Claims

1. A plate heat exchanger for treatment of a feed, the plate heat exchanger including a plate package comprising a plurality of heat exchanging plates arranged in a successive order forming alternating first and second plate interspaces, each first plate interspace define a condensation section for condensing vaporized feed, each condensation section defining an upper border, a lower border, an inlet for introducing vaporized feed into the condensation section between the upper border and the lower border, and an outlet for removing condensed feed from the condensation section at the lower border, each heat exchanging plate being provided with corrugations in the condensing section forming ridges and valleys extending in opposite directions, the ridges of opposing heat exchanging plates form a cross shaped pattern in the first plate interspaces, wherein the plate interspaces further comprising an evaporation section that can be, in use, heated by a heating volume arranged to permit evaporation of at least a part of the feed, and a separation section being arranged to separate non-vaporized feed from vaporized feed, the separation section communicating with the condensation section for supplying vaporized feed to the inlet, the plate heat exchanger being characterized in that the condensation section defines a passage extending at least a part of the distance between the upper border and the outlet, the ridges of each heat exchanging plate outside the passage extend to a contact plane allowing opposing heat exchanging plates to abut at contact points in the contact plane, whereas the ridges of each heat exchanging plate within the passage are spaced apart from the contact plane preventing contact between heat exchanging plates in the passage.

2. The plate heat exchanger according to claim 1, wherein the plate package defines cooling section located in the second plate interspaces between the condensation sections, the cooling sections being adapted for handling a cooling fluid.

3. The plate heat exchanger according to any of the preceding claims, wherein the passage extends from a location adjacent the upper border,

preferably opposite the inlet.

4. The plate heat exchanger according to any of the preceding claims, wherein the passage extends at least 50% of the distance between the upper border and the outlet, the passage preferably extending 75% to 100% of the distance between the upper border and the outlet.

5. The plate heat exchanger according to any of the preceding claims, wherein the passage is substantially straight.

6. The plate heat exchanger according to any of the preceding claims, wherein, in the passage, the distance between opposing valleys of opposing heat exchanging plates is approximately twice the distance between opposing ridges of opposing heat exchanging plates.

7. The plate heat exchanger according to any of the preceding claims, wherein an evaporation section of another process stage is located opposite the condensation section.

8. The plate heat exchanger according to any of the preceding claims, wherein the heat exchanging plates are compression moulded.

9. The plate heat exchanger according to any of the preceding claims, wherein the upper border and the lower border are formed by a gasket, preferably the condensation section is circumferentially enclosed by a gasket except at the location of the inlet and outlet.

10. The plate heat exchanger according to any of the preceding claims, wherein the inlet and outlet are disposed at opposite ends of the condensation section.

11. The plate heat exchanger according to any of the preceding claims, wherein the outlet is centrally located in the plate package.

12. The plate heat exchanger according to any of the preceding claims, wherein the width of the passage is larger than the distance between adjacent ridges.

13. The plate heat exchanger according to claim 12, wherein between opposing heat exchanging plates within the passage ridges mainly will be located opposite valleys.

14. A plate for a plate heat exchanger for treatment of a feed, the plate defines a condensation section for condensing vaporized feed, the condensation section defines an upper border, a lower border, an inlet for introducing vaporized feed into the condensation section between the upper border and the lower border, and an outlet for removing condensed feed from the condensation section, the heat exchanging plate being provided with corrugations in the condensing section forming ridges and valleys extending in opposite directions, wherein the plate further comprising an evaporation section that can be, in use, heated by a heating volume arranged to permit evaporation of at least a part of the feed, and a separation section being arranged to separate non-vaporized feed from vaporized feed, the separation section communicating with the condensation section for supplying vaporized feed to the inlet, the plate being characterized in that the condensation section defines a passage extending at least a part of the distance between the upper border and the outlet, the ridges outside the passage extend to a contact plane, whereas the ridges within the passage are spaced apart from the contact plane.