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Marked Up Version of Amendments

1. A carbonylation method of producing acetic acid, comprising the steps of:

purifying a crude product stream in a light ends column to generate a product stream; and

directing the product stream to a drying column to generate a dried product stream and one or more vapor side streams;

wherein the one or more vapor side streams provide energy to one or more separation systems.

2. The method according to claim 1, further comprising directing the one or more vapor side streams to the light ends column.

3. The method according to claim 2, wherein the one or more vapor side streams are drawn from a lower portion of the drying column.

4. The method according to claim 2, wherein the one or more vapor side streams are fed to a base of the light ends column.

5. The method according to claim 2, wherein a reboiler is not connected to a bottom portion of the light ends column.

6. The method according to claim 1, wherein the one or more vapor side streams heat the crude product stream in the light ends column.

7. The method according to claim 1, wherein the drying column is connected to a reboiler.

8. The method according to claim 1, wherein the one or more vapor side streams comprise acetic acid and water.

9. The method according to claim 8, wherein the one or more vapor side streams comprise acetic acid in an amount of from 90 wt.% to 99.9 wt.%.

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10. The method according to claim 8, wherein the one or more vapor side streams comprise water in an amount of from 0.01 wt.% to 10 wt.% water.

11. The method according to claim 1, wherein the one or more vapor side streams have a temperature of from 130°C to 185°C.

12. The method according to claim 1, wherein the one or more vapor side streams are fed to a base of the light ends column.

13. The method according to claim 1, wherein the light ends column operates within a base temperature of from 120°C to 170°C.

14. The method according to claim 1, wherein from 1% to 50% of a total amount of energy required to drive separation in the light ends column is provided by the one or more vapor side streams.

15. The method according to claim 1, wherein from 50% to 100% of a total amount of energy required to drive separation in the light ends column is provided by the one or more vapor side streams.

16. A method according to claim 1, further comprising the step of:

reacting carbon monoxide with at least one reactant in a first reactor containing a reaction medium to produce the crude product stream comprising acetic acid,

wherein the at least one reactant is selected from the group consisting of methanol, methyl acetate, methyl formate, dimethyl ether and mixtures thereof, and

wherein the reaction medium comprises water, acetic acid, methyl iodide, methyl acetate and a catalyst.

17. A carbonylation method of producing acetic acid, comprising the steps of:

purifying a crude product stream in a light ends column to remove methyl iodide and methyl acetate and generate a product stream, the product stream having a lower concentration of methyl iodide and methyl acetate than the crude product stream;

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drawing the product stream from a sidedraw of the light ends column; and

directing the product stream to a drying column to generate a dried product stream and one or more vapor side streams;

wherein the one or more vapor side streams from the drying column heat the product stream in the light end column.

18. The method according to claim 17, wherein the one or more vapor side streams comprise acetic acid and water.

19. The method according to claim 17, wherein the one or more vapor side streams have a temperature of from 130°C to 185°C.

20. (Amended) A method of heating a light ends column comprising the steps of:

purifying a crude product stream in the light ends column to generate a product stream;

directing the purified product stream to a drying column to generate a dried product stream; ~~and~~

transferring heat from the drying column to the light ends column, and

wherein the step of transferring heat further comprises drawing one or more vapor side streams from the drying column and directing the one or more vapor side streams to the light ends column.

~~21.~~ (Cancelled) ~~The method according to claim 20, wherein the step of transferring heat further comprises:~~

~~drawing one or more vapor side streams from the drying column; and~~

~~directing the one or more vapor side streams to the light ends column.~~

~~22.~~ 21. The method according to claim 20, wherein the one or more vapor side streams comprise acetic acid and water.

~~23.~~ 22. The method according to claim 20, wherein the one or more vapor side streams have a temperature of from 130°C to 185°C.

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We claim:

1. A carbonylation method of producing acetic acid, comprising the steps of:

purifying a crude product stream in a light ends column to generate a product stream;

directing the product stream to a drying column to generate a dried product stream and one or more vapor side streams,

wherein the one or more vapor side streams provide energy to one or more separation systems.

2. The method according to claim 1, further comprising directing the one or more vapor side streams to the light ends column.

3. The method according to claim 2, wherein the one or more vapor side streams are drawn from a lower portion of the drying column.

4. The method according to claim 2, wherein the one or more vapor side streams are fed to a base of the light ends column.

5. The method according to claim 2, wherein a reboiler is not connected to a bottom portion of the light ends column.

6. The method according to claim 1, wherein the one or more vapor side streams heat the crude product stream in the light ends column.

7. The method according to claim 1, wherein the drying column is connected to a reboiler.

8. The method according to claim 1, wherein the one or more vapor side streams comprise acetic acid and water.

9. The method according to claim 8, wherein the one or more vapor side streams comprise acetic acid in an amount of from 90 wt. % to 99.9 wt. %.

10. The method according to claim 8, wherein the one or more vapor side streams comprise water in an amount of from 0.01 wt. % to 10 wt. % water.

11. The method according to claim 1, wherein the one or more vapor side streams have a temperature of from 130° C. to 185° C.

12. The method according to claim 1, wherein the one or more vapor side streams are fed to a base of the light ends column.

13. The method according to claim 1, wherein the light ends column operates within a base temperature of from 120° C. to 170° C.

14. The method according to claim 1, wherein from 1% to 50% of a total amount of energy required to drive separation in the light ends column is provided by the one or more vapor side streams.

15. The method according to claim 1, wherein from 50% to 100% of a total amount of energy required to drive separation in the light ends column is provided by the one or more vapor side streams.

16. A method according to claim 1, further comprising the step of:

reacting carbon monoxide with at least one reactant in a first reactor containing a reaction medium to produce the crude product stream comprising acetic acid,

wherein the at least one reactant is selected from the group consisting of methanol, methyl acetate, methyl formate, dimethyl ether and mixtures thereof, and

wherein the reaction medium comprises water, acetic acid, methyl iodide, methyl acetate and a catalyst.

17. A carbonylation method of producing acetic acid, comprising the steps of:

purifying a crude product stream in a light ends column to remove methyl iodide and methyl acetate and generate a product stream, the product stream having a lower concentration of methyl iodide and methyl acetate than the crude product stream, and

drawing the product stream from a sidedraw of the light ends column;

directing the product stream to a drying column to generate a dried product stream and one or more vapor side streams;

wherein the one or more vapor streams from the drying column heat the crude product stream in the light end column.

18. The method according to claim 17, wherein the one or more vapor side streams comprise acetic acid and water.

19. The method according to claim 17, wherein the one or more vapor side streams have a temperature of from 130° C. to 185°C.