Claims

1. Heat exchanger element (1) for building panels having a heat-conducting body (2) together with a heat-transfer fluid pipe (8) which is made of capillary plastic tube and which is connected in a heat-conducting manner to the heat-conducting body (2), the heat-transfer fluid pipe (8) being embedded in sections in preferably parallel ducts (5) of heat-conducting material in heat-conducting contact, wherein the ducts (5) have a channel-shaped locating section (7) and two tabs (6) which are connected to the channel-shaped locating section (7), so that the ducts (5) are approximately Ω-shaped in cross-section, and wherein the tabs (6) are connected flat to the heat-conducting body (2) in order to establish the heat-conducting connection of the heat-conducting fluid pipe (8) to the heat-conducting body (2), wherein the heat-conducting body (2) is a foil which is made of copper or aluminium or an alloy thereof.

2. Heat exchanger element (1) according to claim 1, wherein the heat conducting body (2) comprises a heat transfer surface (14), which is a main surface of the heat conducting body (2) and is designed for heat exchange with an environment, and a mounting surface (15), which is a main surface of the heat conducting body (2), wherein the tabs (6) are connected to the mounting surface (15), wherein the mounting surface (15) preferably faces away from the heat transfer surface (14).

3. Heat exchanger element (1) according to claim 2, wherein the heat transfer fluid pipe (8) is arranged so as to meander along the mounting surface (15), wherein sections of the heat transfer fluid pipe (8) embedded in the channel-shaped locating section (7) of the ducts (5) are preferably connected to one another straight, preferably parallel to one another and preferably in one piece.

4. Heat exchanger element (1) according to any of the preceding claims, wherein an inner contour of the ducts (5) is matched to an outer contour of the heat transfer fluid pipe (8)

and an opening width (w) of the ducts (5) is smaller in cross-section than an outer dimension (d) of the heat transfer fluid pipe (8) in cross-section.

5. Heat exchanger element (1) according to any of the preceding claims, wherein the tabs (6) of the ducts (5) are connected to the heat-conducting body (2) via a heat-conducting adhesive (4) or a heat-conducting bonding agent.

6. Heat exchanger element (1) according to any of the preceding claims, wherein the ducts (5) are connected to the heat-conducting body (2) by press joining or forming joining.

7. Heat exchanger element (1) according to any of the preceding claims, wherein the ducts (5), in particular the channel-shaped locating sections (7) of the ducts (5), are embedded in a carrier component (29) with grooves (23) which are matched to an outer contour of the ducts (5).

8. Heat exchanger element (1) according to claim 7 , wherein the carrier component (29) is an insulation board.

9. Heat exchanger element (1) according to any of the preceding claims, wherein the ducts (5) have a wall thickness (t5) of at least 10 µm and of at most 100 µm, preferably at least 15 µm and at most 50 µm.

10. Heat exchanger element (1) according to any of the preceding claims, wherein the heat conducting body (2) has a wall thickness (t2) of at least 10 µm and of at most 100 µm, preferably at least 15 µm and at most 50 µm.

11. Heat exchanger element (1) according to any one of claims 1 to 8, wherein the ducts (5) have a wall thickness (t5) of at least 0.5 mm and at most 5 mm, preferably at least 0.8 mm and at most 1 to 2 mm.

12. Heat exchanger element (1) according to any one of claims 1 to 9, wherein the heat conducting body (2) has a wall thickness (t2) of at least 0.5 mm and at most 5 mm, preferably at least 0.8 mm and at most 1 to 2 mm.

13. Heat exchanger element (1) according to any of the preceding claims, wherein the heat conducting body (2) has on the heat transfer surface (14) a heat emission-optimized and/or heat absorption-optimized coating (3).

14. Heat exchanger element (1) according to any of the preceding claims, wherein the heat-conducting body (2) has a perforation or roughening.

15. Heat exchanger element (1) according to any of the preceding claims, wherein the heat conducting body (2) has a coating (3) with an adsorbent or absorbent material on the heat transfer surface (14).

16. Heat exchanger element (1) according to any of the preceding claims, wherein the heat-conducting body (2) has a coating (3) on the heat-transfer surface (14) for protection against physical or chemical environmental influences.

