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1) Family number: 54048004 (US2015006092A)

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Title: DEVICE AND METHOD FOR DETERMINING THE MASS-FLOW OF A FLUID

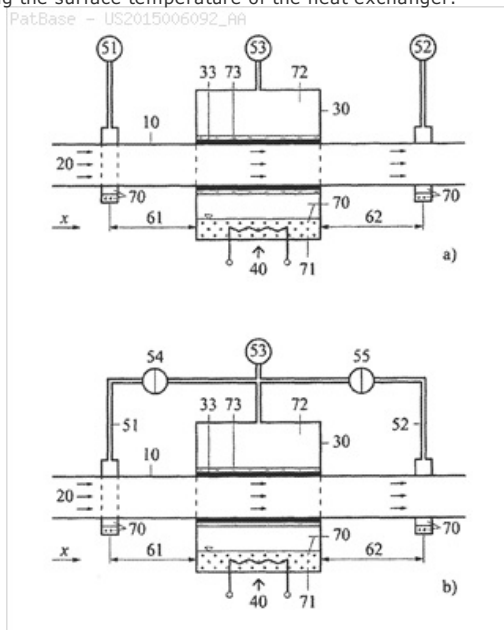
Abstract: A device for determining the mass flow of a fluid includes a line for conducting the fluid in a flow direction to a contact with a heat exchanger. The heat exchanger has a surface temperature which is constant in the flow direction. The device also includes a first temperature measuring position upstream from the exchanger for determining a first fluid temperature, a second temperature measuring position downstream from the heat exchanger for determining a second fluid temperature, and a third temperature measuring position for detecting the surface temperature of the heat exchanger.

Classifications:

International (IPC 8-9): G01F1/68 G01F1/684 G01F1/688 G01F1/69 G01F1/696 G01F1/698 G01F1/699 (Advanced/Invention)

CPC: G01F1/684 G01F1/6847 G01F1/6888 G01F1/696 G01F1/699 G01F1/6842

US: 702/45



Family:

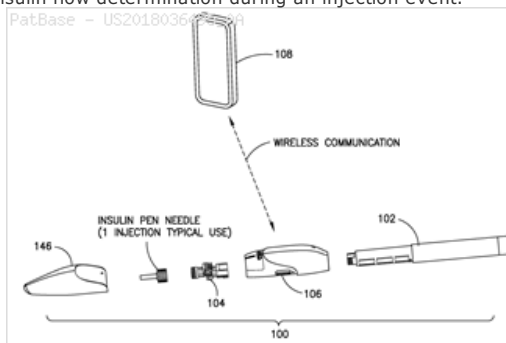
Publication number	Publication date	Application number	Application date
AU2012351141 AA	20130620	AU20120351141	20121207
AU2012351141 AA	20140703	AU20120351141	20121207
AU2016200479 AA	20160310	AU20160200479	20160127
AU2016200479 BB	20170309	AU20160200479	20160127
CA2857065 AA	20140527	CA20122857065	20121207
CA2857065 C	20190827	CA20122857065	20121207
DE102011120899 A1	20130613	DE201110120899	20111212
DE102011120899 B4	20150820	DE201110120899	20111212
DE502012010074 D1	20170524	DE201250010074T	20121207
EP2791629 A1	20141022	EP20120808676	20121207
EP2791629 B1	20170412	EP20120808676	20121207
JP2015500490 T2	20150105	JP20140546347T	20121207
JP6042449 B2	20161214	JP20140546347T	20121207
KR101940360 B1	20190118	KR20147017781	20121207
KR20140104976 A	20140829	KR20147017781	20121207
US2015006092 AA	20150101	US20120364681	20121207
US9964423 BB	20180508	US20120364681	20121207
WO13087174 A1	20130620	WO2012EP05051	20121207

Priority:

DE201110120899 20111212 AU20120351141 20121207 WO2012EP05051 20121207
EP20120808676 20121207 AU20160200479 20160127

Probable Assignee: KARLSRUHER INST FUR TECHNOLOGIE**Assignee(s):** (std): GROHMANN STEFFEN ; KARLSRUHER INST F TECH ; KARLSRUHER INST F TECH KIT ; KARLSRUHER INST F TECHNOLOGIE ; KARLSRUHER INST TECHNOLOGIE ; KARLSRUHER INST FUR TECHNOLOGIE ; KARLSRUHER INST F TECHNOLOGIE KIT ; KARLSRUHER INST FUR TECH**Assignee(s):** KARLSRUHER INST FUR TECHNOLOGIEKAISERSTRASSE 1276131KARLSRUHEDE ; KARLSRUHER INSTITUT FUER TECHNOLOGIE**Inventor(s):** (std): GROHMANN STEFFEN**Inventor(s):** GROHMANN STEFFENDE**Agent(s):** FB RICE; FB RICE PTY LTD; FETHERSTONHAUGH AND CO; LEYDIG VOIT AND MAYER LTD; KARLSRUHER INSTITUT FUER TECHNOLOGIE**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**2) Family number: 68497013 (US2018036495A)**

