CLAIMS

1. An apparatus for maintaining constant fluid pressure and equalized fluid flow among a plurality of downcomer lines through which liquid from a substantially cylindrical tower is directed, comprising:

a substantially annular fluid distribution belt positioned about a circumference of the tower, the fluid distribution belt collecting liquid from the tower; and

at least two outlets configured to direct liquid from the fluid distribution belt into a corresponding number of downcomer lines disposed external to the tower; and

a textured surface on a top end of each of the downcomer lines.

2. The apparatus of claim 1, wherein the fluid distribution belt is at least partially disposed outside of an outer wall of the tower, and further comprising a plurality of openings in the outer wall of the tower through which liquid collected inside the tower flows into the fluid distribution belt.

3. The apparatus of claim 2, wherein the plurality of openings are disposed around the fluid distribution belt at different positions from the at least two outlets.

4. The apparatus of claim 1, wherein the fluid distribution belt is at least partially disposed outside of an outer wall of the tower.

5. The apparatus of claim 1, wherein the fluid distribution belt has a cross-section that is substantially semi-circular.

6. The apparatus of claim 1, wherein the fluid distribution belt has a cross-section that is at least substantially circular along an outer circumference.

7. The apparatus of claim 1, comprising at least three outlets.

8. The apparatus of claim 1, wherein an end of each downcomer line extends upwardly into the fluid distribution belt.

9. The apparatus of claim 1, wherein the textured surface comprises one of notches, scallops, grooves, and castellations.

10. The apparatus of claim 1, wherein the fluid distribution belt is disposed at least partially internal to the tower, and wherein the at least two outlets are in fluid communication with the fluid distribution belt via openings in an outer wall of the tower.

11. The apparatus of claim 1, further comprising packing placed inside the fluid distribution belt, the packing as a calming agent for liquid in the fluid distribution belt.

12. An apparatus for maintaining constant fluid pressure and equalized fluid flow among a plurality of downcomer lines through which liquid from a substantially cylindrical tower is directed, comprising:

a substantially annular fluid distribution belt positioned about a circumference of the tower, the fluid distribution belt collecting liquid from the tower;

at least two outlets configured to direct liquid from the fluid distribution belt into a corresponding number of downcomer lines disposed external to the tower, and

at least one opening in each downcomer line at an elevation that is below a top end of said each downcomer line and within the fluid distribution belt, whereby liquid collected in the tower begins to flow through the at least one opening before reaching said top end of said each downcomer line.

13. A method of maintaining constant fluid pressure and equalized fluid flow among a plurality of downcomer lines through which liquid from a substantially cylindrical tower is directed, performed in an apparatus according to claim 1, the method comprising:

collecting liquid from the tower at the substantially annular fluid distribution belt positioned at the circumference of the tower; and

passing liquid from the fluid distribution belt out of the tower and into the corresponding number of downcomer lines disposed external to the tower.

14. The method of claim 13, wherein the fluid distribution belt is disposed at least partially external to the tower.

15. The method of claim 13, wherein the fluid distribution belt is disposed at least partially integral with the tower.

16. The method of claim 13, further comprising:

maintaining a level of liquid in the fluid distribution belt sufficient to melt solids.

17. The method of claim 13, wherein the fluid distribution belt is at least partially internal to the tower.

18. A method of producing hydrocarbons, performed in an apparatus of claim 1, the method comprising:

maintaining constant fluid pressure and equalized fluid flow among the plurality of downcomer lines through which liquid from the substantially cylindrical tower is directed;

collecting liquid from the tower in the substantially annular fluid distribution belt positioned at the circumference of the tower;

passing liquid from the fluid distribution belt out of tower and into the corresponding number of downcomer lines external to the tower; and

passing hydrocarbons from the tower.