17. Heat exchanger element (1) according to any of the preceding claims, wherein the heat-conducting body (2) is at least partially permeable to air or gas or moisture, preferably through a lattice-like or honeycomb-like or punched or perforated structure of the heat-conducting body (2).

18. Heat exchanger element (1) according to any of the preceding claims, wherein the heat conducting body (2) and/or the ducts (5) are formed of aluminium or copper or an alloy or a composite material.

19. Method of manufacturing a heat exchanger element (1) comprising a heat conducting heat conducting body (2) which has a heat transfer surface (14), and a heat transfer fluid pipe (8) which is connected, heat-conductively to the heat conducting body (2), wherein the heat exchanger element (1) is ~~preferably~~ designed according to any of the preceding claims, the method comprising:

- arranging a heat-conductive foil (20) on a template (22) having grooves (23) such that the grooves (23) are covered by the foil (20);

- using foil strips each covering a groove as the foil (20), or forming foil strips each covering a groove from the foil (20);

- pressing the foil strips into the respective groove, the foil strips being so wide that, after pressing in, they each form a section (7) pressed into the grooves (23) in the form of a channel, and tabs (6) projecting laterally at the longitudinal edges of the grooves (23);

- inserting sections of a heat transfer fluid pipe (8) into the channel-shaped sections (7) of the foil strips pressed into the grooves (23); and

- connecting the tabs (6) flatly with a heat-conducting heat conductor (2).

20. Method according to claim 19, wherein the foil strips are formed when pressed into the grooves (23) by the foil (20) tearing longitudinally between the grooves (23) at predefined locations, wherein the predefined locations are preferably realized by a weakening, in particular perforation (21), which is produced in the foil (20) before the foil (20) is arranged on the template (22).

21. Method according to claim 19, wherein the foil strips are formed in the foil (20) arranged on the template (22) by a cutting tool preferably integrated in a pressing tool (24) for pressing the foil strips into the grooves (23).

22. Method according to claim 19, wherein the previously prepared foil strips are placed on the template (22), each covering a groove (23).

23. Method according to any of claims 19 to 22, wherein the foil (20) or previously prepared foil strips are taken up by a pressing tool (24) for pressing the foil strips into the grooves (23) and arranged on the template (22) and then pressed into the grooves (23) in one pull.

24. Method according to any of claims 19 to 23, wherein the tabs (6) of the ducts (5) are connected to the heat-conducting body (2) via a heat-conducting adhesive (4) or a heat-conducting bonding agent, wherein the adhesive (4) or the bonding agent is preferably applied in advance to the heat-conducting body (2).

25. Method according to any of claims 19 to 24, wherein the ducts (5) are joined to the heat-conducting body (2) by press joining or forming joining.

26. Method according to any of claims 19 to 25, wherein the template (22) is made of an elastically flexible material and wherein an opening width (w) of the channel-shaped portions (7) of the foil strips pressed into the grooves (23) is smaller than an outer diameter (d) of the heat transfer fluid pipe (8).

27. Method according to any of claims 19 to 26, wherein the template (22) is made of a heat and/or sound insulating material and remains on the heat exchanger element (1) as an insulation board, wherein the heat conductive foil (20) is provided with an adhesive (4) or a bonding agent on a surface facing the template (22) prior to being arranged on the template (22), which establishes a connection with the template (22) after the foil strips have been pressed into the respective groove (23).

28. Method according to any of claims 19 to 27, wherein the heat conducting body (2) has a heat transfer surface (14) which is a main surface of the heat conducting body (2) and is designed for heat exchange with an environment, and a mounting surface (15) which is a main surface of the heat conducting body (2), wherein the tabs (6) are connected to the mounting surface (15), while the mounting surface (15) preferably faces away from the heat transfer surface (14).

29. Method according to claim 28, wherein the heat-conducting body (2) is provided with a coating (3) on the heat transfer surface (14), wherein the coating (3) is preferably optimised for heat emission and/or heat absorption and/or designed for protection against physical or chemical environmental influences and/or has ad- or absorptive properties.

