

Title (en)

MEASUREMENT DEVICE FOR MOISTURE CONTENT IN SUPERCRITICAL ENVIRONMENTS

Title (de)

VORRICHTUNG ZUR MESSUNG DES FEUCHTIGKEITSGEHALTS IN ÜBERKRITISCHEN UMGEBUNGEN

Title (fr)

DISPOSITIF DE MESURE DE LA TENEUR EN HUMIDITÉ DANS DES ENVIRONNEMENTS SUPERCRITIQUES

Publication

EP 4143565 A1 20230308 (EN)

Application

EP 21722219 A 20210429

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Abstract (en)

[origin: WO2021219816A1] The moisture content plays an important role in drying, extraction, impregnation and reaction in liquid and supercritical CO₂. Current measuring solutions lack the accuracy, especially over time, to measure the water content. This may negatively impact the quality of the product and/or make the process much less efficient. The invention is a measurement device for measuring a ratio of (i) an amount of a first fluid in a supercritical state or liquid state and (ii) an amount of a second fluid in said first fluid, wherein the first fluid and the second fluid form a mixture, wherein the mixture is in a pressure vessel, wherein the pressure vessel has a vessel pressure and a vessel temperature, wherein the second fluid is water, and wherein the measurement device comprises: a heater arranged for receiving a sample stream of the mixture, and for heating the sample stream to a set temperature; a pressure reducing element provided downstream of the heater for adiabatic expansion of the sample stream, wherein the expanded sample stream has an expanded pressure and an expanded temperature; a humidity sensor arranged downstream of the pressure reducing element providing a humidity sensor value representing a humidity in the expanded sample stream; and a processor arranged for: receiving the humidity sensor value; adapting the set temperature for heating the sample stream to the adapted set temperature with the heater when the humidity sensor value is outside a humidity range having a minimum humidity value and a maximum humidity value; and calculating the ratio based on the humidity sensor value.

IPC 8 full level

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CPC (source: EP)

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