~~Patent claims~~ The invention claimed is:

1. A metering system ~~(1)~~ for a metering substance, comprising a nozzle ~~(40)~~, a feed channel ~~(44)~~ for a metering substance, a discharge element, ~~(31)~~ and a piezo actuator ~~(61)~~ coupled to the discharge element ~~(31)~~ and/or the nozzle ~~(40)~~, wherein the piezo actuator ~~(61)~~ is hermetically encapsulated in a housing ~~(62).~~ by being arranged entirely between a housing base and a housing lid along an entire longitudinal extension of the piezo actuator.

2. The metering system according to ~~Claim~~claim 1, wherein the housing ~~module (62)~~ is designed to be vibration fatigue-resistant.

3. The metering system according to claim 1 ~~any one of the preceding claims~~, wherein at least one temperature sensor ~~(78)~~ is arranged inside the housing ~~(62)~~ and/or on an outer side of the housing ~~(62)~~.

4. The metering system according to ~~Claim~~claim 3, wherein at least one temperature sensor ~~(78)~~ is arranged on an outer side ~~(77)~~ of the piezo actuator ~~(61)~~ and/or inside the piezo actuator ~~(61)~~.

5. The metering system according to ~~Claim~~claim 3 ~~or 4~~, wherein at least one temperature sensor ~~(78)~~ is located on an inner wall of the housing ~~(62)~~.

6. The metering system according to claim 1~~any one of the preceding claims~~, wherein at least one strain gauge ~~(87)~~ is arranged inside the housing ~~(62)~~ and/or on an outer side of the housing ~~(62)~~.

7. The metering system according to claim 1~~any one of the preceding claims~~, wherein the housing ~~(62)~~ comprises at least one feed-through ~~(69)~~ for a number of electrical conductors ~~(65)~~.

8. The metering system according to claim 1~~any one of the preceding claims~~, wherein a thermally conducting medium ~~(75)~~ and/or a medium ~~(75)~~ for moisture suppression are located in the housing ~~(62)~~.

9. The metering system according to claim 1~~any one of the preceding claims~~, wherein a pressure compensation zone ~~(76)~~ is located in the housing ~~(62)~~.

10. The metering system according to claim 1~~any one of the preceding claims~~, wherein the housing ~~(62)~~ comprises a heat dissipation zone ~~(68), which is preferably coupled to a cooling device (21, 22, 24, 25, 26, 27, 28, 84, 85) of the metering system (1)~~.

11. The metering system according to ~~Claim~~claim 10, ~~wherein the~~further comprising a cooling device ~~(21, 22, 24, 25, 26, 27, 28, 84, 85)~~ that uses a coolant which comprises a gaseous and/or liquid medium.

12. The metering system according to ~~Claim~~claim 10 ~~or 11~~, ~~wherein the~~ further comprising a cooling device ~~(21, 22, 24, 25, 26, 27, 28, 84, 85)~~ that is designed in such a way that mechanical abrasion debris is removed from an actuator chamber ~~(12)~~ of the metering system ~~(1)~~ by the coolant.

13. ~~Use of a~~ A method of using the piezoceramic actuator ~~(61)~~ hermetically encapsulated ~~in a housing (62)~~ in ~~a~~ the metering system ~~(1)~~ for metering ~~a~~ the metering substance~~, preferably in a metering system (1)~~ according ~~to any one of the preceding claims~~ to ~~Claim~~claim 1.

14. A method for operating ~~a~~ the metering system ~~(1)~~ for metering ~~a~~ the metering substance according to claim 1, the metering system including the ~~having a~~ piezo actuator ~~(61)~~ hermetically encapsulated in ~~a~~the housing ~~(62), preferably for the operation of a metering system (1) according to any one of the preceding Claims 1 to 12, wherein the operation of the metering system (1) is preferably regulated as a function of at least one operating parameter of the encapsulated piezo actuator (61)~~.

15. A method for producing a metering system ~~(1)~~ for metering a metering substance, the metering system including ~~having~~ a piezo actuator ~~(61)~~, wherein the piezo actuator ~~(61)~~ is hermetically encapsulated in a housing~~,~~ ~~(62)~~ and ~~wherein~~ the housing ~~(62)~~ of the piezo actuator ~~(61)~~ is arranged in a housing ~~(11)~~ of the metering system ~~(1)~~.

16. The metering system according to claim 10, wherein the heat dissipation zone is coupled to a cooling device of the metering system.

17. The method for producing the metering system for metering a metering substance according to claim 15, wherein the piezo actuator is hermetically encapsulated in the housing by being arranged entirely between a housing base and a housing lid along an entire longitudinal extension of the piezo actuator.

18. The method for operating the metering system for metering the metering substance according to claim 14, further comprising regulating, as a function of at least one operating parameter of the encapsulated piezo actuator, the operation of the metering system.