PLASMAKISSEN ZUR BEHANDLUNG VON OBJEKTEN

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HINTERGRUND

Device and method of treating objects & bulk materials with a physical plasma cushion at atmospheric pressure. The plasma passes from the discharge chamber to the treatment chamber through a sparger plate comprising a multitude of holes, producing a plasma cushion, which supports & transports the objects while treating them.

PROBLEMSTELLUNG

Several plasma devices and methods do exist for the treatment of objects, particularly their surfaces. Some even include a complicated turbulent gas flow through the treatment chamber. But all these devices usually do not treat all the surfaces from all the sides of the objects by themselves. This is particularly important for the treatment of bulky materials, like e.g. grains, seeds or fibers.

LÖSUNG

The present invention therefor has the object of providing a device and a method which enable the easy treatment of all the surfaces of an object or bulky material, like grains, seeds or fibers, and supporting its further transport using a plasma cushion at atmospheric pressure. The plasma source is integrated in the conveyor line. The activated plasma passes from the discharge chamber to the treatment chamber through a sparger plate comprising a multitude of holes, producing a plasma cushion, which supports & transports the objects while treating them. Thus, the plasma cushion enables a homogeneous treatment of all sides from all objects & bulky materials, while transporting them through the conveyor.

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ENTWICKLUNGSSTAND

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PATENTSITUATION

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CATEGORIES

//Physikalische Technik //Optik, Photonik und Lasertechnik //Material- und Werkstofftechnik //Oberflächentechnologien
The following schemes are some possible embodiments. Device for the treatment of objects/bulky materials (small balls) with a physical plasma cushion, which passes the plasma from the discharge chamber to the treatment chamber through a sparger plate comprising a multitude of holes (small arrows). This allows a homogeneous all around plasma treatment of the objects/bulky materials.

VORTEILE

- All around plasma treatment of bulky materials.
- Combination of transportation and plasma treatment.
- High filling levels possible.
- Adaptable transportation rates.
- Activation, cleaning or disinfection of bulky materials.
- Separation of different bulky materials possible (e.g. through particle size or density).
- Easy use of cold physical plasma at atmospheric pressure.

ANWENDUNGSBEREICHE

The innovative plasma cushion technology can be used to treat different objects and particularly bulky materials, like e.g. grains and seeds (disinfection), wood fibres (improve their surface binding), powders, granulates, etc. to clean, disinfect or activate them.