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(54) Title: DETERMINING DELAY TIMES FOR ULTRASONIC FLOW METERS

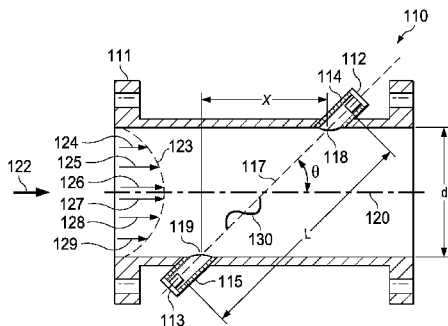


FIG. 1A

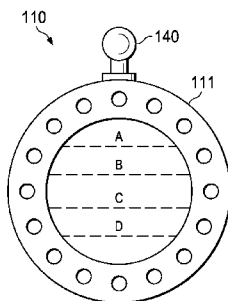


FIG. 1B

(57) Abstract: A system and method for calibrating an ultrasonic flow meter. In one embodiment, a method includes disposing a fluid circulating device within a flow meter. Fluid is circulated in the flow meter by operation of the fluid circulating device. An acoustic signal transit time within the flow meter is measured during the circulating. Based on the measuring, a portion of the acoustic signal transit time caused by latency induced by components of the flow meter is determined.

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GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

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PCT/US2012/021825**A. CLASSIFICATION OF SUBJECT MATTER****G01F 25/00(2006.01)i, G01F 1/66(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G01F 25/00; G01F 1/66

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: ultrasonic flow meter, fan, agitate, circulate, time, transit, acoustic signal, chamber, flange, logic

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 7624651 B2 (MARK FERNALD et al.) 01 December 2009 See column 5, line 3 - column 13, line 7; abstract and figures 1-15.	1 2-23
A	US 2006-0156828 A1 (UWE KONZELMANN et al.) 20 July 2006 See paragraph [0004] - paragraph [0058]; abstract and figures 1-7.	1-23
A	US 7823463 B1 (MURRAY F FELLER) 02 November 2010 See abstract and figures 1-8.	1-23

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

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07 AUGUST 2012 (07.08.2012)

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7624651 B2	01.12.2009	US 2008-0098818 A1	01.05.2008
US 2006-0156828 A1	20.07.2006	DE 102004060065 A1	29.06.2006
		IT MI20052369A1	15.06.2006
		US 7252015 B2	07.08.2007
US 7823463 B1	02.11.2010	US 7841243 B1	30.11.2010
		US 7870793 B1	18.01.2011