solely on its outermost layer (outermost layer upstream relative to the direction of the air flow). These are filters comprising, for example, a layer of PTFE (Polytetrafluoroethylene) or of cellulose nanofibers on the surface. In effect, dust on the surface of the filter comes off more easily than dust stored inside the filter. The operation of dust removal (referred to as unclogging) from the filter is facilitated.

[5] However, during periods of operation of the system of equal duration, the amount of particles that can be retained by such filters is less than the storage capacity of filters which collect particles throughout their entire volume. The problem therefore arises of removing these particles so that the filter continues to operate optimally and has a longer service life.

Summary

[6] The present disclosure aims to remedy these disadvantages.

[7] The disclosure aims to provide a system for capturing braking particles from a friction braking system, in which the filter provides optimized efficiency and service life.

[8] This object is achieved due to the fact that the capture system further comprises a storage container which is capable of receiving the particles which become detached from the filter.

[8a] In an aspect, the present disclosure refers to a capture system for capturing braking particles from a friction braking system, which comprises a vacuum source, a pneumatic circuit which connects said friction braking system to the atmosphere, said vacuum source being located on said pneumatic circuit, and a filtration system for said particles which is located on said pneumatic circuit and which comprises a support and a filter mounted on said support and which becomes clogged by said particles during operation, preferentially on the surface, said capture system being characterized in that it further comprises a storage container which is capable of

receiving said particles which become detached from said filter.

[9] By means of these arrangements, the particles stopped by the filter are regularly stored in a separate area of the filter. The filter is thus regularly unclogged and retains its filtration capacity. Maintenance of the filter is also facilitated since the particles are removed by regularly emptying the storage container.

[10] Advantageously, the capture system further contains an unclogging device for the filter that is able to cause the particles to fall into the storage container.

[11] The particles are thus regularly detached from the filter, which extends the service life of the filter and therefore of the capture system.

[12] For example, this unclogging device is a vibrator which is able to cause the filter to vibrate.

[28] [Fig. 4] FIG. 4 is a perspective view of the capture system according to another embodiment.

[29] [Fig. 5] FIG. 5 is a schematic view of another embodiment of the capture system according to the invention.

[30] [Fig. 6] FIG. 6 is a schematic view of yet another embodiment of the capture system according to the invention.

Detailed description of the invention

[31] FIG. 1 schematically represents a particle capture system 1 according to the invention, these particles being emitted by a friction braking system 10.

[32] This friction braking system 10 comprises a brake pad 11 for braking a vehicle. This pad 11 comprises a backing plate 12 and a lining 13 made of friction material fixed to the backing plate 12. In FIG. 1, pad 11 is seen from below, backing plate 12 being in the foreground.

[33] Pad 11 (first pad) is facing a disc 9 which is driven by the wheel of the vehicle or of a machine. A second identical pad (not visible) is located on the other side of disc 9 and facing first pad 11 such that these two pads sandwich disc 9. The braking of disc 9 is achieved by friction of the two linings 13 against disc 9 when the two pads approach disc 9.

[34] Capture system 1 comprises a pneumatic circuit 30 and a vacuum source 20. Pad 11 and second pad are connected to vacuum source 20 via pneumatic circuit 30. For example, vacuum source 20 comprises an electric motor 21 and a suction turbine 22 which is driven by electric motor 21. Pneumatic circuit 30 therefore extends from friction braking system 10 to vacuum source 20 then continues downstream of vacuum source 20 and leads to the atmosphere (exterior).

