

Title (en)
Elongation sensor and method for measuring the elongation of a textile

Title (de)
Dehnungssensor und Verfahren zum Messen einer Dehnung eines Textils

Title (fr)
Capteur d'extension et procédé de mesure d'une extension d'un textile

Publication
EP 2441867 A1 20120418 (DE)

Application
EP 10013726 A 20101018

Priority
EP 10013726 A 20101018

Abstract (en)
Expansion sensor for measuring expansion of a textile, comprises at least one yarn (12) exhibiting expansibility, where the yarn exhibits at least two electrically conductive layers (30, 32) arranged around a central cylindrical carrier which forms an insulator (20) and extending along a longitudinal direction of the yarn, and the electrically conductive layers are spatially separated and isolated from each other. The conductive layers are opposite to each other extending along the longitudinal direction of the yarn and are separated from each other by intermediate spaces (34). Expansion sensor (10) for measuring expansion of a textile (40), comprises at least one yarn (12) exhibiting expansibility, where the yarn exhibits at least two electrical conductive layers (30, 32) arranged around a central cylindrical carrier which forms an insulator (20) and extending along a longitudinal direction of the yarn, and the electrically conductive layers are spatially separated and isolated from each other. The conductive layers, arranged around the central support, are opposite to each other extending along the longitudinal direction of the yarn and are separated from each other by an intermediate spaces (34) extending along the longitudinal direction of the yarn. Independent claims are also included for: (1) a textile comprising the expansion sensor, which is incorporated preferably by weaving or knitting; and (2) measuring the expansion of the textile, comprising (a) incorporating at least one expandable yarn into the textile, where the yarn exhibits at least two electrical conductive layers arranged around a cylindrical shape central carrier, which forms an insulator and extending along a longitudinal direction of the yarn, preferably extending parallel to each other, and the electrical conductive layers are spatially separated and isolated from each other, and (b) measuring a change in the capacitance of a capacitor formed by the conductive layers or a change in an electrical resistance of a conductor path, formed by the conductive layers, for determining the expansion of the textile.

Abstract (de)
Die Erfindung betrifft einen Dehnungssensor (10), insbesondere zum Messen einer Dehnung eines Textils, mit mindestens einem Garn (12), welches eine Dehnbarkeit aufweist und wobei das Garn mindestens zwei elektrisch leitfähige Schichten (30,32) umfasst, die sich entlang einer Längsrichtung des Garns erstrecken, wobei die elektrisch leitfähigen Schichten räumlich (34) voneinander getrennt und gegeneinander isoliert sind.

IPC 8 full level
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D02G 3/36 (2013.01 - EP US); **D02G 3/441** (2013.01 - EP US); **D06M 11/83** (2013.01 - EP US); **D10B 2401/06** (2013.01 - EP US)

Citation (search report)

- [X] DE 102008003122 A1 20090709 - OFA BAMBERG GMBH [DE]
- [X] EP 0013952 A1 19800806 - AKZO GMBH [DE]
- [X] US 2009181592 A1 20090716 - DUGAN JEFFREY S [US]
- [A] US 2009282671 A1 20091119 - TAO XIAOMING [HK], et al
- [I] CN 100484469 C 20090506 - UNIV DONGHUA [CN]
- [I] US 2005231207 A1 20051020 - GOLDWATER DAN [US], et al
- [I] US 2007171024 A1 20070726 - YANG CHANG MING [TW], et al
- [A] EP 2236654 A1 20101006 - ELECTRONICA SANTAMARIA S L [ES]
- [A] GIBBS PETER T ET AL: "Wearable Conductive Fiber Sensors for Multi-Axis Human Joint Angle Measurements", JOURNAL OF NEUROENGINEERING AND REHABILITATION, BIOMED CENTRAL, LONDON, GB, vol. 2, no. 1, 2 March 2005 (2005-03-02), pages 7, XP021010819, ISSN: 1743-0003, DOI: 10.1186/1743-0003-2-7

Cited by
CN107192489A; WO2016112691A1

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