

ORIGINAL
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Abstract

The present invention relates to a method for providing reduction gas for iron ore reduction by cooling and dry dedusting generator gas (20) produced in a melter gasifier (3) for pig iron production, and also to a device for carrying out the method. In this case, the generator gas (20) is cooled both by water injection and by heat exchange after it has been discharged from the melter gasifier (3) and before the dry dedusting thereof.

(Figure 2)

Claims

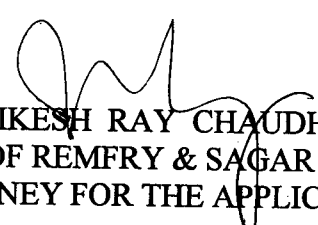
1. A method for providing reduction gas for iron ore reduction by cooling and dry dedusting generator gas (20) produced in a melter gasifier (3) for pig iron production, characterized in that the generator gas (20) is cooled both by water injection and by heat exchange after it has been discharged from the melter gasifier (3) and before the dry dedusting thereof.
2. The method as claimed in claim 1, characterized in that the heat exchange is effected with at least one liquid heat exchange medium (14).
3. The method as claimed in claim 2, characterized in that the liquid heat exchange medium (14) is water.
4. The method as claimed in claim 1 or 2, characterized in that the liquid heat exchange medium (14) is thermal oil.
5. The method as claimed in one of the preceding claims, characterized in that the water injection is effected before and/or during the heat exchange.
6. The method as claimed in claim 5, characterized in that the inlet temperature of the liquid heat exchange medium (14) lies within a temperature range with a minimum temperature of 70°C, preferably 100°C, and with a maximum temperature which is lower than the lowest temperature at which metal dusting corrosion occurs by reaction with generator gas (20) on the material of the device for heat exchange (13), preferably lower than 450°C, particularly preferably 150°C.

7. The method as claimed in one of the preceding claims, characterized in that the water injection is regulated in accordance with the temperature of the generator gas (20) after the heat exchange.
8. The method as claimed in one of the preceding claims, characterized in that the water injection is regulated in accordance with the temperature of the reduction gas produced by the dry dedusting.
9. The method as claimed in one of the preceding claims, characterized in that the quantity of heat withdrawn from the generator gas (20) per unit of time during the heat exchange

is regulated by changing the temperature of the heat exchange medium and/or the quantity of heat exchange medium supplied per unit of time.

10. A device for carrying out a method as claimed in one of claims 1 to 7, comprising a reduction reactor (1) for reducing iron ore (2) by means of a reduction gas, and a melter gasifier (3) for producing generator gas (20) by gasifying carbon carriers (4) in the presence of oxygen (6) and pre-reduced iron carriers (5), wherein the melter gasifier (3) and the reduction reactor (1) are connected by a gas line, in which a dry dedusting device (8) is present, characterized in that both a device for water injection (12) and a device for heat exchange (13) are present in the gas line between the melter gasifier (3) and the dry dedusting device (8).
11. The device as claimed in claim 10, characterized in that the device for heat exchange (13) is provided with a feed line (24) for liquid heat exchange medium (14), preferably water or thermal oil.
12. The device as claimed in claim 10 or 11, characterized in that the device for water injection (12) is arranged between the melter gasifier (3) and the end - as seen in the direction of flow of the generator gas - of the device for heat exchange (13), preferably in the device for heat exchange (13).
13. The device as claimed in one of claims 10 to 12, characterized in that the device for heat exchange (13) is in the form of a cooling jacket heat exchanger (18).
14. The device as claimed in claim 13, characterized in that the cooling jacket heat exchanger (18) has a cooling jacket with a helical guide for heat exchange medium.