[35] During operation, vacuum source 20 is capable of suctioning up the particles when they are emitted by linings 13, then through pneumatic circuit 30. The direction of circulation of the air and the particles during normal operation is indicated by arrow F in FIG. 1. Arrow F therefore indicates a flow from upstream to downstream. The capture system further comprises a filtration system 40 which comprises a support 41 and a filter 42. Filtration system 40 is located on circuit 30,

meaning that filter 42 is crossed by the air which is circulating in circuit 30. Filter 42 is mounted on support 41 which is fixed in a sealed manner on pipe 30, so that support 41 forms an open space only upstream and downstream in circuit 30, and in storage container 50 described below. The particles thus tend to remain within this space. Filtration system 40 is advantageously located upstream of vacuum source 20 in order to prevent, as much as possible, the particles from passing through vacuum source 20. This variant is represented in FIG. 1. Alternatively, filtration system 40 is located downstream of vacuum source 20 on pipe 30, meaning that vacuum source 20 is located on the part of pipe 30 which connects braking system 10 to filtration system 40. This variant is shown in FIG. 6.

[36] FIGS. 2 and 3 are perspective views of the capture system, showing filtration system 40 and storage system 50. In FIG. 2, filtration system 40 and storage system 50 are shown assembled together. In FIG. 3, filtration system 40 and storage system 50 are shown disassembled. For example, support 41 is a housing in which filter 42 is housed. Thus, filter 42 separates housing 41 into an upstream part and a downstream part. The air coming from the upstream part of circuit 30 enters housing 41 through an inlet port 411 at the upstream part of housing 41. The air passes through filter 42, and exits housing 41 at the downstream part of housing 41 through an outlet port 412, to enter the downstream part of circuit 30. Both ports 411, 412 are located on the same face of housing 41. Alternatively, both ports 411, 412 are each located on an opposite face of housing 41.

[37] Capture system 1 further comprises a storage container 50. Storage container 50 is integral with support 41, and is intended to receive and store the particles which become detached from filter 42. In FIG. 2, support 41 is a housing, and housing 41 and storage container 50 form a closed space (except for the inlet and outlet ports (411, 412)). The join between housing 41 (or more generally support 41) and storage container 50 is sealed (for example using a gasket) in order to prevent the particles from escaping.

[38] Storage container 50 is removable from housing 41. Thus, container 50 can be emptied easily and then be reattached to housing 41. For emptying, storage container 50 is advantageously provided with a lid (see below). In FIG. 3, container 50 is shown detached from housing 41. In FIG. 2, container 50 is shown secured to

Claims

[Claim 1] Capture system for capturing braking particles from a friction braking system, which comprises a vacuum source, a pneumatic circuit which connects said friction braking system to the atmosphere, said vacuum source being located on said pneumatic circuit, and a filtration system for said particles which is located on said pneumatic circuit and which comprises a support and a filter mounted on said support and which becomes clogged by said particles during operation, preferentially on the surface, said capture system being characterized in that it further comprises a storage container which is capable of receiving said particles which become detached from said filter.

[Claim 2] Capture system according to claim 1, further comprising an unclogging device for said filter that is able to cause said particles to fall into said storage container.

[Claim 3] Capture system according to claim 2, wherein said unclogging device is a vibrator which is able to cause said filter to vibrate.

[Claim 4] Capture system according to claim 2 or 3, wherein said unclogging device comprises a generator of an air flow that passes through said filter.

[Claim 5] Capture system according to claim 4, wherein said generator is the vacuum source.

[Claim 6] Capture system according to one of claims 1 to 5, such that said storage container and said support form a closed space.

[Claim 7] Capture system according to one of claims 1 to 6, such that said storage container is removable from said support.

[Claim 8] Capture system according to one of claims 1 to 7, such that said filter extends mainly within a plane P which is horizontal.

[Claim 9] Capture system according to one of claims 1 to 7, such that said filter extends mainly within a plane P which forms, with a horizontal plane H, a non-zero angle β which is less than or equal to 90°.

[Claim 10] Capture system according to one of claims 1 to 9, such that said storage container comprises a closure mechanism which makes it possible to prevent the particles from coming into contact with an external operator.

[Claim 11] Capture system according to one of claims 1 to 10, wherein said vacuum source is located on the part of said circuit which connects said braking system to said filtration system.