-performance particulate, mercury and acid gas emissions control. With dozens of reference plants, our SDA technology is especially effective in municipal and solid waste incineration, power generation, cement, and metallurgical applications.

**How SDAs Work**

Our SDAs provide effective control of SO$_x$ and HCl using Turbotak™ atomizing nozzles to spray finely atomized alkaline slurries, such as calcium, potassium, or sodium-based slurries, into the gas stream. Contaminants are absorbed into the droplets, which quickly evaporate leaving the contaminants trapped in dry particles for collection by a downstream baghouse (fabric filter) or electrostatic precipitator (ESP).

**Dry Operation**

Unlike wet scrubbers, all water is evaporated, with no liquid waste stream generated.

**Greater Than 90 Percent Removal Efficiency**

Our SDAs are capable of simultaneously removing SO$_2$ (90 percent) and HCl (>99 percent) with high efficiencies.

**Opacity and Secondary Plume Abatement**

Our SDAs remove SO$_2$ that could react with ammonia compounds, reducing or eliminating secondary (detached) plume. By conditioning the gas stream and altering particulate resistivity and moisture, the SDA enhances the ability of a downstream ESP to reduce opacity. Since the gas is not saturated, the stack is dry and there is less steam plume than a wet scrubbing system.
**Turbotak Atomizing Nozzles**

**Air-Atomized Nozzles**
Turbotak atomizing nozzles use compressed air or steam to atomize liquids, including slurries with a high-solid composition.

**High-Capacity Nozzles**
Large, multiple-orifice Turbotak atomizing nozzles reduce the number of nozzles and lances required.

**Nozzle Orifice Inserts**
Inserts in each nozzle head can be removed for cleaning or replaced, extending the life of the nozzle, thereby improving overall operational efficiencies by lowering maintenance costs and downtime.

**Materials of Construction**
For many applications, simple, hardened steel offers sufficient wear resistance. Orifice inserts can be made from other materials, such as ceramics, for extended wear-resistance in abrasive applications.

Existing equipment may be upgraded to improve performance, save energy, and reduce maintenance. For example, a Dürr Megtec supplied upgrade can achieve lower outlet operating temperatures with no downstream wetting. When downstream wetting occurs, it can lead to particulate buildup and the binding of fabric filter bags, among other performance problems.

**Additional Features**
- Uses microfine or standard lime, as well as other reagents
- Effective temperature control that reduces filter bag replacement and plugging
- The wide turndown ratio of the nozzle capacity permits precise temperature control over the complete range of operation
- No water carryover, sludge buildup or wastewater disposal, compared to wet gas cleaning systems
- Compressed air control system provides economical and automatic droplet size adjustment, which optimizes utility usage
- Increased particulate removal efficiency by moisture conditioning ahead of ESP
- Variable drop size control and turndown ratio allows the operator to optimize scrubbing performance—even on-line
- Dry operation allows for tower construction of less-expensive materials, for better overall cost-effectiveness
- Dry materials may be recycled back into the system to reduce reagent consumption
- Small footprint for retrofitting into tight spaces
- Simultaneous removal of multiple pollutants (acid gases and particulates)

**New Systems and Upgrades to Existing Systems Available**
Dürr Megtec can supply components or complete systems: everything you need including nozzles, lances, pumps, controls, and towers. Control systems range from manual to advanced automatic controls, including PLCs that interface with plant computer systems.