Patent claims

1. Wellbore conveyor device for conveying a medium (9) from a wellbore (8), comprising:
   - a drive (2);
   - a pump (3);
   - a shaft (4) which connects the drive (2) to the pump (3);
   - a mechanical seal unit (5), comprising a mechanical seal (50) with a rotating seal ring (51) and a stationary seal ring (52), the mechanical seal (50) sealing on the shaft (4); and
   - an independent supply means (6) which supplies the mechanical seal (50) with a barrier medium;
   - the independent supply means (6), the drive (2), the pump (3), the shaft (4) and the mechanical seal unit (5) forming a compact conveying unit which is fully submersible in the wellbore;

     wherein, the independent supply means (6) comprises a first chamber (61) for receiving the barrier medium, a second chamber (62) which is connected to an outside of the wellbore conveyor device, so that a pressure corresponding to the pressure of the medium to be conveyed prevails in the second chamber (62), and a bellows (67) which separates the first chamber from the second chamber (62) in a media-tight manner.

2. Device according to claim 1, characterized in that the independent supply means (6) is arranged at an end of the compact conveying unit.

3. Device according to any one of the preceding claims, characterized in that the drive (2) is arranged in axial direction (X-X) of the wellbore conveyor device between the independent supply means (6) and the mechanical seal unit (5).

4. Device according to claim 1, further comprising a piston element (64) which is arranged on the bellows (67) such that the bellows (67) and the piston element (64) form a cup-shaped unit, and the first chamber (61) is arranged in the interior

of the cup-shaped unit, and the second chamber (62) between the outside of the cup-shaped unit and a housing (60) of the independent supply means (6).

5. Device according to claim 1 or 4, characterized in that the independent supply means (6) further comprises a biasing element (64) for permanently biasing the barrier medium in the first chamber (61).

6. Device according to any one of the preceding claims, characterized in that the drive (2) is an electric drive.

7. Device according to claim 6, further comprising a connection line (12) which connects the independent supply means (6) to the mechanical seal unit (5), the connection line (12) extending through the electric drive (2).

8. Device according to any one of claims 1 to 7, characterized in that the independent supply means (6) further comprises a third chamber (63), the third chamber (63) being sealed in a media-tight manner relative to the first and second chamber (61, 62).

9. Device according to claim 8, characterized in that a third pressure (P3) in the third chamber (63) is equal to or greater than a first pressure (P1) in the first chamber (61) and equal to or greater than a second pressure (P2) in the second chamber (62) and/or that the third chamber (63) surrounds the first chamber (61) and/or the second chamber (62).

10. Device according to any one of the preceding claims, further comprising a separator (10) for separating gaseous constituents from the medium (9) to be conveyed, the separator (10) being integrated into the compact conveying unit.

Claims

1. Wellbore conveyor device for conveying a medium (9) from a wellbore (8), comprising:

- a drive (2);
- a pump (3);
- a shaft (4) which connects the drive (2) to the pump (3);
- a mechanical seal unit (5), including a mechanical seal (50) with a rotating seal ring (51) and a stationary seal ring (52), the mechanical seal (50) sealing on the shaft (4); and
- an independent supply means (6) which supplies the mechanical seal (50) with a barrier medium;
- the independent supply means (6), the drive (2), the pump (3), the shaft (4) and the mechanical seal unit (5) forming a compact conveying unit which is fully submersible in the wellbore;

wherein the independent supply means (6) comprises a first chamber (61) for receiving the barrier medium, a second chamber (62) which is connected to an outside of the wellbore conveyor device, so that a pressure corresponding to the pressure of the medium to be conveyed prevails in the second chamber (62), and a bellows (67) which separates the first chamber from the second chamber (62) in a media tight manner; and

wherein the independent supply means (6) further comprises a biasing element (65) for permanently biasing the barrier medium in the first chamber (61).

2. Device according to claim 1, characterized in that the independent supply means (6) is arranged at an end of the compact conveying unit.

3. Device according to any one of the preceding claims, characterized in that the drive (2) is arranged in axial direction (X-X) of the wellbore conveyor device between the independent supply means (6) and the mechanical seal unit (5).

4. Device according to claim 1, further comprising a piston element (64) which is arranged on the bellows (67) such that the bellows (67) and the piston element (64) form a cup-shaped unit, and the first chamber (61) is arranged in the interior of the cup-shaped unit, and the second chamber (62) between the outside of the cup-shaped unit and a housing (60) of the independent supply means (6).

5. Device according to any one of the preceding claims, characterized in that the drive (2) is an electric drive.

6. Device according to claim 5, further comprising a connection line (12) which connects the independent supply means (6) to the mechanical seal unit (5), the connection line (12) extending through the electric drive (2).

7. Device according to any one of the preceding claims, characterized in that the independent supply means (6) further comprises a third chamber (63), the third chamber (63) being sealed in a media-tight manner relative to the first and second chamber (61, 62).

8. Device according to claim 7, characterized in that a third pressure (P3) in the third chamber (63) is equal to or greater than a first pressure (P1) in the first chamber (61) and equal to or greater than a second pressure (P2) in the second chamber (62) and/or that the third chamber (63) surrounds the first chamber (61) and/or the second chamber (62).

9. Device according to any one of the preceding claims, further comprising a separator (10) for separating gaseous constituents from the medium (9) to be conveyed, the separator (10) being integrated into the compact conveying unit.