CLAIMS:

1. A baffle structure for a conduit carrying a fluid flow including a gas phase component and a liquid phase component, comprising:

a structure that defines a central opening;

a ring surrounding the structure defining the central opening, an inner surface of the ring being in contact with the structure defining the central opening;

a plurality of slots in the ring, each slot having a slot entrance;

at least one barrier plate located a distance above an entrance for each of the plurality of slots, the at least one barrier plate providing a total barrier plate surface area that is greater than a combined area of the slot entrances; and

at least one drainage hole, the drainage hole have an area less than area of a slot entrance.

2. The baffle structure of claim 1, wherein at least one slot entrance comprises a slot cylinder extending up from the surface of the ring toward the barrier plate, the slot cylinder having the shape of the slot.

3. The baffle structure of any one of claims 1-2, wherein the ring is located at an exit plane of the structure defining the central opening.

4. A baffle structure for a conduit carrying a fluid flow including a gas phase component and a liquid phase component, comprising:

a structure that defines a central opening;

a plurality of rings surrounding the structure defining the central opening, an inner surface of at least one of the plurality of rings being in contact with the structure defining the central opening; and

at least one slot in each of the rings, the slots being aligned to create a pass-through opening along an axis parallel to an axis of the central opening.

5. The baffle structure of claim 4, further comprising a straightening vane that partitions the pass-through opening, the straightening vane being aligned parallel to the axis of the cylinder defining the central opening.

6. The baffle structure of any one of claims 4-5, further comprising one or more walls located adjacent to the slots and between the rings, the wall(s) defining a pass-through conduit between the rings.

7. The baffle structure of any one of claims 4-6, wherein at least one ring is located at an exit plane of the structure defining the central opening.

8. The baffle structure of any one of the previous claims, wherein the slots have a rectangular cross-section.

9. The baffle structure of any one of the previous claims, wherein the slots have an arcuate cross-section corresponding to the radius of curvature of the ring at the location of the slot.

10. The baffle structure of any one of the previous claims, wherein the surface area of the central opening is from about 40% to about 80% of the total cross-sectional area of the baffle.

11. The baffle structure of any one of the previous claims, wherein the structure defining the central opening is a circular cylinder.

~~12. The baffle structure of any one of the previous claims, wherein the~~ baffle structure is part of a conduit junction structure, the conduit junction structure comprising:

an inlet conduit, the baffle structure being at a location in the inlet conduit;

at least two outlet conduits; and

a conduit junction providing fluid communication between the inlet conduit and the at least two outlet conduits;

wherein the cross-section of the baffle structure corresponds to an interior cross-section of the inlet conduit at the location.

13. The baffle structure of claim 12, wherein the location of the baffle structure in the inlet conduit corresponds to the exit of the baffle structure being a distance from the conduit junction of no more than about 2.0 times the length of the baffle structure.

14. The baffle structure of any one of claims 12-13, wherein the conduit junction is a vertical conduit junction structure or a horizontal conduit junction structure.

15. A method for use of a baffle structure according to any of claims 12-14 for improving the distribution of a fluid flow between outlet conduits of a conduit junction, the method comprising:

introducing a fluid flow including both a gas phase component and a liquid phase component into the inlet conduit of the conduit junction;

passing the fluid flow through a baffle structure, at least a portion of the gas phase component passing through the central opening of the baffle structure and at least a portion of the liquid phase component passing through ~~the plurality of slots in the ring; and~~

~~dividing the fluid flow between the at least two outlet conduits;~~

wherein the volumetric flow rate of the ~~gas phase~~ component received by each outlet conduit ~~differs by~~ 15% or less, and the volumetric flow rate of the ~~liquid phase~~ component received by each outlet conduit differs by ~~about~~ 15% ~~or less~~.

CLAIMS:

1. A baffle structure for a conduit carrying a fluid flow including a gas phase component and a liquid phase component, the baffle structure comprising:

a structure that defines a central opening;

a ring surrounding the structure defining the central opening, an inner surface of the ring being in contact with the structure defining the central opening;

a plurality of slots in the ring, each slot having a slot entrance;

at least one barrier plate located a distance above an entrance for each of the plurality of slots, the at least one barrier plate providing a total barrier plate surface area that is greater than a combined area of the slot entrances; and

at least one drainage hole, the drainage hole have an area less than an area of a slot entrance.

2. The baffle structure of claim 1, wherein at least one slot entrance comprises a slot cylinder extending up from the surface of the ring toward the barrier plate, the slot cylinder having the shape of the slot.

3. The baffle structure of claim 1, wherein the slots have a rectangular cross-section.

4. The baffle structure of claim 1, wherein the slots have an arcuate cross-section corresponding to the radius of curvature of the ring at the location of the slot.

5. The baffle structure of claim 1, wherein the structure defining the central opening is a circular cylinder, the surface area of the central opening being from about 40% to about 80% of the total cross-sectional area of the baffle.

6. The baffle structure of claim 1, wherein the ring is located at an exit plane of the structure defining the central opening.

7. The baffle structure of claim 1, wherein the baffle structure is part of a conduit junction structure, the conduit junction structure comprising:

an inlet conduit, the baffle structure being at a location in the inlet conduit;

at least two outlet conduits; and

a conduit junction providing fluid communication between the inlet conduit and the at least two outlet conduits,

wherein the cross-section of the baffle structure corresponds to an interior cross-section of the inlet conduit at the location.

8. The baffle structure of claim 7, wherein at least one outlet conduit has an interior that does not contain a flow modification device.

9. The baffle structure of claim 7, wherein the conduit junction is a vertical conduit junction structure.

10. The baffle structure of claim 8, wherein the location of the baffle structure in the inlet conduit corresponds to the exit of the baffle structure being a distance from the conduit junction of about 1.0 times the length of the baffle structure.

11. A method for improving the distribution of a fluid flow between outlet conduits of a conduit junction, comprising:

introducing a fluid flow including both a gas phase component and a liquid phase component into an inlet conduit of a conduit junction, the conduit junction having at least two outlet conduits;

providing a baffle structure in the inlet conduit, the baffle structure comprising

a structure that defines a central opening;

a ring surrounding the structure defining the central opening, an inner surface of the ring being in contact with the structure defining the central opening;

a plurality of slots in the ring, each slot having a slot entrance;

at least one barrier plate located a distance above an entrance for each of the plurality of slots, the at least one barrier plate providing a total barrier plate surface area that is greater than a combined area of the slot entrances; and

at least one drainage hole, the drainage hole have an area less than an area of a slot entrance;

wherein an exit from a central opening of the baffle structure is no more than about 2.0 times the length of the baffle structure from the conduit junction;

passing the fluid flow through the baffle structure, at least a portion of the gas phase component passing through the central opening of the baffle structure and at least a portion of the liquid phase component passing through the plurality of slots in the ring; and

dividing the fluid flow between the at least two outlet conduits, a volume of the gas phase component received by each outlet conduit differing by about 15% or less, and a volume of the liquid phase component received by each outlet conduit differing by about 15% or less,

wherein a volume of the gas phase component and/or the liquid phase component received by each outlet conduit differs by at least about 20% in the absence of the baffle structure.

12. The method of claim 11, wherein the fluid flow comprises an annular fluid flow or a stratified fluid flow.

13. The method of claim 11, wherein the conduit junction is a vertical conduit junction structure.

14. The method of claim 11, wherein the volume of the liquid phase component of the divided fluid flow received by each outlet conduit differs by about 10% or less.