30. Method according to any of claims 19 to 29, wherein the heat conducting body (2) has or is provided with a perforation or roughening and/or is partially permeable to air or gas or moisture, preferably through a lattice-like or punched or perforated structure of the heat conducting body (2).

31. Method according to any of claims 19 to 29, wherein the heat-conducting body (2) and/or the foil (20) or foil strips are made of aluminium or copper or an alloy or composite material.

32. Heat exchanger element (1) produced by a method according to any of claims 19 to 31, wherein the heat conducting body (2) and/or the foil (20) or foil strips each have a wall thickness (t2, t5) of at least about 10 µm and of at most about 100 µm, preferably at least about 15 µm and at most about 50 µm or a wall thickness of at least about 0.5 mm and of at most about 5 mm, preferably at least about 0.8 and at most about 1 to 2 mm.

33. Heat exchanger element (1) made by a method according to any one of claims 19 to 31, wherein the heat transfer fluid conduit (8) is made of plastic.

34. Heat exchanger element (1) made by a method according to any of claims 19 to 31, wherein the heat transfer fluid pipe (8) is meander-shaped, wherein the portions of the ducts (5) pressed into the grooves (23) of the template (22) are preferably straight portions (102) of the heat transfer fluid pipe (8), wherein the heat transfer fluid pipe (8) is preferably brought into the meandering shape from one piece before being pressed in, or is composed of straight sections (102) and curved connector sections (103) before being pressed in, or is

completed by attaching connector sections (103) after preferably straight sections (102) have been pressed in.

35. Heat exchanger element (1) according to any of claims 1 to 18 or 33 to 34, the heat exchanger element (1) being of flexible construction.

36. Heat exchanger element according to any of claims 1 to 18 or 33 to 34, the heat-conducting body (2) being three-dimensionally contoured.

37. Heat exchanger element according to any of claims 1 to 18 or 33 to 34, wherein the heat conducting body (2) is plate-shaped or substantially plate-shaped.

38. Building panel with a heat exchanger element (1), ~~in particular~~ according to any of claims 1 to 18 or 32 to 37, which has a heat exchange surface (14),

further comprising a cooling device and a collecting device,

wherein the building panel has an area of at least 1 m^2,

the cooling means being designed to cool the heat exchange surface (14), which is in contact with the ambient air, to a temperature below the dew point of the water vapour in the ambient air,

the contact surface having an inclination to the horizontal so that condensed water can drain away from it,

and wherein the collecting device is designed to collect and carry away condensed water in a controlled manner.

39. Building panel according to claim 38, wherein the building panel additionally has a facing wall for the heat exchanger element (1), wherein the facing wall is arranged at least 50 cm, in particular at least 25 cm or preferably at least 10 cm in front of the heat transfer surface 14, and wherein the facing wall conceals the heat exchanger element (1).

40. Building panel according to claim 38 or 39, wherein the facing wall has an air-permeable material.

41. Building panel according to any of claims 38 to 40, wherein the facing wall is made of plasterboard and the wall has at least one hole, in particular two slots, which are preferably arranged at the top and bottom.

42. Building panel according to claim 41, wherein the gypsum plasterboard facing wall has on the side towards the heat exchanger element (1) a layer against microorganisms, such as e.g. mould, algae or moss.

43. Building panel according to any of claims 38 to 42, wherein a fan provided in the region of at least one of the slots, sucks or ejects air into or out of the space between contact surface and wall.

44. Building panel according to any of claims 38 to 43, wherein the heat transfer surface (14) has three-dimensional structures.

45. Building panel according to any of claims 38 to 44, wherein the coating (3) consists of a durable material such as glass or metal.

46. Building panel according to one of claims 38 to 45, wherein the coating (3) forms a super-hydrophobic surface through micro- and/or nano-structuring.

47. Building panel according to any of claims 38 to 46, wherein the coating (3) has an antibacterial surface, such as an aluminium silicate matrix or titanium dioxide, and/or the coating (3) itself is antibacterial

48. Building panel according to any of claims 38 to 47, wherein the collection container is configured to be connected to a domestic water drain and/or water recovery system and/or is configured to be transported and emptied.