Patent claims

1. A dosing system (1) for a dosing material having a dosing device (5) with a housing (11)~~,~~ comprising a feed channel (80) for dosing material, a nozzle (40), a discharge element (31) and an actuator unit (10) coupled to the discharge element (31) and/or the nozzle (40), and having a dosing material reservoir (70) coupled to the housing (11) or integrated into the housing (11),

- the dosing system (1) having a plurality of temperature control devices (2, 2', 2'') which are each assigned to different temperature zones (6, 6', 6'') of the dosing system (1) in order to control the temperature zones (6, 6', 6'') ~~differently~~to respectively different target temperatures,
- at least one first temperature zone (6) being assigned to the dosing material reservoir (70) and at least one second temperature zone (6'') being assigned to the nozzle (40), and ~~- preferably at least one of the temperature control devices (2, 2', 2''), preferably~~ - at least the temperature control device (2) assigned to the dosing material reservoir (70)~~,~~ comprising a cooling device (3, 3', 3'') having a cold source (93, 93', 95, 99).

2. The dosing system according to claim 1, wherein the cold source (95) of the cooling device (3, 3', 3'') is configured to cool a cooling medium of the cooling device (3, 3', 3'') to a predeterminable temperature and/or wherein the cold source (93, 93') comprises at least one vortex tube (93, 93').

3. The dosing system according to claim 1 ~~or 2~~, having a control unit (50) and/or regulating unit (50) to control and/or to regulate the temperature control device (2, 2', 2'')~~, preferably to regulate the dosing material in the assigned temperature zone (6, 6', 6'') to a target temperature~~.

4. The dosing system according to ~~any one of the preceding~~ claim~~s~~ 1 ~~to 3~~, wherein the temperature control device (2, 2', 2'')~~, preferably at least the temperature control device (2'') assigned to the nozzle (40),~~ comprises a heating device (4, 4', 4'').

5. The dosing system according to claim 4, wherein the temperature control device (2, 2', 2'') is assigned a control unit (50) and/or regulating unit (50) which is configured to separately control and/or to separately regulate the cooling device (3, 3', 3'') and the heating device (4, 4', 4'') of the temperature control device (2, 2', 2'').

6. The dosing system according to ~~any one of the preceding~~ claim~~s~~ 3 ~~to 5~~, wherein the control unit (50) and/or regulating unit (50) is configured to control and/or regulate the temperature control device (2, 2', 2'') for controlling the temperature of the dosing material ~~as a function of~~ based on at least one input parameter~~, preferably a volume flow and/or a temperature and/or a viscosity~~.

7. The dosing system according to claim 6, wherein the temperature control device (2, 2', 2'') is assigned to at least one temperature sensor (88, 88') in the dosing system (1) for generating the input parameter.

8. The dosing system according to ~~any one of the preceding~~ claim~~s~~ 4 ~~to 7~~, wherein the cooling device (3, 3', 3'') and the heating device (4, 4', 4'') of the temperature control device (2, 2', 2'') are ~~configured separately, particularly~~ spatially separated from one another.

9. The dosing system according to ~~any one of the preceding claims~~ claim 1, wherein the dosing system (1) comprises at least one further temperature control device (2') which is assigned to a third temperature zone (6'), ~~which~~ the third temperature zone ~~is~~ being assigned to the feed channel (80) of the dosing system (1).

10. The dosing system according to ~~any one of the preceding claims~~ claim 1, wherein the dosing material reservoir (70) comprises a dosing material supply container (70).

~~11. A method for operating a dosing system (1) for the dosing of dosing material having a dosing device (5) with a housing (11), comprising a feed channel (80) for dosing material, a nozzle (40), a discharge element (31) and an actuator unit (10) coupled to the discharge element (31) and/or the nozzle (40), and having a dosing material reservoir (70) coupled to the housing (11) or integrated into the housing (11),~~

~~- a plurality of temperature zones (6, 6', 6'') of the dosing system (1) being differently controlled by means of a plurality of temperature control devices (2, 2', 2'') of the dosing system (1), the temperature control devices being respectively assigned to different temperature zones (6, 6', 6''),~~

~~- at least one first temperature zone (6) assigned to the dosing material reservoir (70) being controlled differently than a second temperature zone (6'') assigned to the nozzle (40) and~~

~~- preferably at least one of the temperature zones (6, 6', 6''), preferably at least the temperature zone (6) assigned to the dosing material reservoir (70), being controlled by means of a cooling device (3, 3', 3'') of the assigned temperature control device (2, 2', 2'').~~

~~12~~11. The ~~method for operating a~~ dosing system according to claim ~~11~~3, wherein the ~~temperature zone (6'') assigned to the nozzle (40) is controlled so that a temperature of~~ control unit (50) and/or regulating unit (50) regulates the dosing material in ~~this~~ the assigned temperature zone (6~~'') corresponds~~, 6', 6'') to a ~~dosing material processing~~ target temperature.

~~13. The method for operating a dosing system according to any one of the preceding claims 11 or 12, wherein the temperature zone (6) assigned to the dosing material reservoir (70) is controlled such that a temperature of the dosing material in this temperature zone (6) is lower than the temperature of the dosing material in the temperature zone (6'') assigned to the nozzle (40) and/or is lower than an ambient temperature of the dosing system (1), wherein preferably the temperature of the dosing material in a respective temperature zone (6, 6', 6'') is determined as a function of an expected or actual dosing material throughput.~~

~~14. The method for operating a dosing system according to any one of the preceding claims 11 to 13, wherein a temperature zone (6') assigned to a feed channel (80) of the dosing system (1) is controlled so that a temperature of the dosing material in this temperature zone (6') is higher than the temperature of the dosing material in the temperature zone (6) assigned to the dosing material reservoir (70) and/or is lower than a temperature of the dosing material in the temperature zone (6'') assigned to the nozzle (40).~~

~~15. The method for operating a dosing system according to any one of the preceding claims 11 to 14, wherein the cooling device (3, 3', 3'') and a heating device (4, 4', 4'') of the temperature control device (2, 2', 2'') are separately controlled and/or separately regulated for controlling the dosing material to a target temperature.~~

12. The dosing system according to claim 4, wherein the temperature control device (2'') assigned to the nozzle (40) comprises the heating device (4'').

13. The dosing system according to claim 6, wherein the at least one input parameter comprises a volume flow and/or a temperature and/or a viscosity.