




campulse filter systems

Camfil Farr Power Systems	Application brochure	 A smaller version of the Camfil Farr logo, showing the green stylized wings and the word "camfil" in white, set against a blue sky with white clouds.
Power Systems		
Camfil - clean air solutions for turbomachinery		

CamPulse EF Filter Systems – Self Cleaning for really tough environments

CamPulse air filter systems are designed to protect rotating machinery operating in high dust load environments where conventional static systems suffer from frequent service intervals resulting in reduced availability, frequent shutdowns and high maintenance cost.

The CamPulse system is selfcleaning during operation allowing full continuous operation at low stable pressure drop even in extremely dusty environments as they may occur in some parts of the world.

The cleaning system is activated as a function of the dust load and avoids sudden increases in pressure drop. This eliminates

the need for unfiltered air bypass doors as are common for static filter systems and increases the degree of protection of the machine.

How it works

CamPulse is a single stage automatic self-cleaning barrier filter using multiple cylindrical and/or conical filter elements. The filter elements are arranged horizontally in rows and sealed positively against the clean air chamber.

In the normal filtering mode, dust-laden ambient air is drawn into the upper part of the housing and flows through the filter elements, through the tube sheet

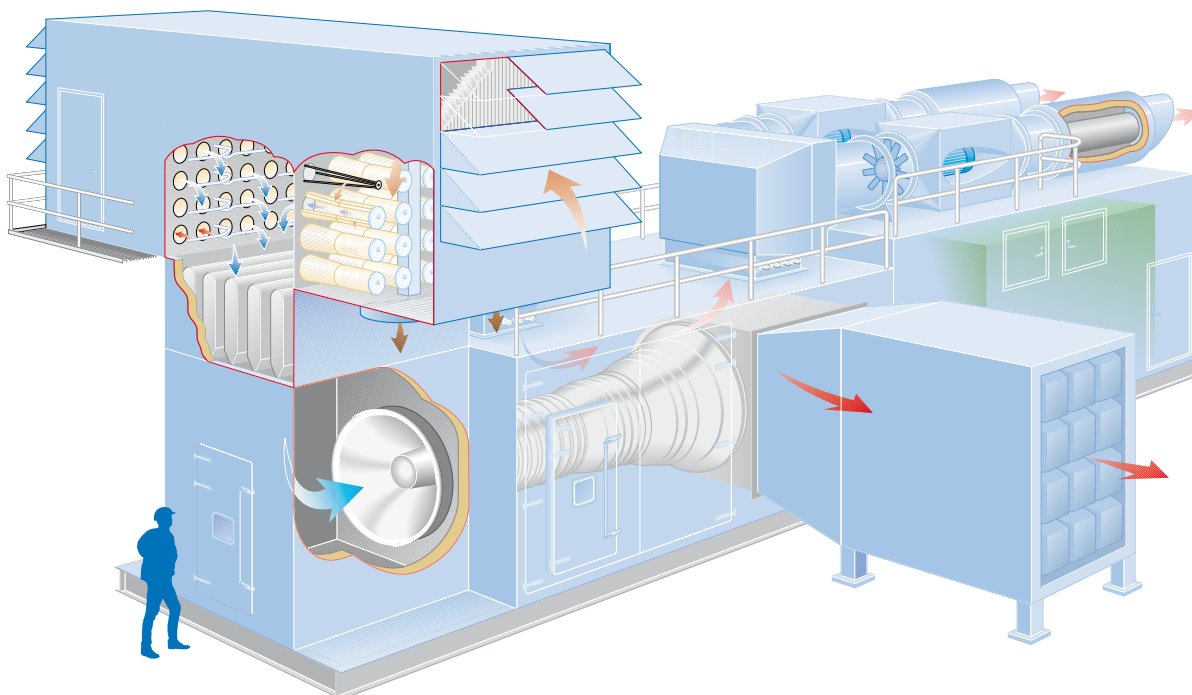
and into the clean air chamber. Dust particles are trapped on the outside surface of the filter media. As the surface becomes loaded with contaminants, air flow is restricted increasing pressure drop. When a preset level is reached, the self cleaning cycle is automatically initiated.

The cleaning takes place during normal operation by injecting compressed air into a number of filter elements in reverse-flow direction without interrupting the normal air flow through the system. The dust pulsed off the filter elements can drop freely and re-entrainment of fine dust particles is greatly reduced by the positive downdraft.

