Smart Dry Injection Systems
Activated Carbon, Sodium Bicarbonate, Trona & Hydrated Lime Injection for Gas Cleaning

Experience is our technology™

8400 Hour Continuous Operation Guarantee!
Smart Dosing & Injection Systems from Process Control Experts

STM was one of the first companies worldwide to offer advanced dry injection systems for acid gas scrubbing and heavy metals removal to air pollution control OEMs and end users. STM boasts extensive experience on sodium bicarbonate, dry lime and activated carbon injection for gas cleaning applications worldwide.

System Supplier + Equipment Designer

Whether it is a complete sub-system, or just a few components, STM EcoSystems is a leader in R&D, engineering, design and manufacture of spray cooling, dry milling and dosing equipment. We are one of the few spray cooling and dry injection systems suppliers who designs and sells its own equipment to end users and OEMs, based in part on our own experience in designing systems and components for over 30 years, combined with our process experience from different industrial and utility processes. We are not a components manufacturer who also supplies systems, but rather a systems supplier that creates its own technology to provide optimal solutions to specific customer problems.

STM offers a wide and complete service range of equipment and services, from a single loss-in-weight feeder system to complete supply, from a feasibility study or CFD to retrofits, field services and technical evaluations. We also work with OEMs to help them supply the best possible solution to their own customers.

STM can provide every kind of technical support and assistance, from greenfield installations to modifications to existing systems, whether the problem be injection capacity, system performance or equipment obsolescence, by implementing the full range of STM EcoSystems solutions.

MDS - The Complete Solution for Activated Carbon and Dry Injection

The complete package for the cost of the feeder alone

With the MDS smart dosing system, you get all of the components, pre-assembled on a skid mounted system for the same price as the feeder alone, plus you get a continuous operation and injection rate accuracy guarantee!

This ensures that not only you save money on the capital equipment and installation cost, but also on the operation during the entire life cycle of your plant. During the operating life of a dry dosing system, injection inaccuracies can far exceed the capital investment, therefore precise implementation of advanced and accurate weigh sensing, feeding and inverter technologies is of fundamental importance.

Only a time-tested system can provide maximum reliability and guarantee availability and continuity. Reliability, in this case, means continuous injection of a sorbent that meets a specific injection rate accuracy – and this reliability presupposes a system that provides maximum efficiency under all operating conditions.

More Savings, Accurate Injection Rates

MDS Series smart dosing and injection systems are the answer to customer demands for:

- Minimal maintenance
- Elevated reliability
- Guaranteed continuous injection of sorbent
- Accuracy of sorbent injection rates

In order to achieve these objectives, many innovative solutions have been incorporated into the design, operation and controls of the MDS Series smart dosing and feeding systems.

STM Quality - Experience is our technology™
**MDS Series Feeder Design**

**Fundamental Features**

Founded in 1980, STM develops advanced technologies in the field of dosing, feeding and injection of fine and difficult to handle dusts, and in particular, since 1990, injection of various sorbents (Sodium Bicarbonate, Trona, Hydrated Lime, Activated Carbon, Carbon Enriched Hydrated Lime and Sodium Bicarbonate) for the purpose of cleaning flue gases.

Based on our extensive experience, we have designed innovative machines that, thanks to the perfect integration of heavy-duty mechanical and advanced electronic technology, are able to guarantee predictable performance, reliable production and energy efficiency. The result is the MDS Series of feeders, an exceptional and reliable line of products whose design is the result of all of our experience, with the quality and performance our customers have come to expect of the STM label.

Powdered activated carbon, used to reduce emissions of heavy metals, dioxin/furans, dioxins, etc., is difficult to handle mainly because of weak sliding fluidity of the product itself. This is also true of many other sorbents, such as some high surface area hydrated limes whose particles tend to attach to one another, and prevent the material from flowing properly, and thus form bridges inside the dosing equipment.

To avoid these problems, STM engineers have taken several steps to ensure full flow of material at all times. One of these is the positive measurement of sorbent or reagent flow and by guaranteeing capacities from 1 to 6600 lb/h, with an error of ±2%. The MDS Series keep a running total of the amount of sorbent injected and automatically adjust the flow to meet the specs. In the case that the value is under or over to the fixed value by more than the allowed error, the system will send a signal to the operator that there is a problem and, at the same time, indicate the exact location of the problem.

