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This invention relates to a sinter cooler of a sintering plant for use in metallurgy, comprising a cooling-air chamber and a sinter cooling chamber including a perforated or slotted base plate, which can travel over the same e.g. by means of bogie wheels running on a rail track, and comprising a cooling gas seal including lower sealing walls, which extends between the cooling-air chamber and the sinter cooling chamber in the vicinity of the base plate wheel axle.

In such sinter coolers, sealing elements for sealing the gap around the base plate wheel axles previously have been used to avoid cooling air losses. In this way, the losses of the cooling air flowing from the cooling-air chamber to the sinter cooling chamber should be reduced, so that more cooling air passes through the holes of the perforated plate, in order to improve the cooling of the sinter material and reduce the operating costs. The previously used cooling air seal is subject to considerable wear, which involves a frequent renewal of the sealing elements to be performed by hand.

CN 201 032 375 discloses a sealing device for a circular cooling machine running with bogie wheels on a rail track. The device has an airtight box mounted around the wheel axle and comprising plates that are separately connected with fixed rubber airproof plates.

It is the object of the present invention to equip a sinter cooler as mentioned above with a novel cooling gas seal, which with an improved durability safely reduces cooling air losses and hence the amount of required cooling air, which should lead to a saving of operating costs and improve the effectiveness of the cooler.

In a sinter cooler as mentioned above, this object in particular is solved in that the cooling gas seal carried along with the sinter cooling chamber includes inner skirting plates and/or outer sealing elements each inserted into the sealing walls, wherein the respective skirting plate or the respective sealing element encloses the base plate wheel axle with snug fit and is mounted on the sealing wall so as to be freely movable relative to the base plate wheel axle.

Due to this special kind of the formation and arrangement of the cooling gas seal, a self-compensating method is proposed for a reliable protection of the sealing elements, in order to avoid or reduce the wear thereof, which would lead to undesired cooling gas losses.

This objective in particular is achieved when the skirtings plates and/or the sealing elements are arranged to be freely floating around the base plate wheel axle and take up the movement of the base plate wheel axle.

The sealing elements arranged on the outside in particular can be made of neoprene.

The respective skirting plate can have an elastically resilient edge bead which rests against the base plate wheel axle and preferably is adapted to the thickness of the sealing wall.

Further developments, advantages and possible applications of the invention can be taken from the following description of an embodiment and the attached drawing. All features described and/or illustrated form the subject-matter of the invention per se or in any combination, also independent of their inclusion in individual claims or their back-reference.

In the drawing:

Fig. 1 schematically shows a section through a sinter cooler including the invention,
Fig. 2 shows a schematic partial view in the vicinity of a bogie wheel obliquely from below and inside onto the sinter cooling chamber of a sinter cooler as shown in Fig. 1,
Fig. 3 shows a schematic partial view in the vicinity of a bogie wheel obliquely from above and outside onto the sinter cooling chamber of a sinter cooler as shown in Fig. 1,
Fig. 4 shows an oblique view of a skirting plate to be mounted from the inside of a wheel cutout of a sinter cooling chamber as shown in Fig. 1,
Fig. 5A and Fig. 5B show two oblique views (from inside and from outside) of a wheel axle cutout seal, and
Fig. 6A and Fig. 6B show the two steps of inserting a wheel axle cutout seal into the sealing wall of a sinter cooling chamber as shown in Fig. 1.

In such sinter cooler of the invention, a sinter cooling chamber 1 can travel over a cooling-air chamber 3 for example by means of bogie wheels 2, so that cooling air supplied into the cooling-air chamber 3 by means of a blower can be introduced via a perforated or slotted base plate 4 into the sinter cooling chamber 1 which contains the hot sinter material to be cooled. The hot waste air is discharged upwards from the sinter cooling chamber 1 and supplied e.g. to a heat recovery.

A cooling gas seal 5 includes inner skirting plates 8 and/or outer sealing elements 6 made of a heat-resistant elastomer for the wheel axle cutouts around the base plate wheel axles 7. The respective skirting plate 8 and/or the respective sealing element 6 of the cooling gas seal 5 carried along with the sinter cooling chamber 1 encloses the base plate wheel axles 7 with snug fit and is mounted on the sealing wall 9 so as to be freely movable relative to the base plate wheel axle 7.

Further developments, advantages and possible applications of the invention can be taken from the following description of an embodiment and the attached drawing. All features described and/or illustrated form the subject-matter of the invention per se or in any combination, also independent of their inclusion in individual claims or their back-reference.
plate wheel axle 7 with snug fit and is mounted on the bottom surface of lower sealing walls 9 so as to be freely movable relative to the base plate wheel axle 7.

[0014] The skirting plates 8 and/or the sealing elements 6 preferably are arranged to be freely floating around the base plate wheel axle 7, so that they can take up the movement of the base plate wheel axle 7.

[0015] As an elastomer for the sealing elements 6, neoprene is preferably used.

[0016] Due to the possibly provided outer skirting plate 8, the service life of the sealing elements 6 can substantially be increased, since they are exposed less to sinter dust and heat.

[0017] Figures 4 to 6B illustrate special configurations of a template-like inner skirting plate 8 with edge bead 10 in accordance with the invention and of a template-like sealing element 6 with skirting plate 8 in accordance with the invention as well as the way of mounting a sealing element 6 in the lower sealing wall 9.

