

PURATEK® VACUUM SUCTION FEEDING SYSTEM

Hazardous waste in form of bulk, fine powdery material, like spent catalyst for example, can generate huge amount of dust when handling, manipulating and feeding.

Hazardous waste dust is harmful for human and environment and needs special attention.

To put hazardous waste dust complete under control, PURATEK® has developed and build Vacuum Suction Feeding System also called **PURATEK® DSS (Dust Suppression System)**.



PURATEK® DSS Vacuum system in operation - sucking spent catalyst from barrels



PURATEK® Vacuum Suction Feeding System

Vacuum suction feeding system is designed for feeding of bulk, fine powdery material to Stabilization & Solidification plant. In most cases this type of waste material comes in barrels, containers or big-bags.

The purpose of **vacuum suction feeding system** is the extraction of the input waste material directly from the barrels, containers or big-bags and transfer of waste material to the storage silo of **Stabilization & Solidification plant** without, respectively, minimized dust generation.

Solid waste material in pieces up to ca 50 mm in diameter is sucked by strong vacuum. A rotary piston vacuum pump

generates the necessary negative pressure (approx. - 600 mbar) to suck the material from the barrels via a suction hose and head, which is borne by the 3D telescoping hydraulic driven arm.

Operator moves cantilever hydraulic arm with via "joy stick" in 3D directions like a toy. Additional function on remote control console is control switch for sucking function ON/OFF. Hence the Roots blower runs non-intermittent, the ON/OFF sucking function is generated by using bypass air valve.

The sucked material goes via suction pipe to the cyclone separator with vacuum tight double flaps lock for solid waste material

discharge. The double flaps vacuum lock enables pressure less material discharge from the separator. Solid waste material from cyclone separator falls down into an intermediate storage silo without under-pressure.



Suction lance



Cartridge Air Filter

Air-stream is connected to the cartridge air filter with automatic air-jet cleaning. After that filtrated air is leded thru HEPA filter and on the end thru charcoal (active carbon) filter. Vacuum pump unit (Roots blower, driven by 75 kW motor) produces vacuum in the suction line resulting high air flow velocity necessary for pneumatic material transport.

WASTE MATERIAL SUCKING CAPACITY:

Maximum suction performance of the vacuum feeding system is approximately 10 m³/h of bulk solid waste material. In practice, more than half of working time is lost for manipulation of the telescopic arm. According to our experience, operator empties one barrel of the solid waste material in about 3 minutes. One barrel holds approx. 200 liters of solid particles and dust. We assume that in 15 minutes it is possible to suck approx. 1 m³ of solid waste from 5 barrels, resulting 4 m³/h net capacity of bulk waste material.

MAIN EQUIPMENT:

This technical description lists only the main equipment. Of course, the complete scope of supply contains all necessary parts to ensure a perfectly functioning vacuum suction feeding device. PURATEK® Vacuum Suction Feeding System consists of:

1. Telescopic Arm
2. Hydraulic Unit
3. Cyclone separator
4. Double flaps lock
5. Intermediate Storage silo
6. Cartridge Air Filter
7. HEPA Filter
8. Activated Carbon Filter
9. Vacuum Pump
10. Silencer
11. Stack



PURATEK® Vacuum Suction Feeding System is fully automatic and easy operated via user friendly touch screen.

TECHNICAL AND PERFORMANCE DATA:

Power supply overall:	110 kW
Free air flow rate:	ca 4800 m ³ /h
Load air flow rate:	ca 4080 m ³ /h
Maximal negative pressure:	ca 600 mbar
Filter system:	3 step filter
3. step air filter:	S-filter-system EU13, grade >99,97%
Rest dust after third air filter step:	< 0,1 mg/m ³
Roots blower motor power:	75 kW
Suction pipe diameter:	150 mm
Suction lance diameter.	180 mm
Suction Performance:	max. 10 m ³ /h bulk waste material
Noise level:	max. 85 dB
Intermediate storage of silo:	10-20 m ³

