Claims

Claim 1. Process for the milling of vegetable-based material, in particular plants like seeds, to produce dehulled or/and fractionate flour, comprising the steps of:
- performing a Material Bed Compression milling of the vegetable-based material,
- performing a first air classification of the milled material to obtain a first fine fraction on one side and a first coarse fraction on the other side,
- performing a first post-treatment to the first fine fraction to obtain separate flour, and
- recycling the first coarse fraction to the milling step,
characterized in that the Material Bed Compression milling is applied on a compacted bed of material, the bed thickness ranging from 10mm to 100mm.

Claim 2. Process according to claim 1 wherein, the material being dehulled pea seeds, the first post-treatment consists of a second air classification step for producing a second coarse fraction of starch flour on one side and a second fine fraction of protein flour on the other side.

Claim 3. Process according to claim 1, further comprising before the step of MBC milling, a step of mixing the vegetable-based material with water to hydrate the mix, and stabilizing said hydrated mix.

Claim 4. Process according to claim 3 wherein, said material being wheat grain, the first post-treatment delivers wheat bran on one side and wheat flour on the other side.

Claim 5. Process according to claim 4, further comprising the steps of:
- performing a second air classification to the first coarse fraction to obtain a second fine fraction on one side and second coarse fraction on the other side,
- performing a second post-treatment to the second fine fraction to obtain wheat bran on one side and wheat flour on the other side, and
- recycling the second coarse fraction to the milling step.

Claim 6. Process according to claim 3 wherein, said material being peas grain, the first post-treatment delivers peas hull on one side and peas flour on the other side.

Claim 7. Process according to claim 6, further comprising a step of sieving the first coarse fraction to obtain peas hulls on one side and an intermediary fraction on the other side.

Claim 8. Process according to claim 7, further comprising the steps of:

- performing a second air classification to the intermediary fraction just after the sieving step to obtain a second fine fraction on one side and a second coarse fraction on the other side,
- performing a second post-treatment to the second fine fraction to obtain peas hulls on one side and peas kernel grits on the other side, and
- recycling the second coarse fraction and the peas kernel grits to the milling step.

Claim 9. Process according to claim 3 wherein, said material being sunflower, the first post-treatment delivers fibres on one side and sunflower protein flour on the other side.

Claim 10. Process according to claim 9, further comprising a step of sieving the first coarse fraction to obtain fibres on one side and an intermediary fraction on the other side.

Claim 11. Process according to claim 10, further comprising the steps of:

- performing a second air classification to the intermediary fraction just after the sieving step to obtain a second fine fraction on one side and a second coarse fraction on the other side,
- performing a second post-treatment to the second coarse fraction to obtain fibres on one side and sunflower grits on the other side, and
- recycling the second fine fraction and the sunflower grits to the milling step.

Claim 12. Process according to claim 1 wherein, the material being pulse seeds, further comprising, after the first air classification, the steps of:

- sieving the first coarse fraction to obtain whole or semi whole flour on one side and an intermediary fraction on the other side, and
- recycling the intermediary fraction to the milling step.