Claims

1. A distribution plate for a wet scrubber, the distribution plate comprising a top surface, a bottom surface and a circumferential wall connecting the top and bottom surfaces and defining a cavity;

   the circumferential wall comprising a conduit arranged to be in fluid communication with a scrubbing fluid supply port of a wet scrubber;

   the distribution plate further comprising one or more channels extending between the top and bottom surfaces; wherein the or each channel is arranged to allow, in use, fluid to pass therethrough from the top surface towards the bottom surface and vice versa;

   the bottom surface comprising a plurality of apertures arranged to allow a scrubbing fluid to flow from the cavity.

2. A distribution plate according to claim 10, wherein the or each channel is bounded by a separating wall which is configured to separate said channel from the cavity.

3. A distribution plate according to claim 10 or claim 11, wherein at least one said channel comprises a venturi scrubber.

4. A wet scrubber for gas abatement, comprising a scrubbing vessel defining a chamber, a gas inlet for supplying a gas to be scrubbed, and a gas outlet for allowing the egress of a scrubbed gas, the inlet and outlet being in fluid communication with one another;

   one or more scrubbing fluid supply ports;

   the wet scrubber comprising at least first and second distribution plates according to any preceding claim each connected to a scrubbing fluid supply port for distributing a scrubbing fluid inside the chamber;

wherein the first distribution plate is arranged to distribute virgin scrubbing fluid inside the chamber;

and the second distribution plate is arranged to distribute recirculated scrubbing fluid inside the chamber.

5. A wet scrubber according to claim 4, wherein the second distribution plate is fluidly located between the first distribution plate and the gas inlet.

6. A wet scrubber according to claim 4 or claim 5, wherein at least one distribution plate comprises a distribution plate comprising a cavity and a plurality of apertures arranged to allow scrubbing fluid to flow from the cavity.

7. A wet scrubber according to claims 4 to 6, wherein the scrubbing vessel is a substantially vertically extending column; and the second distribution plate is located substantially in the lower half of the scrubbing vessel.

8. A wet scrubber according to claims 4 to 7wherein the scrubbing vessel is a substantially vertically extending column; and the second distribution plate is located substantially in the lowermost third of the scrubbing vessel.

9. A wet scrubber for gas abatement, comprising a scrubbing vessel defining a chamber, a gas inlet for supplying a gas to be scrubbed, and a gas outlet for allowing the egress of a scrubbed gas; the inlet and outlet being in fluid communication with one another;

one or more scrubbing fluid supply ports;

the wet scrubber comprising at least one distribution plate according to claims 1 to 3 connected to a scrubbing fluid supply port for distributing a scrubbing fluid inside the chamber;

wherein at least one said distribution plates is a distribution plate comprising a cavity and a plurality of apertures arranged to allow scrubbing fluid to flow from the cavity.

10. A wet scrubber according to claim 9, comprising first and second distribution plates; wherein the first and second distribution plates are distribution plates.

11. A wet scrubber according to claim 9 or claim 10, wherein the apertures of the or each distribution plate are substantially uniformly spaced across the bottom surface of said distribution plate.

12. A wet scrubber according to any of claims 9 to 11, wherein the scrubbing vessel contains packing material; and the packing material is substantially contiguous with at least one distribution plate; preferably the packing material is substantially contiguous with each distribution plate.

13. A method of designing a wet scrubber having a scrubbing vessel defining a chamber, a gas inlet, and a gas outlet, one or more scrubbing fluid supply ports and one or more scrubbing fluid distribution plates according to claims 1 to 3, wherein at least one said distribution plate is a distribution plate arranged to distribute recirculated scrubbing fluid inside the chamber, the method comprising the steps of:

a. determining the configuration and dimensions of the scrubbing vessel, gas inlet, gas outlet and scrubbing fluid supply ports;
b. determining the content and flow rate of gas to be scrubbed into the gas inlet;
c. determining the content and flow rate of scrubbing fluid through the one or more distribution plates; and
d. arranging the or each distribution plate within the scrubbing vessel such that the output concentration of a contaminant to be scrubbed from the gas is minimised.