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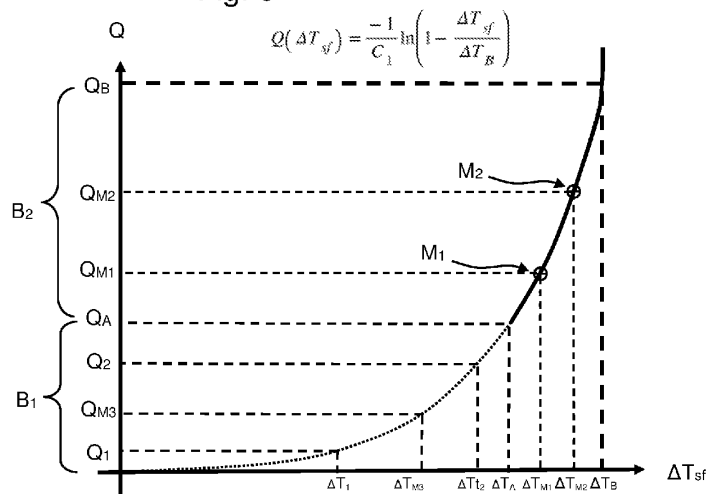


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(54) Title: FLOW SENSOR AND METHOD USING TEMPERATURE TO IMPROVE MEASUREMENTS FOR LOW RATES

Fig. 8



(57) Abstract: A flow sensor (1) configured to measure the flow (Q) of a fluid (26) flowing through a tubular structure (2) is disclosed. The flow sensor (1) comprises a first detection unit (34) that is configured to detect flows (Q) above a predefined lower flow level ( $Q_A$ ) representing the lowest flow ( $Q_A$ ) that can be measured by using the first detection unit (34). The flow sensor (1) comprises a second detection unit (36) that comprises: - a first temperature sensor (12) arranged and configured to detect the temperature ( $T_s$ ) of the surroundings (the ambient temperature); - a second temperature (14) arranged and configured to detect the temperature ( $T_f$ ) of the fluid (26); - a data processor (10) connected to the temperature sensors (12, 15 14). The second detection unit (36) is configured to estimate the flow (Q) below the lower flow level ( $Q_A$ ) on the basis of the temperature difference between the surroundings and a fluid (26). The temperature difference between is measured by the

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first temperature sensor (12) and the second temperature sensor (14). The second detection unit (36) is configured to estimate the flow (Q) below the lower flow level ( $Q_A$ ) on the basis of one or more measurements ( $M_1$ ,  $M_2$ ) made in a flow area ( $B_2$ ), in which the flow sensor (1) can detect the flow (Q) and in which the flow (Q) depends on the temperature difference ( $\Delta T_{sf}$ ). The one or more measurements ( $M_1$ ,  $M_2$ ) made in the flow-calibration-area ( $B_2$ ) are used to determine parameters required to determine how the flow (Q) depends on the temperature difference ( $\Delta T_{sf}$ ) in the flow-calibration-area ( $B_2$ ) and in the flow area ( $B_1$ ) below the flow-calibration-area ( $B_2$ ).