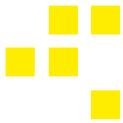




■ ■ ■ ■
■ **Systems for Dosing,
Injection and Control for
Powdered activated Carbon,
Sodium Bicarbonate,
Hydrated Lime.**

Model MDS60 - MDS80 - MDS100





Security during the dosing

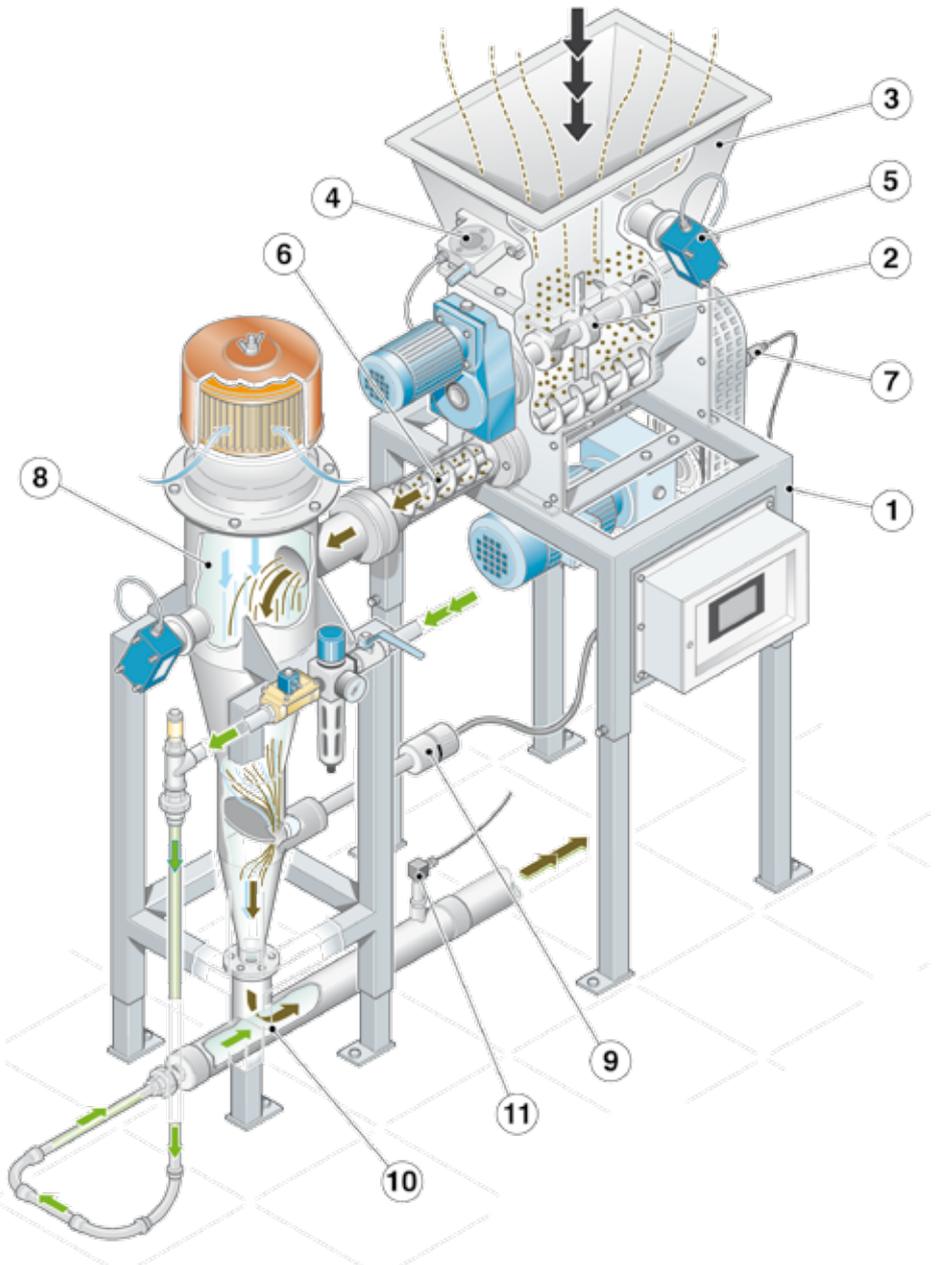
The powdered activated carbon, used for the reduction of the emissions of heavy metals, furans, dioxins, . . . , is difficult to treat mainly because of the weak sliding fluidity of the product itself.

There is the danger that the correct dosing isn't respected because of the formation of bridges inside the installation or other. For avoiding this problem, considering the STM experience in this sector, we have decided to measure the passing flow of the reagent, by guarantying capacities from 0,5 Kg/h up to 100 Kg/h, with a mistake margin of $\pm 2\%$.

