CLAIMS

1. A method of improving flow distribution of one or more streams in a process vessel comprising:

passing the one or more streams through an upstream processing zone and a downstream processing zone within the process vessel, the upstream processing zone and downstream processing zone each containing one or more beds of processing materials;

passing the one or more streams through a redistribution zone located between, and adjacent to both of, the upstream processing zone and downstream processing zone, wherein the entire depth of the redistribution zone comprises a plurality of individual, packed treating elements, and wherein one or more of the treating elements comprise ceramic reticulates and the processing materials include reaction promoting catalyst; and

prior to passing the one or more streams through the upstream processing zone, passing the one or more streams through a bed zone,

wherein the redistribution treating zone is directly adjacent to the upstream processing zone such that certain of the processing materials from the upstream processing zone are capable of migrating into the redistribution treating zone to create a combo-zone having both processing zone functionality and treating zone functionality; and

wherein the processing materials occupy at least 20% of the volume of that portion of the layer of treating elements (contained in the redistribution treating zone into which the processing materials have migrated.

2. A method of improving flow distribution of one or more streams in a process vessel comprising:

passing the one or more streams through an upstream processing zone and a downstream processing zone within the process vessel, the upstream processing zone and downstream processing zone each containing one or more beds of processing materials;

passing the one or more streams through a redistribution zone located between, and adjacent to both of, the upstream processing zone and downstream processing zone, wherein the entire depth of the redistribution zone comprises a plurality of individual, packed treating elements; and

prior to passing the one or more streams through the upstream processing zone, passing the one or more streams through a bed zone,

wherein the treating elements in the redistribution zone are larger in size than the processing materials in the upstream processing zone and downstream processing zone,

wherein the redistribution treating zone is directly adjacent to the upstream processing zone such that certain of the processing materials from the upstream processing zone are capable of migrating into the redistribution treating zone to create a combo-zone having both processing zone functionality and treating zone functionality; and

wherein the processing materials occupy at least 20% of the volume of that portion of the layer of treating elements (contained in the redistribution treating zone into which the processing materials have migrated.

3. A method of improving flow distribution of one or more streams in a process vessel comprising:

passing the one or more streams through an upstream processing zone and a downstream processing zone within the process vessel, the upstream processing zone and downstream processing zone each containing one or more beds of processing materials;

passing the one or more streams through a redistribution zone located between, and adjacent to both of, the upstream processing zone and downstream processing zone, wherein the entire depth of the redistribution zone comprises a plurality of individual, packed treating elements; and

prior to passing the one or more streams through the upstream processing zone, passing the one or more streams through a bed zone, wherein the bed zone can mitigate undesired species contained in the one or more streams,

wherein the treating elements are randomly packed in the redistribution zone and have openings passing therethrough, and wherein a stream passing through the redistribution zone is capable of passing around and through the treating elements,

wherein the redistribution treating zone is directly adjacent to the upstream processing zone such that certain of the processing materials from the upstream processing zone are capable of migrating into the redistribution treating zone to create a combo-zone having both processing zone functionality and treating zone functionality; and

wherein the processing materials occupy at least 20% of the volume of that portion of the layer of treating elements (contained in the redistribution treating zone into which the processing materials have migrated.

4. The method of claim3, wherein a plurality of channeled liquid streams exit the upstream processing zone, and wherein the treating elements facilitate redistribution of the channeled liquid streams, and wherein the redistributed streams enter the downstream processing zone as laterally dispersed streams such that there is improved contact between the laterally dispersed streams and the processing elements in the downstream processing zone.