

Title (en)
UNIAXIAL THERMAL AND/OR MECHANICAL DEFORMATION-MEASURING DEVICE, SYSTEM AND METHOD EMPLOYING A BRAGG GRATING OPTICAL FIBRE

Title (de)
VORRICHTUNG,SYSTEM UND VERFAHREN ZUM MESSEN VON UNIAXIALEN MECHANISCHEN UND/ODER THERMISCHEN DEFORMATIONEN MITTELS EINES MIT EINEM BRAGG GITTER VERSEHENEN OPTISCHEN FASERS

Title (fr)
DISPOSITIF, SYSTEME ET PROCEDE DE MESURE DE DEFORMATIONS MECANIQUES ET/OU THERMIQUES UNIAXIALES AU MOYEN D UNE FIBRE OPTIQUE A RESEAU DE BRAGG

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Application
EP 04742687 A 20040507

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Abstract (en)
[origin: WO2004099713A2] The invention relates to a uniaxial deformation-measuring device consisting of: a section of optical fibre comprising at least one Bragg grating which is aligned with the direction of the measurement axis; and a test body which is subjected to the deformations to be measured and which transmits same to the section of optical fibre. The inventive device is characterised in that: (i) fixing points, which are designed to subject the fibre section to a negative, positive or zero preload and to transmit the elongations experienced in the test body thereto, are separated by a distance (L_{fib}) presenting a variation ($<L_{fib}$) when the test body is stressed by the deformation to be measured; (ii) the effective length (L_{ce}) of the test body presents an elongation ($?L_{ce}$) when the test body is stressed by the deformation to be measured; and the length (L_{fib}) of the section of optical fibre and the effective length (L_{ce}) of the measurement body are such that the longitudinal deformation ($?L_{fib}/L_{fib}$) experienced by the section of optical fibre is strictly greater than the originating deformation ($?L_{ce}/L_{ce}$) of the test body, thereby defining an amplification factor K which is strictly greater than 1 and which is equal to the quotient ($?L_{fib}/L_{fib}$) / ($?L_{ce}/L_{ce}$) at the first order.

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Citation (search report)
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Cited by
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