Claims

1. A ~~D~~distribution device ~~(1)~~ for an extruder ~~(10)~~, comprising

- a first connecting piece ~~(1a)~~ for connecting the distribution device ~~(1)~~ to an outlet of an extruder ~~(10)~~,

- a distribution unit ~~(2)~~,

- at least two conduits ~~(3, 4)~~ leading away from the distribution unit ~~(2)~~, wherein each conduit ~~(3, 4)~~ has a second connecting piece ~~(5)~~, for connection to a cooling nozzle ~~(11, 12)~~, at its end remote from the distribution unit ~~(2)~~;

wherein each conduit ~~(3, 4)~~ comprises a temperature-control device ~~(3b, 4b)~~.

2. The ~~D~~distribution device ~~(1)~~ according to claim 1, characterized in that a measuring device, preferably a flow meter, or mutually spaced measuring devices ~~(6, 7, 8, 9)~~, are provided, in order to determine the product flow in the conduits ~~(3, 4)~~, the measuring devices ~~(6, 7, 8, 9)~~ preferably being selected from the group consisting of flow meters and pressure sensors.

3. The ~~D~~distribution device ~~(1)~~ according to claim 1 or 2, characterized in that two conduits ~~(3, 4)~~ leading away from the distribution unit ~~(2)~~ are provided.

4. The ~~D~~distribution device ~~(1)~~ according to any of the preceding claims, characterized in that each conduit ~~(3, 4)~~ is cylindrical, the temperature-control device ~~(3b, 4b)~~ surrounding the interior space ~~(3a, 3b)~~ of the conduit ~~(3, 4)~~, serving as a product conduit, in a sheath-like manner.

5. The ~~D~~distribution device according to any of the preceding claims, characterized in that the second connecting piece comprises a curved pipe portion.

6. The ~~D~~distribution device ~~(1)~~ according to any of the preceding claims, characterized in that it further comprises a heat exchanger ~~(13)~~ which

comprises channels ~~(14)~~ through which product can be guided from a first side ~~(13a)~~ of the heat exchanger ~~(13)~~ through an elongate portion ~~(13b)~~ to a second side ~~(13c)~~ of the heat exchanger ~~(13)~~.

7. An ~~E~~extrusion system comprising an extruder ~~(10)~~ and the~~a~~ distribution device ~~(1)~~ according to any of claims 1 to 6, which is connected via a first connecting piece ~~(1a)~~ to an outlet of the extruder ~~(10)~~.

8. The ~~E~~extrusion system according to claim 7, characterized in that in each case a cooling nozzle ~~(11, 12)~~ is connected to each conduit ~~(3, 4)~~ of the distribution device ~~(1)~~ via a second connecting piece ~~(5)~~ which is arranged on an end of the conduit ~~(3, 4)~~ remote from the distribution unit ~~(2)~~ of the distribution device ~~(1)~~.

9. The ~~E~~extrusion system according to claim 7 or 8, characterized in that it further comprises a heat exchanger ~~(13)~~ which has channels ~~(14)~~ through which the product can be guided from a first side ~~(13a)~~ of the heat exchanger ~~(13)~~ through an elongate portion ~~(13b)~~ to a second side ~~(13c)~~ of the heat exchanger ~~(13)~~.

10. The ~~E~~extrusion system according to claim 9, characterized in that the extruder is shortened, for example to a 5-barrel extruder.

11. A ~~M~~method for producing a proteinaceous food item in the~~an~~ extruder system according to any of claims 7 to 10, comprising the steps of:

a) processing a raw material mixture, wherein at least one raw material is a protein, preferably a plant protein, in an extruder ~~(10)~~,

b) leading the extrudate out of the extruder ~~(10)~~ into the distribution device ~~(1)~~,

c) guiding partial flows of the extrudate through conduits ~~(3, 4)~~ of the distribution device ~~(1)~~ into cooling nozzles ~~(11, 12)~~, wherein the flow rates of the partial flows in the conduits ~~(3, 4)~~ are determined by means of a measuring

device, preferably a flow meter, or mutually spaced measuring devices ~~(6, 7, 8, 9)~~, and deviations of the flow rates of the partial flows from one another are determined herefrom,

d) optionally heating or cooling a conduit ~~(3, 4)~~ during step c) depending on the flow rates of the partial flows determined in step c), in order to modify the flow rates of the partial flows in the conduits ~~(3, 4)~~.

12. The ~~M~~method according to claim 11, characterized in that the method comprises an additional step d) of thermal shock treatment of the extrudate, step d) being carried out after step a) and before entry of the extrudate into the cooling nozzles ~~(11, 12)~~.

13. The ~~M~~method according to claim 12, characterized in that the thermal shock treatment is carried out in a heat exchanger at 150 to 200°C for 1 s to 10 s.

14. The ~~M~~method according to claim 12 or 13, characterized in that the temperature in the cooling nozzle is adjusted depending on the temperature in the heat exchanger.

15. A ~~P~~proteinaceous food item obtainable by the~~a~~ method according to any of claims 11 to 14.