



Selfclear Automatic Filtration System

Fully Automatic, Filter Cake Drying, Slag Removal Backblowing

Filtration. Separation. Solutions



CAC Automatic Filtration System

SelfClear™ is Feature–Tec’ s new continuous self–cleaning filtration equipment which automatically filters and removes particles from liquid and gaseous streams.

SelfClear™ automatically cleans filter elements without equipment shutdown or change out of used elements. SelfClear™ has been widely used in various applications requiring continuous production operation, highly dangerous working environments and applications with high dirt load or sticky mediums, which cannot be handled using general automatic backwashable metal filter systems.

Integrating Four Functions Together

1 Filtering

Especially suitable for treating sticky streams or with large quantities of impurities and requiring maximum precision of 1 um. SelfClear™ is usually applied in natural gas purification, crude oil refineries, synthetic ammonia and other fine chemical processes, as well as amine desulfurization and decarbonization in waste gas treatment.

2 Separating

SelfClear™’ s high precision filtration can recover some useful materials such as precious metal salts, rare metal catalysts, fine activated carbon particles, fine titanium dioxide particles and PTA particles. The inbuilt drying technology improves treatment of residual liquor in filter cakes, achieving maximum efficiency in separating solids from liquor while reducing material loss.

3 Washing

In traditional fine chemical production processes, materials are usually repeatedly washed and agitated to thoroughly dissolve and eliminate impurities in crude ores. SelfClear™ Automatic Filtration System’ s creative design combines washing and filtration functions organically, greatly improving productivity. SelfClear™ is very suitable for inorganic ore and crude titanium ore productions.

4 Thickening

SelfClear™ Automatic Filtration System’ s drying blowback technology integrates conventional concentrating procedures into the separation filtration process. SelfClear™ is particularly suitable for use in mother liquor concentration after centrifugal separation, and is widely adopted in PVC and PTA production processes.



SelfClear™ ☒

Treat materials with high impurity content

Treat sticky impurities and high impurity content

Fulfills high content and high precision requirements

Fully closed operation; able to treat corrosive, volatile impurities that are difficult for human labor

Able to achieve filter cake dryness requirements (min water content up to 20%), suitable for recycling of filter cake and ensures minimal liquid loss

No raffinate design reduces material loss

Other Filter Elements ☐

Filters require frequent element changeout

Metal elements result in frequent clogging

Regular automatic filters provide low filtration precision

Conventional filter press and belt press systems endangers operators’ safety

Traditional backwashing filters and disc filters incurs high wastage of materials

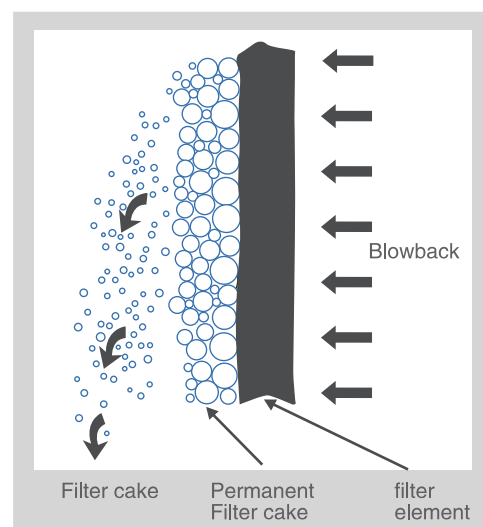
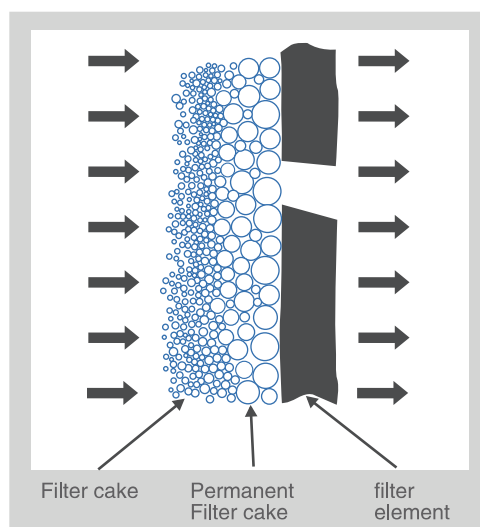
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Filter Cake Filtration Process

Filter cake filtration process uses a permanent layer of filter cake with a certain thickness on the filter element as the filtration surface to trap finer particulates, thickening the filter cake.



