CLAIMS

1. Method for operating an arrangement (1) for storing fluid, said arrangement (1) comprising an energy storage (2) having a vertical temperature gradient, which method comprises
retrieving fluid of a first temperature (T_1) from the energy storage (2) for use in a first heat-absorbing system (3), such that free space is created in said energy storage (2) for fluid of a second temperature (T_2), wherein said second temperature (T_2) is higher than said first temperature (T_1),
retrieving fluid of said second temperature (T_2) from the energy storage (2) for use in a second heat-absorbing system (4),
providing fluid of said second temperature (T_2) at a level of said energy storage (2) being of said second temperature (T_2),
c h a r a c t e r i z e d in that the method further comprises
retrieving fluid of a third temperature (T_3) from said energy storage (2) for use in a heat emitting cooling system (8), and
providing fluid of said third temperature (T_3), which is lower than said first and second temperatures (T_1, T_2), at a level of said energy storage (2) being of said third temperature (T_3),
wherein said first heat-absorbing system (3) is a low temperature system and said second heat-absorbing system (4) is a high temperature system.

2. Method according to claim 1, further comprising receiving fluid of said third temperature (T_3) from said first heat-absorbing system (3) and providing said fluid at a level of said energy storage (2) being of said third temperature (T_3).

3. Method according to claim 1 or 2, further comprising receiving fluid of said second temperature (T_2) from a heat-emitting system (6, 7), and providing said fluid at a level of said energy storage (2) being of said second temperature (T_2).

4. Method according to claim 1 or 2, further comprising receiving fluid of said first temperature (T_1) from a heat-emitting system (6, 7), and providing said fluid at a level of said energy storage (2) being of said first temperature (T_1).

5. Method according to any of the previous claims, further comprising receiving fluid of said first temperature (T_1) from said second heat-absorbing system (4) and providing said fluid at a level of said energy storage (2) being of said first temperature (T_1).

6. Method according to any of the previous claims, further comprising receiving fluid of said first temperature (T_1) from said heat emitting cooling system (8) and providing said fluid at a level of said energy storage (2) being of said first temperature (T_1).

7. Method according to any of the previous claims, further comprising receiving fluid from an exterior (13, 14) of said arrangement (1), and providing said fluid at a level of said energy storage (2) being of said third temperature (T_3).

8. Method according to any of the previous claims, wherein said first temperature (T_1) is in the range of 15°C to 65°C.

9. Method according to any of the previous claims, wherein said second temperature (T_2) is in the range of 50°C to 100°C.

10. Method according to any of the previous claims, wherein said third temperature (T_3) is in the range of 4°C to 25°C.

11. Method according to any of the previous claims, wherein vertical temperature stratification is used in the energy storage (2) in order to reduce the consumption of electrical energy while extracting thermal

energy, by means of a gradient flow generated due to differences in density between vertical levels.

12. Method according to claim 11, wherein said vertical temperature stratification is used in combination with an electrical generator in order to generate electrical energy from said gradient flow while extracting thermal energy.

13. Method according to any of the previous claims, wherein an internal combined heating and cooling machine (15) is used in order to increase the energy storage capacity of the energy storage (2) by retrieving fluid from a level being of a first, second, or third temperature (T_1, T_2, T_3) from the energy storage (2), while returning heated fluid to a level being of a first or second temperature (T_1,T_2) and cooled fluid to a level being of a first, second, or third temperature (T_1, T_2, T_3) in the energy storage (2).

CLAIMS:

1. A method for operating an arrangement for storing fluid, said arrangement comprising an energy storage having a vertical temperature gradient, which method comprises
retrieving fluid of a first temperature from the energy storage for use in a first heat-absorbing system, such that free space is created in said energy storage for fluid of a second temperature, wherein said second temperature is higher than said first temperature,
retrieving fluid of said second temperature from the energy storage for use in a second heat-absorbing system,
providing fluid of said second temperature at a level of said energy storage being of said second temperature,
wherein the method further comprises
retrieving fluid of a third temperature from said energy storage for use in a heat emitting cooling system, and
providing fluid of said third temperature, which is lower than said first and second temperatures, at a level of said energy storage being of said third temperature,
wherein said first heat-absorbing system is a low temperature system and said second heat-absorbing system is a high temperature system.

2. A method according to claim 1, further comprising receiving fluid of said third temperature from said first heat-absorbing system and providing said fluid at a level of said energy storage being of said third temperature.

3. A method according to claim 1 or 2, further comprising receiving fluid of said second temperature from a heat-emitting system, and providing said fluid at a level of said energy storage being of said second temperature.

4. A method according to claim 1 or 2, further comprising receiving fluid of said first temperature from a heat-emitting system, and providing said fluid at a level of said energy storage being of said first temperature.

5. A method according to any one of the preceding claims, further comprising receiving fluid of said first temperature from said second heat-absorbing system and providing said fluid at a level of said energy storage being of said first temperature.

6. A method according to any one of the preceding claims, further comprising receiving fluid of said first temperature from said heat emitting cooling system and providing said fluid at a level of said energy storage being of said first temperature.

7. A method according to any one of the preceding claims, further comprising receiving fluid from an exterior of said arrangement, and providing said fluid at a level of said energy storage being of said third temperature.

8. A method according to any one of the preceding claims, wherein said first temperature is in the range of 15°C to 65°C.

9. A method according to any one of the preceding claims, wherein said second temperature is in the range of 50°C to 100°C.

10. A method according to any one of the preceding claims, wherein said third temperature is in the range of 4°C to 25°C.

11. A method according to any one of the preceding claims, wherein vertical temperature stratification is used in the energy storage in order to reduce the consumption of electrical energy while extracting thermal energy, by means of a gradient flow generated due to differences in density between vertical levels.

12. A method according to claim 11, wherein said vertical temperature stratification is used in combination with an electrical generator in order to generate electrical energy from said gradient flow while extracting thermal energy.

13. A method according to any one of the preceding claims, wherein an internal combined heating and cooling machine is used in order to increase the energy storage capacity of the energy storage by retrieving fluid from a level being of a first, second, or third temperature from the energy storage, while returning heated fluid to a level being of a first or second temperature and cooled fluid to a level being of a first, second, or third temperature in the energy storage.