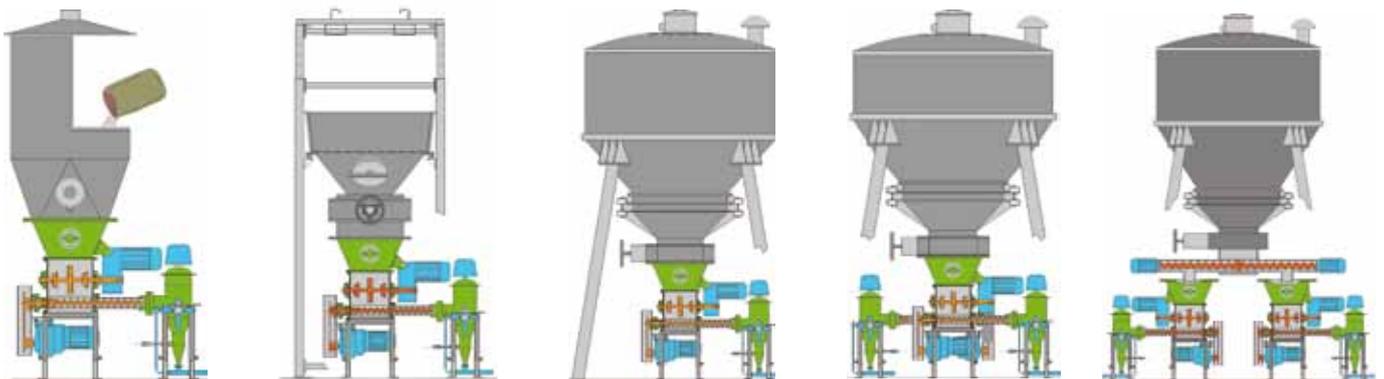
By using a measuring sensor with micro-wave technology, we are able to make an instantaneous measurement of the dosed quantity and, if the value is under or over to the fixed value, the system will send a signal to the operator that there is a problem and, at the same time, will make a check of the installation in order to find it.

The supply, as per the that you can see on the right, is composed by:

- A **batch feeder** (1), complete with mixer with **sinter breaker** (2);
- A **hopper** (3) complete with **pneumatic vibrator** (4) and **level indicator** (5);
- A **proportioning device** (6) dimensioned following the quantity to be dosed, and realized with a special design so that not to compress the activated carbon, and complete with a **rotation sensor** (7);
- A **conveyor** (8) where the reading instrument (9) is installed;
- A **Venturi injector** (10) for the pneumatic transport of the product, for which can be used compressed air or nitrogen (max. 2 bar), or a high pressure pump (not applicable with the inertizing system);
- A **pressure sensor** (11) for the control of the obstruction of the pipes.



Possible applications:



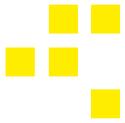
Dosing system with manual charge.

Dosing system with Big Bag Unloader .

Silo with simple dosing system.

Silo with double dosing system.

Silo with screws.



Security in 5 points



1) SECURITY DURING THE DOSING PHASE

Following our studies, done in cooperation with the activated carbon producers and with an advising company for the prevention of fire and explosion, the activated carbon is a product that, as per what indicated in the security data sheet, can be classified as ATEX but, considering the fact that is not grinded on site that might cause the primer, it is enough and it is possible to prevent the other ignition points, so that they don't become effective, i.e. all the moving element might not cause sparkles, also in accidental way, to avoid the creation of fire inside the activated carbon.

A possible solution for not having sparkles is installing the transmission bearing outside without contact point with the product to be dosed. This solution (avoiding the ignition points) has been used for the micro-batch feeder and for the mixer. To prevent the ignition points, our company has studied and realized a pneumatic transport system by using compressed air coming from a normal compressor with a capacity of 40 – 60 m³/h per line and a maximum pressure of 2 bar.



2) SECURITY DURING THE INJECTION PHASE

To avoid that, during the transport phase of the dosed activated carbon, there is the formation of explosive clouds, instead of the compressed air can be used nitrogen gas for pushing the product to the injection point, with an oxygen percentage not over the 5%.

For doing this, you have to install, before the dosing system, a nitrogen generator to produce directly on site the necessary quantity.



3) SECURITY DURING THE CHARGING PHASE

When the plant has a stocking silo for the activated carbon, STM can supply a system that allow the carrier to connect the charging pump of the tank truck to the generator of the nitrogen gas, so that to make the charge under inert atmosphere. The system can be feed by a stocking cylinder or by a nitrogen generator as you can see from the scheme here under.



