Description

Title: Filter identification in a system for capturing braking particles

[1] This invention relates to a system for capturing braking particles from a friction brake system, which comprises a vacuum source, a pneumatic circuit that connects the friction brake system to the vacuum source, and a current filter located on the pneumatic circuit and mounted on a support.

[2] Such friction brake systems may equip road or rail vehicles. Such friction brake systems may also equip stationary rotor devices such as wind turbines or industrial machines.

[3] In such systems, there is provided a vacuum source (for example a suction turbine driven by a motor) which is connected by a pneumatic circuit to the friction brake system, and a filter for collecting particles emitted by the brake system. This filter is placed upstream of the vacuum source, and prevents the passage of particles through the vacuum source and their release into the atmosphere. However, in certain situations, the current filter (i.e. the filter currently mounted in the system) does not have the same characteristics (for example it is of a different model or brand) as the reference filter, which is the filter appropriate for the capture system. This difference in at least one of the characteristics is detrimental because the current filter may not perform as efficiently as the reference filter. The current filter is then unsuitable.

Description of the invention

Summary

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

[4a] In an aspect, the present disclosure refers to a system for capturing braking particles from a friction brake system, which comprises a vacuum source, a pneumatic circuit that connects said friction brake system to said vacuum source,

and a current filter located on said pneumatic circuit and mounted on a support, characterized in that said capturing system comprises a control unit and an identification device for identifying said filter, which is capable of sending at least one signal to said control unit, said signal comprising at least one current characteristic of said current filter, said control unit being capable of comparing said at least one current characteristic with at least one reference characteristic of a reference filter, and informing a user when said at least one current characteristic and said at least one reference characteristic are dissimilar.

[4b] In another aspect, the present disclosure refers to a method for identifying a filter in a system for capturing braking particles from a friction brake system, this capturing system comprising a vacuum source, a pneumatic circuit that connects the friction brake system to the vacuum source, and a current filter which is located on said pneumatic circuit and which is mounted on a support, said method being characterized in that it comprises the following steps: (a) a control unit and an identification device for identifying said current filter are provided which are part of the capturing system; (b) said identification device sends at least one signal to the control unit, this signal comprising at least one current characteristic of said current filter; (c) said control unit compares said at least one current characteristic with at least one reference characteristic of a reference filter, and informs a user when the at least one current characteristic and the at least one reference characteristic are dissimilar.

[5] In an example, the present disclosure aims to provide a system for capturing braking particles which makes it possible to ensure that the current filter is identical to the reference filter.

[6] This is achieved by means of the fact that the capturing system comprises a control unit and an identification device for identifying the filter, which is capable of sending a signal to the control unit, the signal comprising at least one current characteristic of the current filter, the control unit being capable of comparing

the at least one current characteristic with at least one reference characteristic of a reference filter and informing a user when the at least one current characteristic and said at least one reference characteristic are dissimilar.

[7] By means of these arrangements, the current filter is identified with certainty, and its relevant characteristics are compared with those of a reference filter which is the filter that should be installed in the capturing system. Consequently, when at least one of these characteristics of the filter currently installed in the capturing system is not identical to that of the reference filter, the user is so informed. The user can then act to prevent the vehicle or stationary machine from continuing to operate with an unsuitable filter. This user action is normally the replacement of this unsuitable filter by an appropriate filter identical to the reference filter.

[8] For example, the current characteristic of the current filter is unique and the reference characteristic of the reference filter is unique

[9] For example, the current filter has a plurality of N characteristics and there is a plurality of N reference characteristics, and the control unit is capable of comparing each of the current characteristics with each of the reference characteristics, two by two, and informing a user when, for at least one integer value of n between 1 and N, the current characteristic and the reference characteristic are dissimilar.

[10] Advantageously, a portion of the identification device contains the at least one current characteristic of the current filter, this portion being carried by the current filter.

[11] The reliability of the identification of the current filter is thus reinforced.

[12] In an example, the present disclosure also relates to a method for identifying a filter in a system for capturing braking particles from a friction brake system, this capturing system comprising a vacuum source, a pneumatic circuit that connects the friction brake system to the vacuum source, and a current filter which is located on the pneumatic circuit and which is mounted on a support.

[13] According to the example, the method comprises the following steps:

(a) A control unit and an identification device for identifying the current filter are provided which are part of the capturing system;

(b) The identification device sends at least one signal to the control unit, this signal comprising at least one current characteristic of the current filter;

(c) The control unit compares the at least one current characteristic with at least one reference characteristic of a reference filter and informs a user when the at least one current characteristic and the at least one reference characteristic are dissimilar.

[14] The invention will be better understood and its advantages will become more apparent upon reading the following detailed description of some embodiments represented as non-limiting examples. The description refers to the accompanying drawings, in which:

[15] [Fig. 1] FIG. 1 is a schematic view of a capturing system according to the invention,

[16] [Fig. 2] FIG. 2 is a perspective view of a housing carrying a filter, and an embodiment of a detection device for detecting this filter in the capturing system of FIG. 1,

[17] [Fig. 3] FIG. 3 is a perspective view of a housing carrying a filter, and of another embodiment of a detection device for detecting this filter in the capturing system of FIG. 1.

Detailed description of the invention

[18] FIG. 1 schematically shows a system for capturing particles 1 according to the invention, these particles being emitted by a friction brake system 10.

[19] This friction brake 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, the pad 11 is viewed from below, the plate 12 being in the foreground.

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