Claims

1. A process for screening polymer from a polymer-lean stream, whereby the process comprises the steps of

   A) separating an effluent stream (a) comprising the polymer and a mixture of hydrocarbons into a polymer-rich stream (b) and a polymer-lean vapor stream (c);

   B) contacting the polymer-lean vapor stream (c) with a first condensed vapor stream (f), wherein the flow direction of the first condensed vapor stream (f) is countercurrent to the flow direction of the polymer-lean vapor stream (c) to produce a cleaned vapor stream (d) and a polymer-comprising condensed vapor stream (e)

   wherein the polymer in the effluent stream (a) is molten.

2. The process according to claim 1 further comprising the step of:

   C) contacting the polymer-lean vapor stream (c) with a second condensed vapor stream (g) downstream to the contacting of step B) with respect to the flow direction of the polymer-lean vapor stream (c), wherein the flow direction of the second condensed vapor stream (g) is countercurrent to the flow direction of the polymer-lean vapor stream (c).

3. The process according to any of the preceding claims, wherein a condensed vapor composition comprising mixture of hydrocarbons is sprayed into the polymer-lean vapor stream (c) using a spraying condensed vapor stream (i) upstream of the contacting of step B) and downstream of the separating of step A) with respect to the flow direction of the polymer-lean vapor stream (c), wherein the polymer-comprising condensed vapor stream (e) is partially fed to the spraying condensed vapor stream (i).

4. The process according to any of the preceding claims, wherein in step B) the polymer-comprising condensed vapor stream (e) is fed to the first condensed vapor stream (f).

5. The process according to any of the preceding claims, wherein a recycle condensed vapor stream (j) is introduced into step A), wherein the polymer-comprising condensed vapor stream (e) is at least partially fed to the recycle condensed vapor stream (j), and wherein the recycle condensed vapor stream (j) is heated using a heater (13).

6. The process according to any of the preceding claims, wherein a heated condensed vapor stream (h) is contacted with the polymer-lean vapor stream (c), wherein the flow direction of the heated condensed vapor stream (h) is countercurrent to the flow direction of the polymer-lean vapor stream (c), wherein the polymer-comprising condensed vapor stream (e) is at least partially fed to the heated condensed vapor stream (h), and wherein the heated condensed vapor stream (h) is optionally heated using a heater (13).

7. The process according to any of the preceding claims 2 to 6, wherein in step C) the cleaned vapor stream (d) is condensed and fed to the second condensed vapor stream (g).