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FIG 1

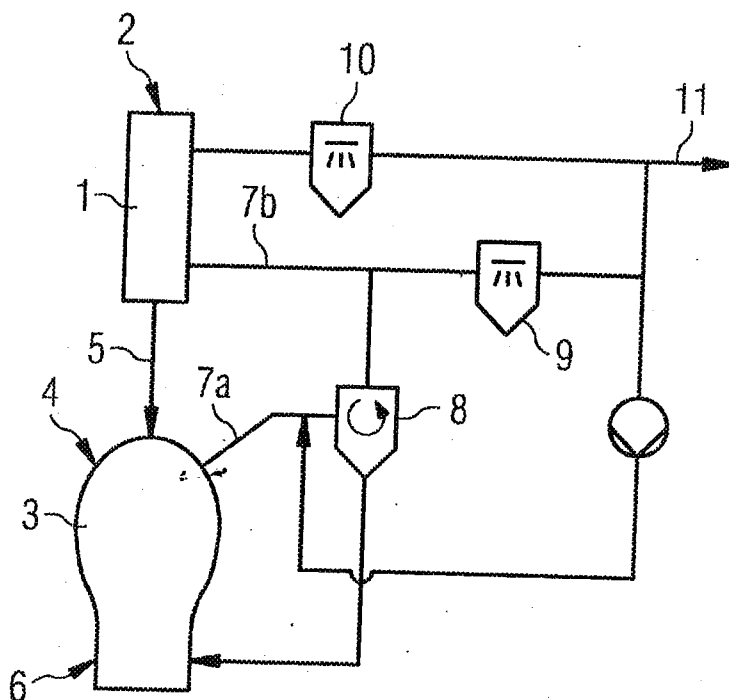
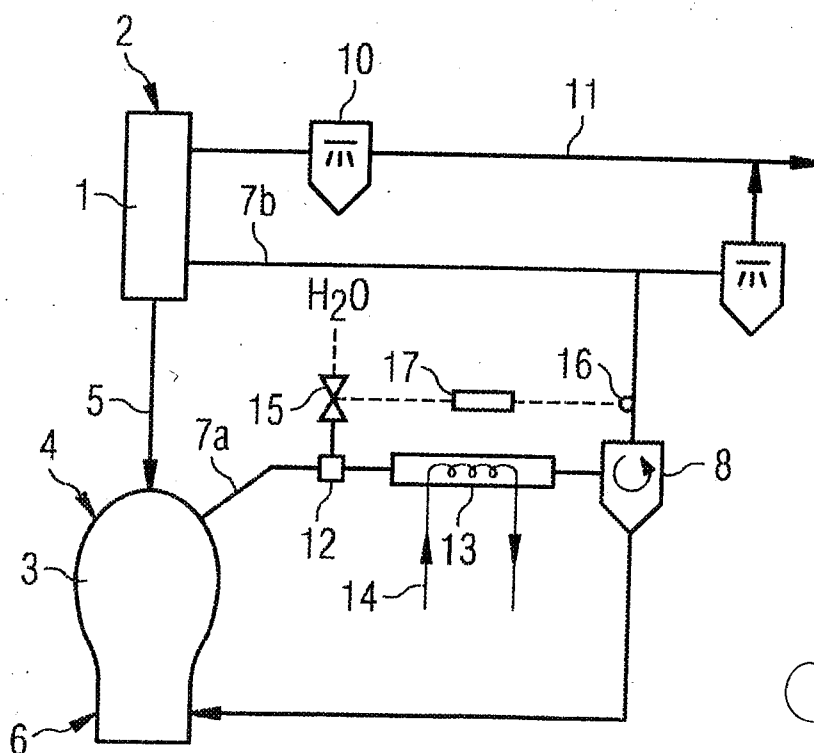


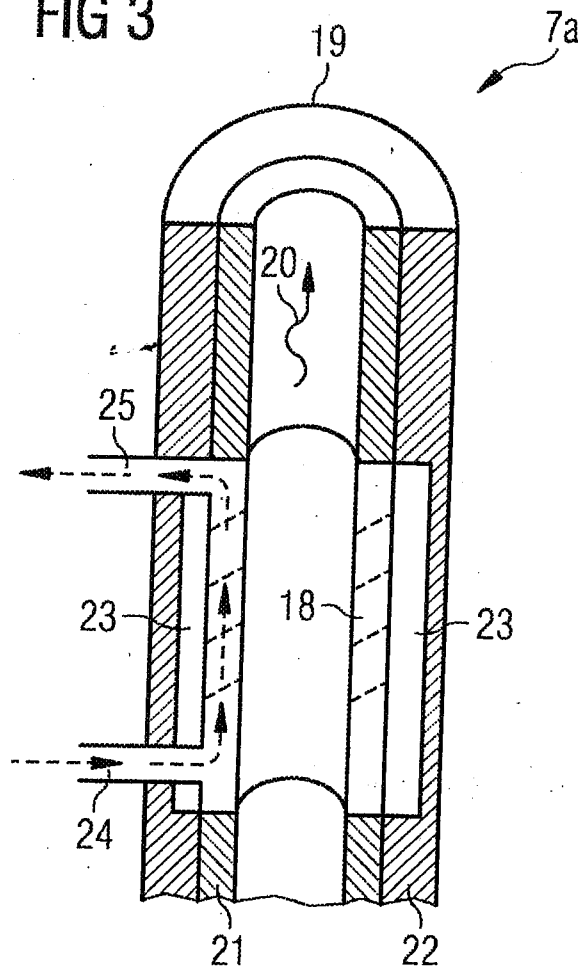
FIG 2



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FIG 3



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