List of Reference Numerals:

[0018]

1  sinter cooling chamber
2  bogie wheels
3  cooling-air chamber
4  base plate
5  cooling gas seal
6  sealing elements for wheel axle cutout
7  base plate wheel axle
8  skirting plate for wheel axle cutout
9  sealing walls.
10 edge bead

Claims

1. A sinter cooler of a sintering plant for use in metallurgy, comprising a cooling-air chamber (3) and a sinter cooling chamber (1) including a perforated or slotted base plate (4), which can travel over the same e.g. by means of bogie wheels (2) running on a rail track, and comprising a cooling gas seal (5) including lower sealing walls (9), which extends between the cooling-air chamber (3) and the sinter cooling chamber (1) in the vicinity of the base plate wheel axle (7), characterized in that the cooling gas seal (5) carried along with the sinter cooling chamber (1) includes inner skirting plates (8) and/or outer sealing elements (6) each inserted into the sealing walls (9), wherein the respective skirting plate (8) or the respective sealing element (6) encloses the base plate wheel axle (7) with snug fit and is mounted on the sealing wall (9) so as to be freely movable relative to the base plate wheel axle (7).

2. The sinter cooler according to claim 1, characterized in that the skirting plates (8) and/or the sealing elements (6) are arranged to be freely floating around the base plate wheel axle (7) and take up the movement of the base plate wheel axle (7).

3. The sinter cooler according to claim 1 or 2, characterized in that the sealing elements (6) are made of neoprene.

4. The sinter cooler according to any of the preceding claims, characterized in that the skirting plate (8) includes an edge bead (10), which rests against the base plate wheel axle (7) and preferably is adapted to the thickness of the sealing wall (9).

Patentansprüche

1. Sinterkühler einer Sinteranlage für den Einsatz in der Metallurgie, mit einer Kühlluftkammer (3) und einer über diese z.B. mittels auf einem Schienenstrang laufender Laufräder (2) verfahrbaren, eine gelochte oder geschlitzte Bodenplatte (4) aufweisenden Sinterkühlkammer (1) und mit einer untere Dichtwände (9) aufweisenden Kühlgasabdichtung (5) zwischen der Kühlluftkammer (3) und der Sinterkühlkammer (1) im Bereich der Tragplatten-Radachse (7), dadurch gekennzeichnet, dass die mit der Sinterkühlkammer (1) mitgeführte Kühlgasabdichtung (5) jeweils in die Dichtwände (9) eingesetzte innere Schürzenplatten (8) und/oder äußere Dichtelemente (6) aufweist, wobei die jeweilige Schürzenplatte (8) bzw. das jeweilige Dichtelement (6) die Tragplatten-Radachse (7) mit Passsitz umgreift.
und relativ zu der Tragplatten-Radachse (7) frei beweglich an der Dichtwand (9) angebracht ist.

2. Sinterkühler nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schürzenplatten (7) und/oder Dichtelemente (6) frei schwimmend um die Trägerplatten-Radachse (7) angeordnet sind und die Bewegung der Tragplatten-Radachse (7) aufnehmen.

3. Sinterkühler nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Dichtelemente (6) aus Neopren bestehen.

4. Sinterkühler nach einem der vorgenannten Ansprüche, **dadurch gekennzeichnet, dass** die Schürzenplatte (8) einen Randwulst (10) aufweist, der sich an die Tragplatten-Radachse (7) anlegt und vorzugsweise an die Dicke der Dichtwand (9) angepasst ist.

**Revendications**

1. Refroidisseur de métal fritté d’une unité de frittage destiné à être utilisé dans la métallurgie, comportant une chambre d’air de refroidissement (3) et une chambre de refroidissement de métal fritté (1) comprenant une plaque de base perforée ou rainurée (4), qui peut se déplacer sur celle-ci par exemple au moyen de roues porteuses (2) progressant sur un rail, et comportant un joint étanche au gaz de refroidissement (5) comprenant des parois d’étanchéité inférieures (9), qui s’étend entre la chambre d’air de refroidissement (3) et la chambre de refroidissement de métal fritté (1) à proximité de l’axe de roue de plaque de base (7), **caractérisé en ce que** le joint étanche aux gaz de refroidissement (5) transporté conjointement à la chambre de refroidissement de métal fritté (1) comprend des plaques de bordure intérieures (8) et/ou des éléments d’étanchéité (6) chacun insérés dans les parois d’étanchéité (9), dans lequel la plaque de bordure respective (8) ou l’élément d’étanchéité respectif (6) enceint l’axe de roue de plaque de base (7) avec un ajustement serré et est monté sur la paroi d’étanchéité (9) de manière à pouvoir se mouvoir librement relativement à l’axe de roue de plaque de base (7).

2. Refroidisseur de métal fritté selon la revendication 1, **caractérisé en ce que** les plaques de bordure (8) et/ou les éléments d’étanchéité (6) sont disposés pour pouvoir librement flotter autour de l’axe de roue de plaque de base (7) et absorber le mouvement de l’axe de roue de plaque de base (7).

3. Refroidisseur de métal fritté selon la revendication 1 ou 2, **caractérisé en ce que** les éléments d’étanchéité (6) sont en néoprène.

4. Refroidisseur de métal fritté selon l’une quelconque des revendications précédentes, **caractérisé en ce que** la plaque de bordure (8) comprend un bourrelet de rebord (10), qui repose contre l’axe de roue de plaque de base (7) et de préférence est adapté à l’épaisseur de la paroi d’étanchéité (9).
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201032375 [0003]