CLAIMS

1. Process for operating a polymer powder degasser vessel which vessel comprises a silo comprising a main vertical cylinder and a hopper at the bottom of the cylinder, there being a polymer powder withdrawal pipe connected to the hopper by which polymer powder is withdrawn from the hopper, and wherein the silo contains a polymer powder which occupies less than 45% of the volume of the silo, further wherein at least one of the following is applied:

i) polymer powder is withdrawn from the hopper and recirculated to the silo, wherein the recirculation rate of the polymer powder is at least 30 percent per hour of the polymer powder present in the silo, and

ii) a purge gas provided to the silo via the polymer powder withdrawal pipe or via an inlet located on the hopper at a vertical height which is less than half of height of the hopper from its bottom end.

2. A process as claimed in claim 1 wherein the polymer powder occupies less than 30% of the volume of the silo.

3. A process as claimed in claim 1 wherein the recirculation rate is at least 40 percent per hour of the polymer powder present in the silo.

4. A process as claimed in claim 1 wherein the purge gas is provided to the silo via the polymer powder withdrawal pipe.

5. A process according to claim 1 wherein there is provided a polymer powder inlet pipe connected to the polymer powder degasser vessel at a height located above the polymer powder and wherein the polymer powder is withdrawn from the hopper and recirculated via the polymer powder withdrawal pipe to a location upstream of the silo or to the silo at a height located above the polymer powder.

6. A process as claimed in claim 5 wherein the polymer powder inlet pipe is

connected to the silo at a height located above the surface of the polymer powder inside the silo.

7. A process as claimed in claim 1 wherein the polymer powder withdrawal pipe is connected to the bottom end of the cone of the hopper.

8. A process as claimed in claim 1 wherein the polymer powder withdrawal pipe is divided into a main polymer powder withdrawal pipe and a secondary polymer powder recirculation pipe.

9. A process as claimed in claim 1 wherein the silo has a volume of 30 to 500 m^3.

10. A process for the polymerisation of olefins which comprises
i) polymerising one or more olefins in a polymerisation reactor,
ii) passing polymer powder obtained from the polymerisation reactor to a polymer powder degasser vessel, and
iii) operating the polymer powder degasser vessel according to the process of claim 1.

11. A process as claimed in claim 10 wherein the polymerization reactor is a gas phase reactor, a gas/liquid phase reactor or a slurry reactor for the polymerisation of ethylene and/or propylene.

12. Process for operating a polymer powder degasser vessel which comprises a silo comprising a main vertical cylinder and a hopper at the bottom of the cylinder, there being a polymer powder withdrawal pipe connected to the hopper by which polymer powder is withdrawn from the hopper, and which process comprises switching between a first set of conditions which are applied when the silo contains a first amount of polymer powder and a second set of conditions which are applied when the silo contains a second amount of the same polymer powder, the first and second amounts being different, and wherein at least one of the following applies:
i) the second amount of polymer powder is greater than the first amount of polymer powder, and the flow rate at which polymer powder is withdrawn from the hopper and

recirculated to the silo is less in the second set of conditions than in the first set of conditions,

ii) the second amount of polymer powder is less than the first amount of polymer powder, and the flow rate at which polymer powder is withdrawn from the hopper and recirculated to the silo is higher in the second set of conditions than in the first set of conditions,

iii) the locations by which purge gas is supplied to the silo differ in the second set of conditions compared to the first set of conditions.

13. A process as claimed in claim 12 wherein the lower amount of polymer powder is such that the polymer powder occupies less than 45% of the volume of the silo.

14. A process as claimed in claim 12 wherein the lower amount of polymer powder is such that the polymer powder occupies less than 30% of the volume of the silo.

15. A process as claimed in claim 12 wherein the higher amount of polymer powder is such that the polymer powder occupies at least 50% of the volume of the silo and/or the higher amount is such that the polymer powder occupies at least 20% by volume of the silo more than the lower amount.

16. A process as claimed in claim 12 wherein the higher recirculation flow rate is at least 1 tonne per hour and/or is at least 30% percent per hour of the polymer powder present in the silo.

17. A process as claimed in claim 12 wherein the lower recirculation flow rate is less than 50% of the higher recirculation flow rate.

18. A process as claimed in claim 17 wherein the higher recirculation flow rate is at least 5 tonnes per hour and/or is at least 40% percent per hour of the polymer powder present in the silo.

19. A process as claimed in claim 12 wherein the silo comprises at least one inlet by

which purge gas is provided which is located on the cylinder section of the silo (hereinafter "cylinder inlet") and at least one inlet by which purge gas is provided to the silo via the polymer powder withdrawal pipe or via an inlet located on the hopper at a vertical height which is less than half of height of the hopper from its bottom end (hereinafter "hopper inlet"), and where the second amount of polymer powder is greater than the first amount of polymer powder then amount of purge gas which is introduced via the hopper inlet is less under the second set of conditions than the amount introduced via the hopper inlet under the first conditions, and vice versa.

20. A process as claimed in claim 19 where the larger amount of polymer powder occupies at least 50% by volume of the silo and no purge gas is applied to the hopper inlet under the corresponding set of conditions.

21. A process as claimed in claim 12 wherein the purge gas is provided to the silo via the polymer powder withdrawal pipe.

22. A process according to claim 12 wherein there is provided a polymer powder inlet pipe connected to the polymer powder degasser vessel at a height located above the polymer powder and wherein the polymer powder is withdrawn from the hopper and recirculated via the polymer powder withdrawal pipe to a location upstream of the silo or to the silo at a height located above the polymer powder.

23. A process as claimed in claim 22 wherein the polymer powder inlet pipe is connected to the silo at a height located above the surface of the polymer powder inside the silo.

24. A process as claimed in claim 12 wherein the polymer powder withdrawal pipe is connected to the bottom end of the cone of the hopper.

25. A process as claimed in claim 12 wherein the polymer powder withdrawal pipe is divided into a main polymer powder withdrawal pipe and a secondary polymer powder recirculation pipe.

26. A process as claimed in claim 12 wherein the silo has a volume of 30 to 500 m^3.

27. A process for the polymerisation of olefins which comprises

i) polymerising one or more olefins in a polymerisation reactor,

ii) passing polymer powder obtained from the polymerisation reactor to a polymer powder degasser vessel, and

iii) operating the polymer powder degasser vessel according to the process of claim 12.

28. A process as claimed in claim 27 wherein the polymerization reactor is a gas phase reactor, a gas/liquid phase reactor or a slurry reactor for the polymerisation of ethylene and/or propylene.