Claims

1. A filtering method, with which a fluid to be filtered is led through a filter (4), the filter (4) is back-flushed at predetermined intervals and a pre-treatment agent is added to the fluid at the entry side of the filter (4), characterised in that a process variable which describes the efficiency of the filtration is continuously computed during the filtration, and a metering quantity (DM) of the pre-treatment agent is adjusted in predetermined intervals on the basis of the values for the process variable or a characteristic value derived from the process variable, characterised in that the filtering method is divided into several consecutive filtering cycles which in each case begin with a back-flushing of the filter (4) and end before the beginning of the next back-flushing, wherein a stored process variable is stored for each filtering cycle at a predetermined time of the filtering cycle and/or at the end of the filtering cycle, and a function curve of two or more stored process variables is determined from values of the two or more stored process variables, wherein a gradient value (DIR) of this function curve is determined for each metering step; characterised in that an increase of the gradient value compared to the gradient value of the preceding metering step indicates a worsening of the efficiency of the filtration, and a gradient value which reduces compared to the gradient value of the preceding metering step indicates an improved efficiency of the filtration.

2. A filtering method according to claim 1, characterised in that the metering quantity (DM) is adjusted in metering steps which each comprise a certain number of filtering cycles.

3. A filtering method according to one of the preceding claims, characterised in that the process variable is a relative energy consumption per filtering cycle and which is computed by way of dividing the total energy consumption per filtering cycle by a net permeate volume produced per filtering cycle.

4. A filtering method according to claim 3, characterised in that the total energy consumption per filtering cycle is the sum of the energy necessary per filtering cycle, for the filtering, for the back-flushing and for the metering of the pre-treatment agent, as well as of an energy value representing an equivalent to the pre-treatment agent consumption.

5. A filtering method according to one of the claims 3 or 4, characterised in that the net permeate volume which is produced per filtering cycle is the permeate volume produced per filtering cycle minus a permeate volume which is used per filtering cycle for back-flushing the filter (4).

6. A filtering method according to one of the preceding claims, characterised in that a coarse setting (A) of the metering quantity (DM) is carried out in a first phase of the filtering process, and the metering quantity (DM) in a second phase of the filtering process is optimised in a fine setting (B), starting from a metering quantity (DM) determined with the coarse setting (A).

7. A filtering method according to claim 6, characterised in that the metering quantity (DM) with the coarse setting (A) is increased by the same amount in consecutive metering steps, as long as the stored process variable changes in the same direction to a value representing an optimal process condition of the filtering process, wherein the coarse setting (A) is finished when the stored process variable departs from the value representing the optimal process condition, in the opposite direction.

8. A filtering method according to one of the claims 6 or 7, characterised in that the metering quantity (DM) with the fine setting (B) of the metering is adjusted in each case in consecutive metering steps, wherein it is changed or retained in dependence on the development of a gradient value (DIR).

9. A filtering method according to claim 8, characterised in that the metering quantity (DM) is changed in a variable manner with the metering steps of the fine setting (B), wherein the amount, by which the metering quantity (DM) is changed, is determined on the basis of the tendency of the gradient values (DIR) in the directly preceding metering steps.

10. A filtering method according to claim 8, characterised in that the metering quantity (DM) is retained given a negative value of the gradient value (DIR).

11. A filtering method according to one of the claims 6 to 10, characterised in that the fine setting (B) of the metering quantity (DM) is completed given an abrupt change of the process variable and a renewed coarse setting (A) of the metering quantity (DM) is carried out.

12. A filtering method according to one of the preceding claims, characterised in that the pre-treatment agent is added to the fluid to be filtered with a delay after a back-flushing of the filter (4).

13. A filtering method according to one of the preceding claims, characterised in that the start and the stop of the filtering cycle are determined by monitoring the continuously computed process variable or a process value measured in the filter device.

14. A filtering method according to claim 13, characterised in that a start of a filtering cycle is determined in case the continuously computed process variable or the measured process value decreases rapidly and that a stop of a filtering cycle is determined in case the continuously computed process variable or the measured process value increases rapidly.