

Title (en)

METHOD AND DEVICE FOR NON-INVASIVE MEASUREMENT OF THE VELOCITY OF A GAS OR LIQUID

Title (de)

VERFAHREN UND VORRICHTUNG ZUR NICHTINVASIVEN MESSUNG DER GESCHWINDIGKEIT EINES GASES ODER EINER FLÜSSIGKEIT

Title (fr)

PROCEDE ET DISPOSITIF POUR LA MESURE NON INVASIVE DE LA VITESSE D'UN GAZ OU D'UN LIQUIDE

Publication

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Application

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Abstract (en)

[origin: DE19829940A1] The invention relates to a method for non-invasive measurement of the velocity of a gas or a liquid in a test site, comprising the following steps: l) energizing the atoms and/or molecules present in the gas or liquid to an excited atom or molecule state using a first focused pulsed light beam of a light source in the test site; j) after a time interval DELTA t has elapsed, that is at least as long as the time required for the excited atoms and/or molecules to return to a metastable state by means of relaxation, the atoms and/or molecules in metastable state are selectively energized to an excited atom or molecule state using a second pulsed light beam of the light source irradiating the test site and the assumed momentary location of the spatial area containing the atoms and/or molecules and having a lower intensity in relation to the first light beam, so that a characteristic luminescence is generated; k) detecting the characteristic luminescence of the selectively excited atoms and/or molecules and determining the coordinates of the test site and the emergence of luminescence (luminescent cloud) in an image field and l) calculating the speed v of the gas or liquid on the basis of the distance s between the test site and the central point of the luminescence cloud and the time interval DELTA t as follows: $v = s / \text{DELTA } t$.

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