

Title (en)

IMPEDANCE METHOD AND ARRANGEMENT FOR DETERMINING THE COMPOSITION OF A MULTIPHASE MIXTURE

Title (de)

IMPEDANZ-VERFAHREN UND ANORDNUNG ZUR BESTIMMUNG DER ZUSAMMENSETZUNG EINES MEHRPHASENGEMISCHS

Title (fr)

PROCÉDÉ À IMPÉDANCE ET SYSTÈME POUR DÉTERMINER LA COMPOSITION D'UN MÉLANGE MULTIPHASE

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Application

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Abstract (en)

[origin: WO2012168032A1] The invention relates to a method and an arrangement for determining the composition of a multiphase mixture (MG), the multiphase mixture (MG) having at least three phases, in particular mineral oil, water, sand and/or sludge. The multiphase mixture (MG) is conveyed away or led from a delivery point, for example, in a through-flow device (DF), in particular a pipeline. At least two electrodes (E1, E2) for the capacitive measurement of an impedance (Zx) of the multiphase mixture (MG) are fitted to the through-flow device (DF) so as to be insulated electrically from the multiphase mixture (MG), and a changing electric voltage having a defined amplitude is applied to the multiphase mixture (MG) by a voltage source (VQ), wherein a frequency of said voltage can be adjusted. Then, with the aid of a reference impedance (Zref), a capacitive measurement of the impedance (Zx) of the multiphase mixture (MG) is carried out (2) via the electrodes (E1, E2). By using a measuring unit (ME), a variation in the impedance that depends on a frequency is then determined and impedance spectra are derived (3) from the variation in the impedance (Zx). Then, by means of an evaluation unit (AW), via an evaluation of the impedance spectra, for example by using partial least squares regression, proportions by volume of the respective phase in the multiphase mixture (MG) are derived (4). The method and the associated arrangement have the advantage in particular that interference caused by electrochemical reactions between electrodes (E1, E2) and multiphase mixture (MG) is prevented and therefore the measurement is very robust and can be used flexibly.

IPC 8 full level

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