CLAIMS:

What is claimed is:

1. A process for producing a polymer comprising:

polymerizing a monomer dissolved in a solvent in the presence of a catalyst system to obtain a first effluent stream, comprising a solution of polymer in the solvent;

heating the first effluent stream in at least one spiral heat exchanger to produce a second effluent stream, wherein the first effluent stream flows through the at least one spiral heat exchanger in a cross-flow direction relative to spirals of the at least one spiral heat exchanger, wherein pressure drop across the at least one spiral heat exchanger is less than or equal to about 345 kPa, wherein the second effluent stream has a temperature at the outlet of the at least one spiral heat exchanger of about 75°C to about 215°C; and

separating the second effluent stream in a vessel into:

a third effluent stream comprising polymer substantially free of the solvent and a recycle stream comprising the solvent and unreacted monomer.

2. The process of claim 1, wherein the second effluent stream is separated in the vessel at an average vessel temperature of about 75°C to about 215°C and an average vessel pressure of about 1.4 kPa to about 4482 kPa.

3. The process of claim 1, wherein when the first effluent stream comprises less than about 60% polymer, the second effluent stream is depressurized in a pressure valve before being separated into the third effluent stream, wherein the pressure valve is fluidly connected to the at least one spiral heat exchanger and the vessel.

4. The process of claim 1, wherein when the first effluent stream comprises more than about 60% polymer, the at least one spiral heat exchanger is fluidly connected to the vessel.

5. The process of claim 1, wherein the catalyst system comprises a coordination catalyst.

6. The process of claim 1, wherein the polymer comprises polyethylene and/or polypropylene.

7. The process of claim 1, wherein the monomer comprises C_2–C_{40} olefins and/or C_1–C_4 paraffins.

8. The process of claim 1, wherein the monomer comprises ethylene and/or propylene.

9. The process of claim 1, wherein the polymer comprises a C_2 to C_{20} comonomer.

10. The process of claim 9, wherein the C_2 to C_{20} comonomer is selected from the group consisting of ethylene, propylene, butene, pentene, hexene, heptene, octene, nonene, decene, undecene, dodecene and a mixture thereof.

11. A process for devolatilizing a polymer stream comprising:

heating a polymer stream comprising a solution of a polymer, a solvent, and unreacted monomer in at least one spiral heat exchanger to produce a second effluent stream, wherein the polymer stream flows through the at least one spiral heat exchanger in a cross-flow direction relative to spirals of the at least one spiral heat exchanger, wherein pressure drop across the at least one spiral heat exchanger is less than or equal to about 345 kPa, wherein the second effluent stream has a temperature at the outlet of the at least one spiral heat exchanger of about 75°C to about 215°C; and

separating the second effluent stream in a vessel into:

a third effluent stream comprising polymer substantially free of the solvent; and

a recycle stream comprising the solvent and unreacted monomer.

12. The process of claim 11, wherein the separation is performed in the vessel at an average vessel temperature of about 75°C to about 215°C and an average vessel pressure of about 1.4 kPa to about 4482 kPa.

13. The process of claim 11, wherein when the polymer stream comprises less than about 60% polymer, the second effluent stream is depressurized in a pressure valve before being separated into the third effluent stream, wherein the pressure valve is fluidly connected to the at least one spiral heat exchanger and the vessel.

14. The process of claim 11, wherein when the polymer stream comprises more than about 60% polymer, the at least one spiral heat exchanger is fluidly connected to the vessel.

15. The process of claim 11, wherein the polymer comprises polyethylene and/or polypropylene.

16. The process of claim 15, wherein the polymer comprises a C_2 to C_{20} co-monomer selected from the group consisting of ethylene, propylene, butene, pentene, hexene, heptene, octene, nonene, decene, undecene, dodecene and a mixture thereof.