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 sparge channels vary in one or more of a sparge channel depth or a sparge channel width along the lengthwise axis.

3. 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.

4. The falling film evaporator of claim 3, further comprising a distribution manifold disposed below the sparge channel and in fluid communication therewith.

5. 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.