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(54) Title: PROCESS FOR PRODUCING POLYOLEFINS

(57) Abstract: The present invention deals with a process of producing a polymer of at least one olefin in two consecutive reactors in gas phase in the presence of an olefin polymerisation catalyst where an olefin is polymerised in a first polymerization reactor in the presence of an olefin polymerisation catalyst and a first reaction gas mixture to form a fluidized bed comprising an olefin polymer and said first reaction gas mixture. The first reaction gas mixture together with the olefin polymer is continuously or intermittently withdrawn from the first polymerisation reactor and directed into a separation vessel so that a bed of polymer is formed in said separation vessel. A portion of said first reaction gas mixture is withdrawn from said separation vessel and returned into the first polymerization reactor to a point where the pressure is lower than in the separation vessel. The olefin polymer is withdrawn from said separation vessel to form a second product stream and the second product stream is directed into a second polymerization reactor. A second gas may be introduced into the bottom part of the separation vessel to avoid the carry-over of the reactants from the first polymerisation stage into the second polymerisation stage.