The base system, per the schematic on the right, is composed of:

- Dry dosing feeder (1), complete inlet hopper (2), inlet feed pipe (3), dosing screw body (4), proportioning dosing screw (5), high level sensor (6), dosing screw drive (7) sized to feed the quantity to be dosed, fitted with one of two specially designed flights, solid or spring-style, delumper drive (8) with delumper tool (10) and doser vibrator (9).

Dry feeding is easier than ever with MDS Series systems.

**STM EcoSystems - Experience is our technology.**
MDS Series Feeder Design

Performance Elements

In order to provide an 8400 hour continuous operation guarantee, STM engineers have fitted the doser with an array of sensors and tools designed to handle any eventuality.

Lump-breaker/agitator tool
Although the dosing feeder screw element is designed to encourage particle de-clumping, the lump breaker/agitator is included to make sure that any lumps contained in the material supplied by the customer are broken up into material that can be handled by the screw.

Screw tool design
The dosing feeder screw elements are designed to facilitate accurate metering of the type of material that is being dosed. The screws are designed with either solid screw or spring screw elements, and are supplied in several different pitch ratios to satisfy accuracy and performance.

High performance gear motor
The gear motors installed on the MDS Series dry dosing systems are high performance devices driven by a VFD, ensuring both accuracy and reliability.

Integrated weigh scale
The weigh scales installed on the MDS Series dry dosing systems provide high precision and are designed to operate in harsh environments, ensuring both accuracy and reliability.

MDS Series Feeder Design

Safety Elements

As part of the system’s active instrumentation, the MDS Series dry dosing systems are supplied with a surge hopper level sensor and an outlet flow pressure transmitter for blockage detection and prevention.

MDS Series Feeder Design

Convenience Features

Elegantly pre-assembled into an easy to maintain unit, the system is supplied with all instrumentation and electronic controls required to properly dose any material, and to regulate and fine-tune any function easily, by way of its intuitive human-machine interface system and integrated pneumatic control panel.
**Example System - Compressed Air Propulsion**

![Diagram of MDS-AC Cutaway](image)

1. Feed Inlet  
2. Lump Breaker/Agitator  
3. Surge Hopper  
4. Eductor Venturi  
5. Optional Weigh Scale  
6. Screw Feed Gear Reducer  
7. Screw Feed Element  
8. Outlet Pressure Transmitter

The MDS-AC metering/transport system utilizes compressed air to propel the material. Its main advantage is that, since it utilizes compressed air that can be filtered, cooled and dried, it can transport material that is sensitive to moisture and heat and that requires a clean environment. Also, since compressed nitrogen can also be used, it can be used to dose and transport material that requires an inert environment.

**Example System - Blower Propulsion**

![Diagram of MDS-P Cutaway](image)

1. Feed Inlet  
2. Lump Breaker/Agitator  
3. Surge Hopper  
4. Eductor Venturi  
5. Optional Weigh Scale  
6. Screw Feed Gear Reducer  
7. Screw Feed Element  
8. Outlet Pressure Transmitter

The MDS-P metering/transport system utilizes a blower to propel the material. Its main advantage is that it provides its own source of transport air and a separate line from the compressed air system is not required. It should not be used to transport material that is sensitive to moisture and heat, such as activated carbon.
Example System - Blower Propulsion/Flow Through Valve

The MDS-VS metering/transport system utilizes a blower to propel the material that feeds a flow-through rotary valve. Its main advantage is that it provides its own source of transport air and a separate line from the compressed air system is not required, plus it provides the added benefit of having the material be positively evacuated from the rotary valve without danger of overpressure. It should not be used to transport material that is sensitive to moisture and heat, such as activated carbon.

Example System - Compressed Air Propulsion/Twin Transport

The MDS-D is a dual metering/transport system utilizes compressed air to propel the material. Its main advantage is that, since it utilizes compressed air that can be filtered, cooled and dried, it can transport material that is sensitive to moisture and heat and that requires a clean environment, and, since compressed nitrogen can also be used, it can be used to dose and transport material that requires an inert environment. Also, it is an economical way to inject in two points without doubling the cost of the feed and weighing system.
Note: Design and performance data in this catalog may be changed at any time at supplier’s discretion.