CamPulse's self-cleaning cycle is automatically activated on demand by a

CamPulse Systems offer

- High efficiency, optimum protection
- Stable, low operating pressure drop
- Continuous, maintenance-free operation
- High reliability and availability
- Simple installation and operation



pressure sensor or a timer. A combination of both methods may be used. When the cleaning cycle is activated, pulses of compressed air are discharged in the reverse direction of normal flow through the injector nozzles into the filter elements. The injected compressed air is further augmented by air from the clean-air chamber creating a combined air mass with the necessary pressure to properly dislodge dust particles trapped on the outside surface of the filter element. The compressed air used during the cleaning cycle is supplied through blowpipes arranged downstream of each row of filters.

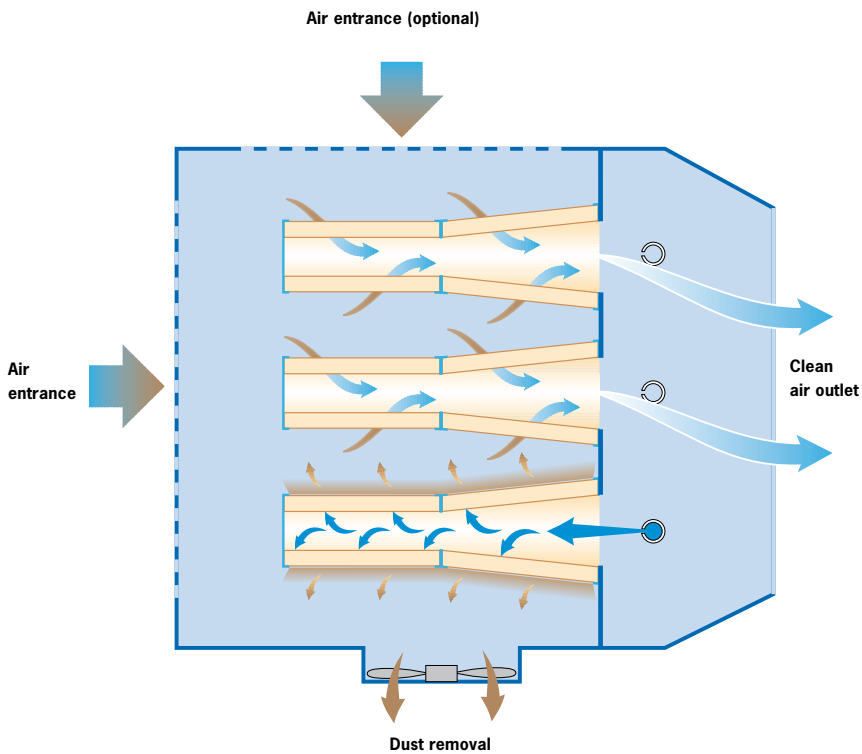
Each blowpipe has air nozzles corresponding with each filter element and cleans two or more element a time.

The reverse high pressure pulses are generated by a quick acting diaphragm valve mounted ahead of each blowpipe. The valve is actuated by a solenoid valve, which in turn is sequentially controlled by a solid state electronic timer.

The sequencer regulates frequency interval and pulse duration. Each blowpipe is attached to a common manifold which contains the compressed air used to pulse the filter elements. Normally between 5% and not more than 15% of the systems filters are cleaned simultaneously. This ensures a constant and uninterrupted flow of air.

The self-cleaning sequence is maintained until the unit returns to the desired normal operating pressure level and the self cleaning cycle stops. When reactivation is necessary, the cycle starts where it left off. The cyclical action insures that all filter elements are cleaned on a regular basis and ensures an uninterrupted supply of clean air.

The evacuation of the dust pulsed-off is further assisted by one or more scavenge air fans in the lower part of the filter housing. The fans increase the downdraft of dust from the pulsed elements and reduce the re-entrainment of dust to adjacent elements to a minimum.



Principle of operation



CamPulse Filter System for GE Frame 6 unit in Spain.



Filter module open for inspection.

CamPulse Filter Systems are designed for use in high dust load environments. We offer three other filter systems which are designed for specific environments:

- **Barrier Filter Systems**
- **Offshore Filter Systems**
- **Marine Filter Systems**

Filtration characteristics

The heart of the filter system is the highly efficient CamPulse element. The single stage cylindrical barrier type filter is specially engineered for selfcleaning applications. It employs a unique surface acting cellulose and/or synthetic fibre base media that effectively removes contaminants. In fact, its remarkable filtering capability measures up to a 99,95% efficiency rating during an average service life.

Consistent operating pressure levels

The CamPulse system consistently maintains average operating pressure levels without sacrificing filtration efficiency. This is accomplished by the unique media used, and the regular automatic self-cleaning of the filter elements. Accumulated dust is regularly removed from the surface of the elements, keeping pressure drop variations at a minimum.

Actual pressure drop variations over time are impossible to predict. However, a typical design range of 500 to 1000 Pa provides optimum efficiency and the most economical application.



Cross section of CamPulse filtermodule with optional chiller coil arrangement.

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