1-14. (canceled)

15. An apparatus for monitoring of a predetermined fill level and/or for determining the density or viscosity of a medium in a container, comprising:

an oscillatable unit;

a driver/receiver unit; feedback electronics; and

an evaluation unit, wherein:

said oscillatable unit is placed according to one of the following: at the height of the predetermined fill level, and such that it reaches to a defined immersion depth into the medium,

said driver/receiver unit excites said oscillatable unit to oscillate with a predetermined oscillation frequency via said feedback electronics,

said evaluation unit detects the reaching of the predetermined fill level on the basis of a frequency change and/or an amplitude change of the oscillation of said oscillatable unit,

said evaluation unit determines the density or the viscosity of the medium on the basis of a change of the oscillation of the oscillatable unit, in said oscillation circuit, formed said oscillatable unit and said feedback electronics, a microprocessor is provided, which corrects the phase of said feedback electronics over a predetermined frequency bandwidth in such a manner that the sum of the phases of said feedback electronics and said microprocessor follows a predetermined function f(v).

16. The apparatus as claimed in claim 15, wherein:

the frequency bandwidth preferably extends between the limits of 300 and 1500 Hz.

17. The apparatus as claimed in claim 15, wherein:

the sum of the phases of said feedback electronics and said microprocessor follow a predetermined function f(v)=constant.

18. The apparatus as claimed in claim 17, wherein:

associated with said microprocessor is a memory unit, in which at least one correction value is stored for the phase as a function of frequency.

19. The apparatus as claimed in claim 18, wherein:

said at least one correction value for the phase as a function of frequency is available in said memory unit in the form of a table or in the form of a computational algorithm.

20. The apparatus as claimed in claim 15, further comprising:

an input/display unit, via which the function f(v) can be prespecified.

21. The apparatus as claimed in claim 15, wherein:

said feedback electronics provides said microprocessor with a periodic, preferably rectangular, input signal, which is used by said microprocessor for determining a correction value for the phase.

22. The apparatus as claimed in claim 15, wherein:

said microprocessor evaluates and further processes the signal delivered from said feedback electronics in the time domain.

23. The apparatus as claimed in claim 21, wherein:

said microprocessor determines in a first step, on the basis of the edges of the rectangular input signal (In), the frequency of said oscillation circuit,

said microprocessor determines in a second step the phase correction value associated with the determined frequency, and

said microprocessor issues an output signal with the corrected phase determined in the second step.

24. The apparatus as claimed in claim 15, wherein:

said microprocessor determines the frequency over plural periods of the input signal (In) and performs a frequency weighting.

25. The apparatus as claimed in claim 15, further comprising:

an amplifier circuit, via which an output signal (Out) of said microprocessor is fed to said driver unit for said oscillatable unit.

26. The apparatus as claimed in claim 15, wherein:

said microprocessor additionally assumes the tasks of said evaluation unit and determines the reaching of the predetermined fill level or determines the viscosity or the density of the medium being measured.

27. The apparatus as claimed in claim 21, wherein:

said feedback electronics provides for said microprocessor a signal which is amplitude-proportional to the input signal (In).

28. The apparatus as claimed in claim 15, further comprising:

a further sensor, for instance a temperature sensor for measuring a process variable, said further sensor provides for the microprocessor information regarding the process variable, e.g. regarding the temperature, and wherein:

said microprocessor considers the influence of the process variable in providing a correction value for the phase.

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