Claims

1. An abrasive suspension eroding system with an eroding unit (11) which can be let down into an existing borehole (1), for producing (1107) a high-pressure erosion jet for the abrasive suspension eroding of material (6, 20) in an existing borehole (1), characterised in that the eroding unit (11) is connectable to a drilling fluid conduit (9) and is designed to produce a high-pressure erosion jet from a drilling fluid - abrasive agent suspension, wherein the eroding unit (11) comprises a distal nozzle head section (13) and a proximal anchoring section (15), wherein the nozzle head section (13) is distally movable relative to the anchoring section (15), wherein the nozzle head section (13) comprises a distal nozzle head (17) and a proximal nozzle head base (19), wherein the nozzle head (17) is rotatable relative to the nozzle head base (19) about a rotation axis (R), wherein the eroding unit (11) comprises at least one first nozzle (49) and at least one second nozzle (51), wherein the at least one first nozzle (49) is aligned for producing an obliquely radially outwardly directed erosion jet and the at least one second nozzle (51) for producing an obliquely radially inwardly directed erosion jet, wherein the at least one second nozzle (51) has a distance to the rotation axis of the nozzle head (17).

2. An abrasive suspension eroding system according to claim 1, which comprises an abrasive agent supply unit (29) and a drilling fluid high-pressure pump (25) fluidically connectable upstream to the eroding unit (11) via the drilling fluid conduit (9).

3. An abrasive suspension eroding system according to claim 1 or 2, wherein the anchoring section (15) can be anchored in the existing borehole (1) in a rock and/or in a pipe element by way of first lateral anchoring elements (16).

4. An abrasive suspension eroding system according to one of the preceding claims, which comprises a control unit (27) which is signal-connected to the eroding unit (11) and by way of which an anchoring (813) of the anchoring section (15) and/or a distal moving (811) of the nozzle head section (13) relative to the anchoring section (15) is controllable.

5. An abrasive suspension eroding system according to claim 3 or 4, wherein the nozzle head section (13) can be anchored in the existing borehole (1) in the rock and/or in the pipe element in a distally extended position relative to the anchoring section (15) by way of the two lateral anchoring elements (49).

6. An abrasive suspension eroding system according to one of the preceding claims, wherein the nozzle head (17) is eccentrically rotatable.

7. An abrasive suspension eroding system according to one of the preceding claims, with at least two first nozzles (49) which are aligned at a different angle with respect to the rotation axis (R), and/or with at least two second nozzles (51), of which at least one is aligned

such that the erosion jet intersects the rotation axis (R) and/or at least one is aligned such that the erosion jet runs skewly to the rotation axis (R).

8. A borehole facility (10) with a drilling fluid conduit (9) and with an abrasive suspension eroding system according to one of the preceding claims, wherein the eroding unit (11) is fluid connected to the drilling fluid conduit (9).

9. A borehole facility (10) according to claim 8, wherein the abrasive suspension eroding system comprises an abrasive agent supply unit (29) and a drilling fluid high-pressure pump (25) fluidically connectable upstream to the eroding unit (11) via the drilling fluid conduit (9).

10. A method for the abrasive-suspension eroding of material (6, 20) within an existing borehole (1) with the steps:

- letting down (1101) an eroding unit (11) into the existing borehole (1), wherein the eroding unit (11) is fluid-connected to an abrasive agent supply unit (29) via a drilling fluid conduit (9),
- feeding (1103) abrasive agent into the drilling fluid conduit (9) by way of the abrasive agent supply unit (29),
- pumping (1105) a drilling fluid - abrasive agent suspension through the drilling fluid conduit (9) to the eroding unit (11) by way of a drilling fluid high-pressure pump (25),
- producing (1107) a high-pressure erosion jet of the drilling fluid - abrasive agent suspension by way of the eroding unit (11), and
- eroding (1109) material (6, 20) in the existing borehole (1) by way of the high-pressure erosion jet of the drilling fluid - abrasive agent suspension, wherein a nozzle head section (13) of the eroding unit (11) is distally moved relative to an anchoring section (15) of the eroding unit (11) and a distal nozzle head (17) of the nozzle head section (13) is rotated relative to a nozzle head base (19) of the nozzle head section (13) about a rotation axis (R), wherein an obliquely radially outwardly directed erosion jet is produced by at least one first nozzle (49) of the nozzle head (17) and an obliquely radially inwardly directed erosion jet is produced by at least one second nozzle (51) of the nozzle head (17), wherein the at least one second nozzle (51) has a distance to the rotation axis (R) of the nozzle head (17).

11. A method according to claim 10, further comprising an anchoring (1113) of a proximal anchoring section (15) by way of first lateral anchoring elements (16).

12. A method according to claim 11, further comprising an anchoring (1113) of a distal nozzle head section (13) in a position which is extended distally relative to the anchoring section (15), by way of second lateral anchoring elements.

13. A method according to one of the claims 10 to 12, further comprising a controlling of the anchoring (1113) and/or of the distal moving (1111) by way of a control unit (27) which is signal-connected to the eroding unit (11).

14. A method according to one of the claims 10 to 13, further comprising a rotating (1115) of a distal nozzle head (17) of the nozzle head section (13) relative to a proximal nozzle head base (19) of the nozzle head section (13) about a rotation axis (R) which runs eccentrically to a longitudinal axis (L) of the nozzle head (17).

15. A method according to one of the claims 10 to 14, wherein the feeding (1103) of the abrasive agent into the drilling fluid conduit (9) by way of the abrasive agent supply unit (29) takes place upstream of the drilling fluid high-pressure pump (25).