4) SECURITY DURING STOCKING PHASE

When there is a stocking silo for the activated carbon to be dosed, it is possible to use nitrogen gas for maintaining under permanent control the oxygen value inside the silo itself, and keep it under the danger threshold. This is done by analyzing the internal atmosphere of the silo with a special system that manages the opening and the closing of the nitrogen injection system inside the silo. More over, you can install also an flow-off panel, installed on the top of the silo, and three temperature probes, installed on different heights and in a circular way at 120° the one from the other. The system supplied by STM can function if feed by a stocking cylinder or directly by a nitrogen generator.

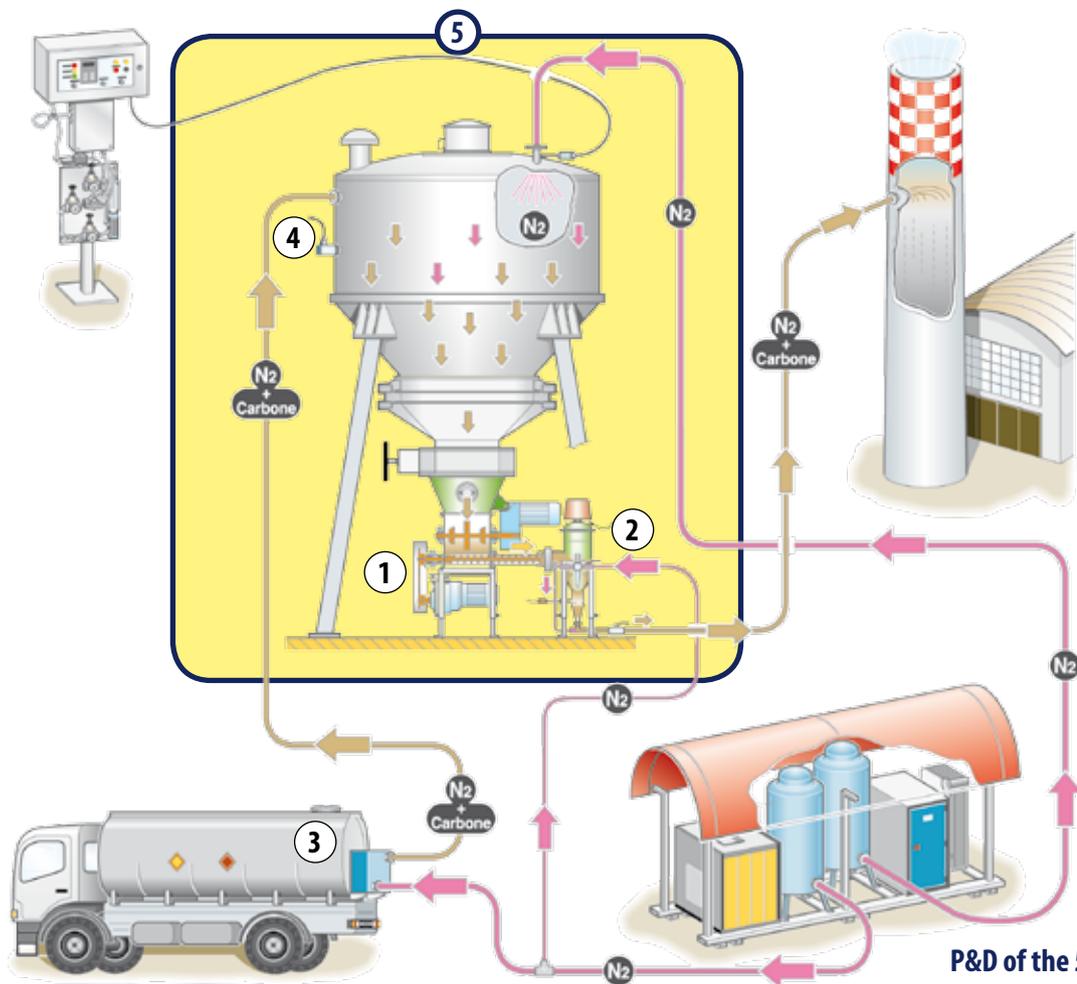


5) SECURITY DURING POSITIONING ON CLASSIFIED AREA

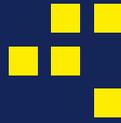
If the supply might be installed inside a classified area, the system can be complete of drives, reducers, sensors, ... certified for installation in ATEX 22 area.

Only a detailed appraisal of the risk, based on the peculiarity of the process and of the product, can define the characteristics of an installation that corresponds to the essential requirements of security and health for the explosion risk.

STM can help the customer by supplying the technical support for the risk evaluation and the determination of the technical security solutions that are necessary for each single plant.



P&D of the 5 points.



Dosing system for activated carbon with Big-Bags unloader model SBB15 and micro-batch feeder MDS60 with balance.



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NB: All the data in this catalogue are not engaging and can be changed at anytime.