

Claims

1. A method for managing the dense charging of a vessel with solid particles, comprising:

storing in a memory a model of an expected charging profile over a charging duration,

dense charging the vessel with the solid particles,

during the charging, receiving (201), from at least one sensor, measured values of a parameter indicative of the height of a bed of solid particles charged into the vessel ($h_m(n)$),

determining (204, 205, 210, 212) filtered values of the parameter indicative of the height ($h_f(n)$) from the measured values received and from the modeled charging profile, and

transmitting (214) the filtered values to a charging control means so as to formulate, as a function of said filtered values, a signal for controlling the charging with solid particles.

2. The method as claimed in claim 1, in which

a theoretical charging profile, modeled as a function of the shape of the vessel, the flow rate of solid particles and the type of solid particles charged is stored, and in which the filtered values of the parameter indicative of the height ($h_f(n)$) is determined by comparing (204) received measured values ($h_m(n)$) with values from the theoretical charging profile ($h_{th}(n)$).

3. The method as claimed in claim 1, in which

an experimental charging profile (213) modeled on filtered values of the parameter indicative of the height determined at previous instants is stored,

the filtered values of the parameter indicative of the height ($h_f(n)$) are determined by comparing (205) received measured values ($h_m(n)$) with values from the experimental charging profile ($h_{MC}(n)$).

4. The method as claimed in claim 1, further comprising a step involving comparing (203) at least one measured value of the parameter indicative of the height ($h_m(n)$) of the charging bed with at least one previous value of said parameter ($h_f(n-i)$).

5. The method as claimed in claim 1, comprising, for at least one received measured value,

a step of comparing (206) said received measured value ($h_m(n)$) with at least one previous measured value ($h_m(n-1)$),

5 and in which said received measured value is ignored if it is found that the received measured values have evolved too little over a given period of time (T).

6. The method as claimed in claim 1,

10 in which a plurality of sensors is provided, each sensor making it possible to measure one measured value of the parameter indicative of the height,

and comprising, prior to charging:

15 receiving a plurality of measured values of the parameter indicative of the height from the plurality of respective sensors,

determining, for at least one sensor, an offset value to be applied to the values from said sensor so that the plurality of corrected values are equal.

20 7. A non-transitory, computer program product comprising instructions for carrying out the steps of the method as claimed in claim 1 when said program is executed by a computer processor.

8. A device (5) for managing dense charging of a vessel with solid particles, comprising:

25 a memory storing an expected charging profile modeled over a charging duration,

receiving means for receiving from at least one sensor measured values of a parameter indicative of the height of a bed of solid particles charged into the vessel during the dense charging,

30 processing means for determining filtered values of the parameter indicative of the height from the measured values received and from the modeled charging profile, and

35 transmission means for transmitting the filtered values of the parameter indicative of the height to a charging control means so as to formulate a signal controlling the charging with solid particles.

9. A system (13) for charging a vessel (1) with solid particles, comprising

a solid particles distribution device (3),
at least one sensor (8) for measuring a parameter indicative of the height
of the bed of solid particles charged into the vessel, and
a device (5) for managing dense charging as claimed in claim 8.

5

10. The charging system as claimed in claim 9, in which said at least one
sensor comprises at least one radar probe (8).

10

11. The charging system as claimed in claim 9, comprising a plurality of
sensors.