CLAIMS:

What is claimed is:

1. A process for upgrading a hydrocarbon, comprising:

determining an amount of methanol that will be present in a steam cracker effluent based, at least in part, on a composition of a hydrocarbon feed to be steam cracked, a temperature the hydrocarbon feed will be heated at during steam cracking, a residence time the hydrocarbon feed will be heated at the temperature during steam cracking, or a combination thereof; and

introducing a sufficient amount of a first sorbent, wherein the sufficient amount of the first sorbent is based at least in part of the determined amount of methanol, into a first methanol sorbent unit to allow the first methanol sorbent unit to process a depropanizer overhead that is to be separated from the steam cracker effluent for at least as long as a predetermined period of time without requiring replacement or re-activation of the first sorbent due to saturation caused by methanol present in the depropanizer overhead.

2. The process of claim 1, further comprising:

steam cracking a hydrocarbon feed comprising methanol to produce a steam cracker effluent comprising cracked hydrocarbons and methanol;

separating a process gas comprising methanol, ethane, ethylene, propane, and propylene from the steam cracker effluent;

separating the depropanizer overhead from the process gas; and

introducing the depropanizer overhead into the first methanol sorbent unit for at least as long as the predetermined period of time and recovering a treated depropanizer overhead.

3. The process of claim 2, wherein the treated depropanizer overhead comprises less methanol than the depropanizer overhead.

4. The process of claim 3, further comprising:

introducing a sufficient amount of a second sorbent into a second methanol sorbent unit to allow the second methanol sorbent unit to process a deethanizer bottoms that is to be separated from the treated depropanizer overhead for at least as long as the predetermined period of time without requiring replacement or re-activation of the second sorbent due to saturation caused by methanol present in the deethanizer bottoms;

separating the deethanizer bottoms from the treated depropanizer overhead; and

introducing the deethanizer bottoms into the second methanol sorbent unit for at least as long as the predetermined period of time.

5. The process of any of claims 2 to 4, further comprising:

separating a naphtha cut comprising pygas, water, and methanol from the steam cracker effluent, wherein an amount of methanol in the naphtha cut is greater than an amount of methanol in the process gas;

separating a pygas product and an aqueous mixture comprising methanol from the naphtha cut;

contacting the aqueous mixture with steam to heat the aqueous mixture and produce a vapor phase product and a liquid phase product; and

condensing at least a portion of the vapor phase product to produce a process water, wherein > 50% of the methanol contained in the steam cracker effluent is present in the process water, and wherein < 50% of the methanol contained in the steam cracker effluent is present in the process gas.

6. The process of any of claims 1 to 5, wherein the first sorbent and the second sorbent are each an adsorbent.

7. The process of any of claims 1 to 6, wherein the first sorbent and the second sorbent each comprises at least one metal from Group 1, 10, or 11 of the periodic table of elements or an oxide thereof.

8. The process of any of claims 1 to 7, wherein the predetermined period of time is at least 5 days.

9. The process of any of claims 1 to 8, wherein the hydrocarbon feed has a total acid number of $\geqslant$ 0.5 mg KOH/g of hydrocarbon feed, as measured according to ASTM D664 – 18e2.