~~What is claimed is:~~Claims:

1. A separator and distributor assembly for a falling film evaporator, housed within the evaporator shell, and comprising:

a housing defining a separation volume;

a refrigerant inlet configured to admit a liquid and vapor refrigerant flow into the separation volume;

one or more refrigerant gutters extending along a lengthwise axis of the housing, the refrigerant gutter having a gutter inlet at a bottom of the separation volume, the one or more refrigerant gutters configured to receive separated liquid refrigerant from the separation volume; and

one or more sparge channels in fluid communication with the refrigerant gutters, the sparge channel including one or more sparge openings at a top of the sparge channel vertically below the gutter inlet, the one or more sparge openings configured to flow liquid refrigerant therefrom.

~~2. The separator and distributor assembly of claim 1, wherein the one or more refrigerant gutters extend from a first longitudinal end to a second longitudinal end of the separation volume.~~

~~3. The separator and distributor assembly of claim 1, wherein the one or more refrigerant gutters are two refrigerant gutters, the two refrigerant gutters disposed at opposing lateral sides of the separation volume.~~

~~4. The separator and distributor assembly of claim 3, further comprising two sparge channels, each sparge channel connected to a refrigerant gutter of the two refrigerant gutters.~~

2~~5~~. The separator and distributor assembly of claim 1, wherein the one or more sparge channels vary in one or more of a sparge channel depth or a sparge channel width along the lengthwise axis.

~~6. The separator and distributor assembly of claim 1, further comprising a baffle disposed in the separation volume extending at least partially across the refrigerant inlet.~~

~~7. The separator and distributor assembly of claim 1, further comprising a distribution manifold disposed below the sparge channel and in fluid communication therewith.~~

~~8. The separator and distributor assembly of claim 1, further comprising a vent opening disposed at the separation volume, the vent opening configured to vent vapor refrigerant from the separation volume.~~

39. A falling film evaporator, comprising:

an evaporator housing;

a plurality of evaporator tubes through which a volume of thermal energy transfer medium is flowed; and

a separator and distributor assembly for a falling film evaporator, comprising:

a separator housing defining a separation volume;

a refrigerant inlet configured to admit a liquid and vapor refrigerant flow into the separation volume;

one or more refrigerant gutters extending along a lengthwise axis of the housing, the refrigerant gutter having a gutter inlet at a bottom of the separation volume, the one or more refrigerant gutters configured to receive separated liquid refrigerant from the separation volume; and

one or more sparge channels in fluid communication with the refrigerant gutters, the sparge channel including one or more sparge openings at a top of the sparge channel vertically below the gutter inlet, the one or more sparge openings configured to flow liquid refrigerant therefrom.

~~10. The falling film evaporator of claim 9, wherein the one or more refrigerant gutters extend from a first longitudinal end to a second longitudinal end of the separation volume.~~

~~11. The falling film evaporator of claim 9, wherein the one or more refrigerant gutters are two refrigerant gutters, the two refrigerant gutters disposed at opposing lateral sides of the separation volume.~~

~~12. The falling film evaporator of claim 11, further comprising two sparge channels, each sparge channel connected to a refrigerant gutter of the two refrigerant gutters.~~

~~13. The falling film evaporator of claim 9, further comprising a baffle disposed in the separation volume extending across the refrigerant inlet.~~

414. The falling film evaporator of claim 39, further comprising a distribution manifold disposed below the sparge channel and in fluid communication therewith.

~~15. The falling film evaporator of claim 9, further comprising a vent opening disposed at the separation volume, the vent opening configured to vent vapor refrigerant from the separation volume.~~

516. A method of operating a falling film evaporator, comprising:

flowing a liquid and vapor refrigerant into a separation volume of a separator and distributor assembly;

separating a liquid refrigerant from the liquid and vapor refrigerant at the separation volume;

flowing the liquid refrigerant through a refrigerant gutter at the bottom of the separation volume into a sparge channel, the refrigerant gutter extending into a sparge channel disposed outside of the separation volume; and

urging the liquid refrigerant out of one or more sparge openings at a top of the sparge channel via refrigerant pressure in the separation volume.

~~17. The method of claim 16, further comprising:~~

~~flowing the liquid refrigerant from the one or more sparge openings to a distribution manifold disposed below the sparge channel; and~~

~~flowing the liquid refrigerant from the distribution manifold over a plurality of evaporator tubes.~~

~~18. The method of claim 16, further comprising impinging at least a portion of the liquid and vapor refrigerant onto a baffle disposed at least partially across the refrigerant inlet.~~

~~19. The method of claim 16, further comprising venting vapor refrigerant from the separation volume via a vent opening in the separation volume.~~