

CLAIMS

1. An apparatus for dispersing particles (P) in a fluid (F), comprising
5 a flow divider (10) for receiving the fluid (F) and for separating the fluid (F) into a first fluid stream (F1) and a second fluid stream (F2),
a first fluid branch (11) for receiving the first fluid stream (F1),
a second fluid branch (12) for receiving the second fluid stream (F2),
a branch joining section (14) for receiving the first and second fluid streams (F1,
10 F2) from the first and second fluid branches (11, 12), the branch joining section (14) having a collision zone (141) for allowing the first and second fluid streams (F1, F2) to collide, **wherein**
a first nozzle (30) is arranged in the first fluid branch (11) and a second nozzle (40) is arranged in the second fluid branch (12), the first nozzle (30) comprising an
15 orifice (33) that is followed by a fluid diverging section (36).
2. An apparatus according to claim 1, wherein the first nozzle (30) comprises an intermediate flow section (35) that is located between the orifice (33) and the fluid diverging section (36), the intermediate flow section (35) having a constant cross-sectional area.
- 20 3. An apparatus according to claim 1 or 2, wherein the first nozzle (30) comprises a fluid converging section (32) that converges towards the orifice (33).
4. An apparatus according to any one of claims 1 - 3, wherein the orifice (33) comprises a central region (331) and a plurality of angularly spaced-apart, outer regions (332) around the periphery of the central region (331), so that a fluid flow
25 through each of said outer regions (332) develops a vortex flow pattern.
5. An apparatus according to any one of claims 1 - 4, wherein the first nozzle (30) is made of plastic and is arranged inside the first fluid branch (11).
6. An apparatus according to any one of claims 1 - 6, wherein the first nozzle (30) comprises a circumferential flange (38) that abuts the first fluid branch (11) so that
30 the first nozzle (30) is fixed relative the first fluid branch (11), as seen in a direction of a flow of the first fluid (F1).
7. An apparatus according to any one of claims 1 - 7, wherein the first fluid branch (11) and the second fluid branch (12) are arranged to direct the first fluid stream (F1) and the second fluid stream (F2) towards each other by an angle (α) of
35 60° - 120°, so that the fluid streams (F1, F2) meet in collision zone (141) by said angle (α).

8. An apparatus according to any one of claims 1 - 7, wherein the first nozzle (30) comprises an outer elongated, cylindrical surface (303) that abuts an inner surface (112) of the first fluid branch (11).

9. An apparatus according to any one of claims 1 - 8, wherein the first fluid
5 branch (11) comprises a first clamp (113) that is located at a position of the first fluid branch (11) where an inlet (301) of the of the first nozzle (30) is located, and a second clamp (114) that is located at a position of the first fluid branch (11) where an outlet (302) of the of the first nozzle (30) is located.

10. An apparatus according to any one of claims 1 - 9, comprising a straight
10 pipe section (124) in which the first nozzle (30) is located, the straight pipe section (124) being attached to the apparatus by a first clamp (113) and a second clamp (114).

11. An apparatus according to any one of claims 1 - 10, comprising a first pressure sensing interface (71) at an inlet (2) of the apparatus and a second pressure sensing interface (72) at an outlet (3) of the apparatus.

12. An apparatus according to any one of claims 1 - 11, comprising a pressure
15 sensing device (77) for indicating a differential pressure over the apparatus when the fluid (F) is flowing through the apparatus.

13. A method for dispersing particles (P) in a fluid (F), the method comprising
20 introducing (701) fluid (F) with particles (P) in an inlet (2) of an apparatus (1) that comprises
a flow divider (10) for receiving the fluid (F) and for separating the fluid (F) into a first fluid stream (F1) and a second fluid stream (F2),
a first fluid branch (11) for receiving the first fluid stream (F1),
a second fluid branch (12) for receiving the second fluid stream (F2),
25 a branch joining section (14) for receiving the first and second fluid streams (F1, F2) from the first and second fluid branches (11, 12), the branch joining section (14) having a collision zone (141) for allowing the first and second fluid streams (F1, F2) to collide and thereafter flow towards an outlet (3), wherein
a first nozzle (30) is arranged in the first fluid branch (11) and a second nozzle
30 (40) is arranged in the second fluid branch (12), the first nozzle (30) comprising an orifice (33) that is followed by a fluid diverging section (36),
the method comprising measuring (702) a differential pressure over the inlet (2) and the outlet (3) of the apparatus (1), and
adjusting (703), in dependence of the measured differential pressure, a flow of
35 the fluid (F) with the particles (P) that are introduced in the inlet (2).