

CASE STUDY

APPLICATION:
COLLECTION OF FINE PEAT DUST IN AN ATEX Z22 CLASSIFIED ENVIRONMENT

CUSTOMER:
PHARMACEUTICAL COMPANY PRODUCING ACTIVATED CARBON

BENEFITS:
SPEED UP CLEANING OPERATION SAFELY

A pharmaceutical company with extensive experience in the **production of activated carbon processes** large quantities of peat, a carbon-rich organic material, at one of its plants.

During the different stages of this process, **an extremely fine, light, and volatile dust** is generated, which tends to disperse easily into the environment and accumulate even in the most difficult-to-reach places.

This dust is potentially flammable. The production area is classified as an ATEX 22 zone and extends vertically over several levels and walkways, reaching a total height of approximately 35 meters.

To ensure that the production environment remains constantly clean, in compliance with hygiene and safety standards, a **customized centralized vacuum system** has been installed, capable of operating even in areas that are difficult to access and making cleaning operations faster and more efficient.

Vacuum and filtration units of the centralized system



CUSTOMER'S NEED - OUR CHALLENGE

The customer requested the design and installation of a **centralized vacuum system** capable of keeping the entire plant free of dust and guaranteeing:

- **Simultaneous suction** at different points located on the 3 floors of the factory;
- **Wide suction range**, to cover the entire building;
- **Efficient collection**: the vacuumed dust must be conveyed into a Big Bag to simplify disposal.



Pharmaceutical industry headquarters



SAFE VACUUMING IN ATEX ZONE 22

Peat is an organic material rich in carbon and highly combustible. During processing, handling and transportation, peat generates fine dust which, if dispersed into the environment, can create potentially explosive atmospheres.

The working environment is therefore **classified as Zone 22 Atex**, given the presence of combustible dust.

It is therefore necessary to implement a safe, efficient extraction system that is perfectly suited to the complexity of the production environment.

Peat is an organic material used in various fields, including agriculture and pharmaceuticals.



THE INSTALLATION

FOR COLLECTING FINE AND VOLATILE PEAT DUST



We have developed a **centralized vacuum system** designed to operate safely in an Atex zone 22 certified environment.

The system was built using **steel pipes** distributed throughout all levels of the plant. The suction points (12 in total) are strategically positioned according to the operators' needs:

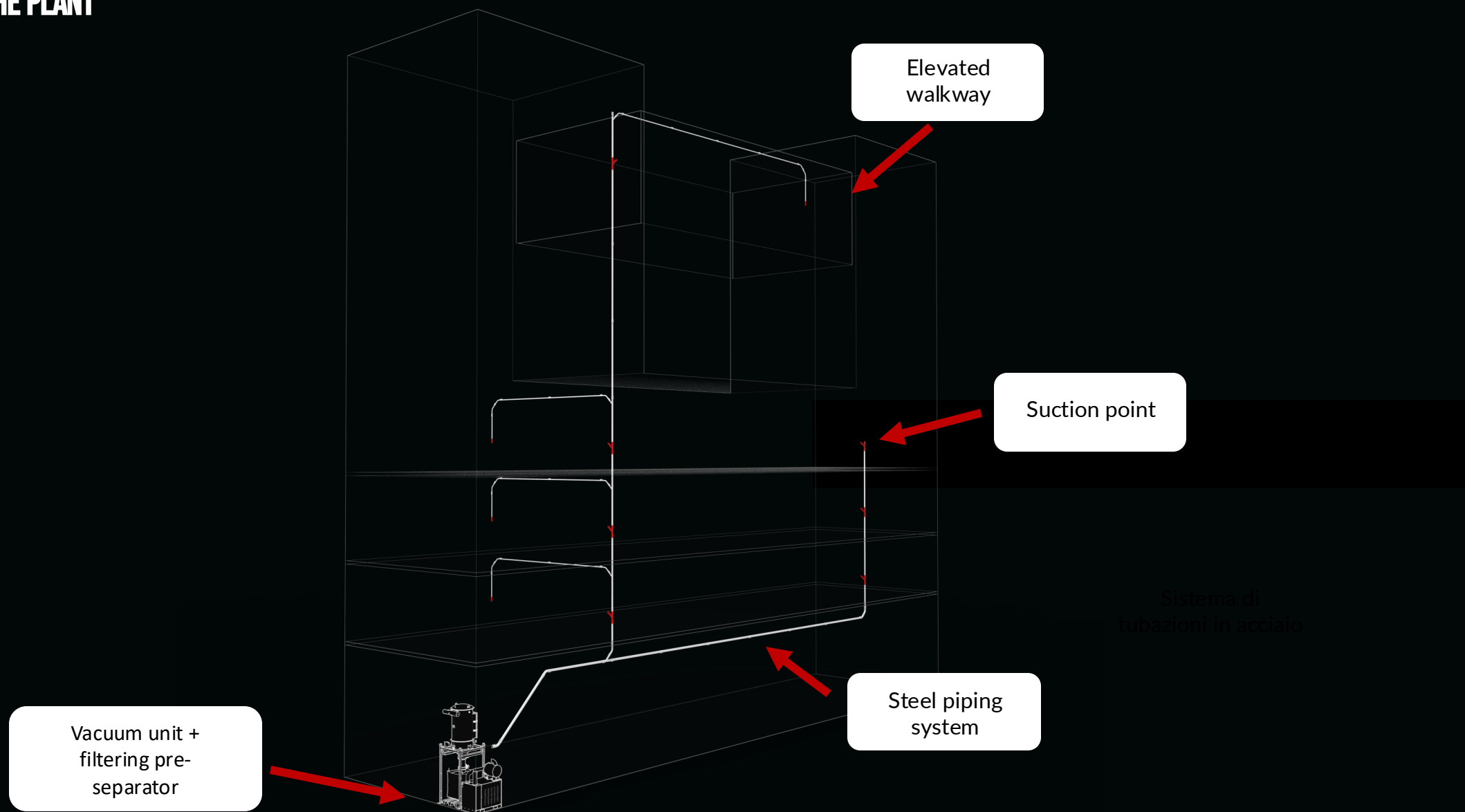
- 1 suction point on the ground floor, for vacuuming near the pre-separator
- 3 suction points on the first floor
- 3 suction points on the second floor
- 3 suction points on the third floor
- 2 suction points on the elevated walkway at a height of 35 meters).