SelfClear™ Filtration Process

1、Prefiltration

As the process fluid enters the filter, larger particles are trapped while the smaller particles pass through into the filter element.

2、Filtration

As the fluid is filtered, the filter cake acts as a filter medium to trap the finer solid particulates.



3、Cake Drying

As the filter cake is dried, pressurized gas presses the cake to remove liquid content within the cake to reduce material wastage.

4、Backblowing

When the filter cake is dried, pressurized gas is backblown through the element to remove the filter cake. 3–55mm thickness of filter cake can be discharged this way.



Before Filtration



Dried Filter Cake



Backblowing Process



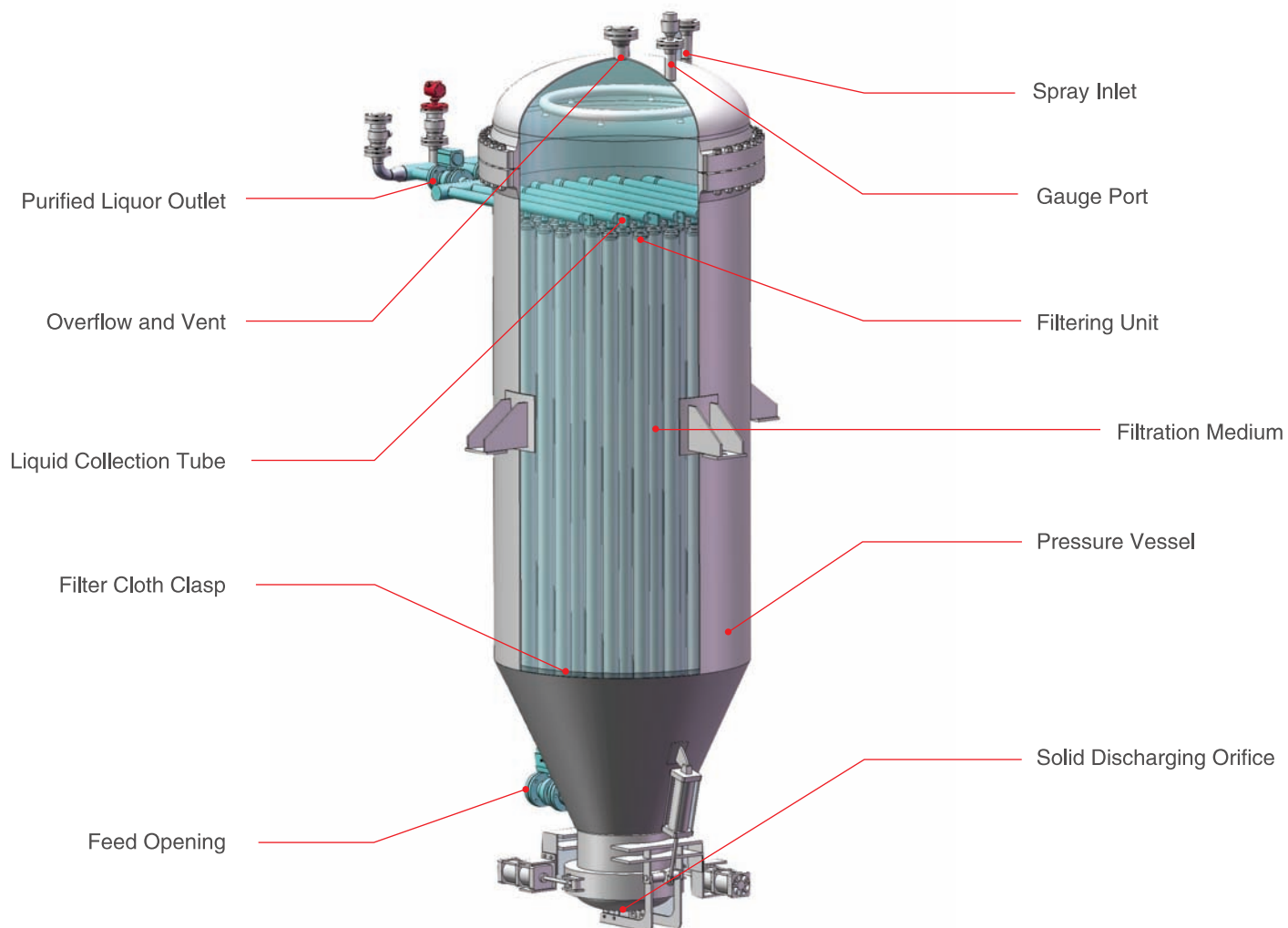
After Backblowing

SelfClear™ Process

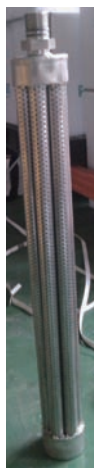
- Cleaning of filter cake
- Addition of filter aid
- Thickening processes



CAC Automatic Filtration System



Liquid collection tube



6+1 Metal
Filter Cartridge



1+1 Metal
Filter Cartridge



6+1 Plastic
Filter Cartridge



Filter Cloth



CAC Automatic Filtration System

Typical Application

Amine Desulfurization& Decarbonization Process

Desulfurization and decarbonization processes are common in natural gas purification, crude oil refineries, ammonia production and other chemical processes. During adsorption and stripping of the amine solution, pipeline impurities, organic acids and other impurities gradually accumulates, significantly reducing heat transfer efficiency of the heat exchangers and towers, amine absorption efficiency, equipment capacity and increases energy consumption. SelfClear™ completely removes small impurities from the system, minimizing loss of amine solution to reduce operating costs. With fully enclosed operation, SelfClear™ is a safe and reliable long-term solution.

PTA & PVC Powder Recovery

The PTA mother liquor contains high content of fine PTA particles even after centrifugation, which is discarded in conventional processes. As the finer PTA particles have great market value, SelfClear™ Filtration System can be applied after the centrifugation process to recover the finer PTA particles. SelfClear™ can be applied for PVC production processes.

