CLAIMS

1. A buffer storage arrangement filled with phase change material for storing heat energy, comprising a container (1) having open or sealed configuration, a heat exchanger unit (2) arranged in the container (1), and liquid-solid phase change material encompassing the heat exchanger unit (2) inside the container (1), in which the heat exchanger unit (2) comprises pipe coils (21, 22) formed from bent pipes and heat exchanger fins (23) adapted for interconnecting the pipe coils (21, 22), in which each pipe coil (21, 22) is situated along a respective imaginary plane, the imaginary planes being arranged parallel beside one another, and the heat exchanger fins (23) are arranged aligned with the direction of the cross-section of the pipes of the pipe coils (21, 22), substantially perpendicular to the imaginary planes of the pipe coils, characterised in that

the walls (11, 12, 13, 14) of the container (1) and the heat exchanger fins (23) of the heat exchanger unit (2) are spaced apart with respect to each other;

the heat exchanger fins (23) of the heat exchanger unit (2) comprise through holes or cutouts that are arranged along the walls (11, 12, 13, 14) of the container (1) and extend between the spatial regions (15) separated by the fins; and

shoulders adapted for providing a uniform distance between the fins (23) are disposed on the heat exchanger fins (23) around the pipes;

in order to provide fluid communication between the walls (11, 12, 13, 14) of the container (1) and the heat exchanger unit (2) so as to balance inhomogeneities between the spatial regions (15) separated by the heat exchanger fins (23).

2. A buffer storage arrangement according Claim 1, characterised in that the distance between adjacent pipes is identical in both substantially mutually perpendicular transverse directions.

3. A buffer storage arrangement according to Claim 1 or 2, characterised in that the shoulders of the exchanger fins (23) are formed of material originating from perforations made for the pipes passed therethrough.

4. A buffer storage arrangement according to Claim 1, 2 or 3, characterised in that the uniform distance between the heat exchanger fins (23) is between 2.1 and 6 mm.

5. A buffer storage arrangement according to any preceding claim, characterised in that the heat exchanger fins (23) have an undulating surface configuration.

6. A buffer storage arrangement according to any preceding claim, characterised in that every second pairs of mutually parallelly arranged pipe coils (21) are interconnected to form a primary circuit (P), in which the primary circuit (P) further comprises a primary distribution pipe (24) to which the inlets of the pipe coils (21) forming the primary circuit (P) are connected and a primary manifold (25), to which the outlets of the pipe coils (21) forming the primary circuit (P) are connected, and in which the pipe coils (22) situated between the pipe coils (21) of the primary circuit (P) form a secondary circuit (S), the secondary circuit (S) further comprising a secondary distribution pipe (26) to which the inlets of the pipe coils (22) forming the secondary circuit (S) are connected and a secondary manifold (27) to which the outlets of the pipe coils (22) forming the secondary circuit (S) are connected, with a primary heat-transfer medium and a secondary heat-transfer medium, disposed in the primary circuit (P) and the secondary circuit (S), respectively, being circulated in a counter-flow fashion through the pipe coils (21, 22).

7. A buffer storage arrangement according to Claim 6, characterised in that the primary distribution pipe (24), the secondary distribution pipe (26), the primary manifold (25) and the secondary manifold (25) are configured such that there is an identical volumetric flow through all the parallel pipe coils (21, 22).

8. A buffer storage arrangement according to any preceding claim, characterised in that the container (2) has a rectangular block shape.

9. A buffer storage arrangement according to any preceding claim, characterised in that the walls (11, 12, 13, 14) of the container (2) comprise a heat-insulating layer.

10. A buffer storage arrangement according to any preceding claim, characterised in that the buffer storage arrangement is connected to a heat transfer system via a three-way valve.