The **furthest suction point** is located approximately 75 meters from the suction unit.



THE INSTALLATION

THE STRUCTURE OF THE PLANT



THE INSTALLATION

FOR COLLECTING FINE AND VOLATILE PEAT DUST

PLANT'S STRUCTURE

Each suction point is equipped with **electropneumatic valves** that:

- automatically start the system when the suction point is opened;
- automatically shut down the system approximately 20 seconds after closing.

The system has been designed to allow simultaneous use by two operators.



Suction point



Electropneumatic
valve

THE INSTALLATION

FOR THE COLLECTION OF FINE AND VOLATILE PEAT DUST

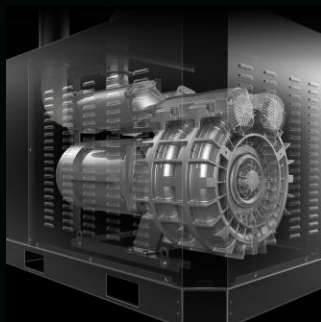


VACUUM UNIT: CVS 150 ATEX Z22

The suction unit is a **CVS 150 ATEX Z22**, consisting of a powerful side channel turbine inside a steel structure.

- Power: 15 KW
- Vacuum in continuous run: 350 mBar
- Maximum air flow: 920 m³/h

A PLC electrical panel is installed on the CVS, which allows the extraction system to be activated remotely.



Side channel blower
15 kW



Electrical panel with
remote start



Can be picked up with a
forklift truck

THE INSTALLATION

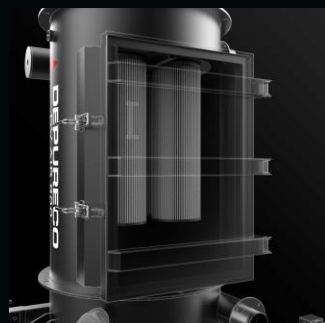
FOR THE COLLECTION OF FINE AND VOLATILE PEAT DUST



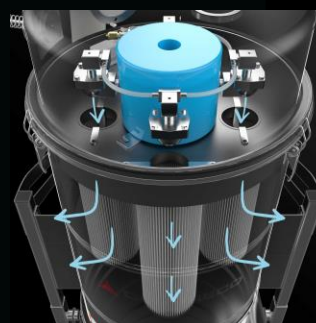
FILTERING UNIT: DV AIR 800 ATEX Z22

The dust is collected inside a filter pre-separator with conveyor discharge, the **DV AIR 800**. The preparer is emptied into large Big-Bags and is managed independently via the electrical panel.

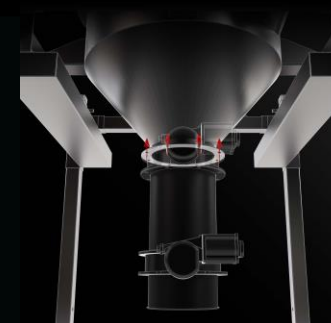
- **Filtering unit:** 4 class M cartridges
- **Filter surface area:** 340,000 cm²
- **Filter cleaning system:** automatic SP with counter-current air flow (compressed air not supplied as standard)



High efficiency class M
cartridges



SP automatic filter
cleaning system



Conveyed discharge
system

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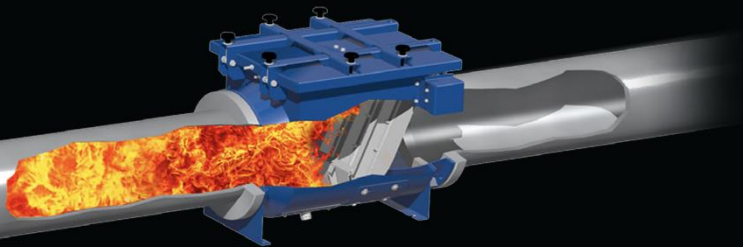
SAFETY SYSTEMS

The system is equipped with several safety devices that ensure operational continuity and safety in the production environment.

- An ATEX-certified **compartmentalization valve** integrated into the piping, designed to prevent the return of extracted peat dust and prevent the propagation of explosions along the system.
- An ATEX-certified **relief vent**, integrated into the system, allows rapid depressurization in the event of a peat dust explosion, preventing structural collapse.



FLAMELESS VENT



COMPARTIMENTALIZATION VALVE

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