Bleaching Agents & Filter Aids

Bleaching agents and filter aids such as activated carbon, diatomaceous earth and white clay is widely used in the chemical, pharmaceutical and food industry for bleaching and impurity absorbing uses. After the reaction, these additives must be removed to minimize loss of useful products. By using SelfClear™ to filter the residue and steam or compressed air to dry the removed filter cake, the product content within the removed filter cake is less than 20%.

Extended Wastewater Coking Treatment

In extended coking processes for crude oil refineries, coking powder is usually around 1–5 microns. Unfiltered stream with high content of sticky coke powder could cause reduced heat transfer and reduce reliability of the system. Conventional backwash filtration systems are easily choked, producing filter cake with high liquid content. Feature-Tec's SelfClear™ is able to solve this problem.

Titanium Pigment Production

SelfClear™ Filtration System is applicable for the first and second washing and separation processes for the production of titanium dioxide. Plate filters are used for third stage separation.

Catalyst Recovery

In chemical and pharmaceutical production, rare metal catalysts are added for reaction processes, which are recovered or reused after the reaction. Such processes require versatile equipment such as the SelfClear™ to directly filter high pressure gaseous streams, complete with drying and washing process of the filter cake.

Inorganic Salt Production

Molecular sieves used in the production process of inorganic salt requires several treatment and washing processes, using conventional rotating hub or belt filtration systems. While coarse cloth is used to filter appropriate sized salts and prevent oversizing, the cloth is unable to filter the finer particles. As customers requires the best recovery solution for their rare metal solution, SelfClear™ effectively filters the stream, applicable in fine recycling and waste treatment processes.



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