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Title: SYSTEM AND METHOD FOR MEASURING DELIVERED DOSE**Abstract:** A flow sensor is provided to enable volumetric dose data to be acquired automatically by sampling flow rates of insulin measured by a flow sensor exposed to a flow manifold through which the insulin flows. The flow sensor preferably connects to a standard insulin pen on one end, and to a standard pen needle on the other end. Particular geometries and algorithms are utilized to accommodate the unique requirements of insulin flow determination during an injection event.**Classifications:****International (IPC 8-9):** A61M5/00 A61M5/142 A61M5/168 A61M5/172 A61M5/20 A61M5/31 A61M5/315 A61M5/32 A61M5/48 G01F1/00 G01F1/38 G01F1/684 G01F1/696 G01K7/22 (Advanced/Invention)**CPC:** A61M5/16886 A61M2205/3379 G01F1/38 G01K7/22 A61M5/16804 A61M5/16831 A61M5/20 A61M2205/3331 A61M2205/3569 A61M5/3286 A61M5/482**US:** 1/1 604/67**Family:**

Publication number	Publication date	Application number	Application date
CA3030883 AA	20190114	CA20173030883	20170725
CN107670147 A	20180209	CN201710650655	20170802
CN208693927 U	20190405	CN201720959598U	20170802
EP3493863 A1	20190612	EP20170837403	20170725
JP2019524277 T2	20190905	JP20190505419T	20170725
US2018036495 AA	20180208	US20160226638	20160802
US2019167919 AA	20190606	US20180050187	20180731
US10052441 BB	20180821	US20160226638	20160802
WO18026573 A1	20180208	WO2017US43677	20170725

Priority:

US20160226638 20160802 WO2017US43677 20170725 US20180050187 20180731

Probable Assignee: BECTON DICKINSON CO**Assignee(s):** (std): BECTON DICKINSON CO**Assignee(s):** BURKE ANDREW ; COSTELLO PETER ; SEARLE GARY ; FOCHT KENNETH ; ROSS FRANCIS L ; BECTON DICKINSON AND CO**Inventor(s):** (std): ROSS FRANCIS L ; SEARLE GARY ; COSTELLO PETER ; BURKE ANDREW ; FOCHT KENNETH ; ANDREW BURKE ; FRANCIS L ROSS ; KENNETH FOCHT ; GARY SEARLE ; PETER COSTELLO**Agent(s):** GOWLING WLG CANADA LLP; DOMPATENT VON KREISLER SELTING WERNER PARTNERSCHAFT VON PATENT U RECHTSANWALTEN MBB; TANI AND ABE PC; DICKINSON WRIGHT PLLC; HOLMES JOHN E ET AL**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**3) Family number: 4765041 (US4519246A)**

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Title: Improved flow meter**Abstract:** An improved mass flow meter is disclosed for measuring the flow rate of a fluid through a thin walled sensor tube that has the feature of high sensitivity to the temperature of the fluid within the sensor tube. The sensor tube is wound with closely coupled resistance elements of insulated wire. Measurement is accomplished with a conventional bridge connection to

the sensor resistance elements. The bridge is designed to remain in balance over a wide range of ambient temperature at a zero flow rate. Fluid flow through the sensor tube upsets the uniform temperature gradient with heat loss being greater upstream so that the balance of the sensor resistance elements installed or coupled to the sensor tube (which elements are heated by a power supply) is progressively upset with increasing flow. External heat loss is reduced (thereby providing greater temperature sensing ability) by surrounding the sensor tube with a polyester fiber insulating material covered with a metallic heat shield and by connecting the flow meter into the fluid stream through thermal insulating couplings.

Classifications:

International (IPC 8-9): G01F1/684 (Advanced/Invention);

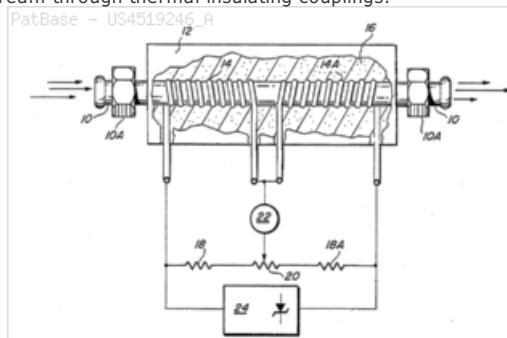
G01F1/684 (Core/Invention)

International (IPC 1-7): G01F1/68

CPC: G01F1/6847

European: G01F1/684N

US: 73/202.5 73/204.22 73/204.27



Family:

Publication number	Publication date	Application number	Application date
US4519246 A	19850528	US19810332557	19811221

Priority:

US19810332557 19811221

Probable Assignee: ADVANCED SEMICONDUCTOR MAT

Assignee(s): (std): ADVANCED SEMICONDUCTOR MAT

Assignee(s): ADVANCED SEMICONDUCTOR MATERIAL INT ; ADVANCED SEMICONDUCTOR MATERIALS INTERNATIONAL N V

Inventor(s): (std): HARTEMINK GERRIT A

4) Family number: 56730100 (US2015316401A)

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Title: THERMAL, FLOW MEASURING APPARATUS AND METHOD FOR DETERMINING AND/OR MONITORING FLOW OF A MEDIUM

Abstract: A thermal, flow measuring apparatus for determining and/or monitoring flow of a measured medium through a measuring tube, comprising at least two temperature sensors, wherein a first temperature sensor is heatable, and a second temperature sensor serves to provide the temperature of the measured medium. According to the invention, the thermal, flow measuring apparatus has at least one measuring transducer for ascertaining the following properties of the medium: thermal conductivity, heat capacity, density and dynamic viscosity or thermal conductivity, thermal diffusivity, density and dynamic viscosity.

Classifications:

International (IPC 8-9): G01F1/68 G01F1/684 G01F1/69 G01F1/696

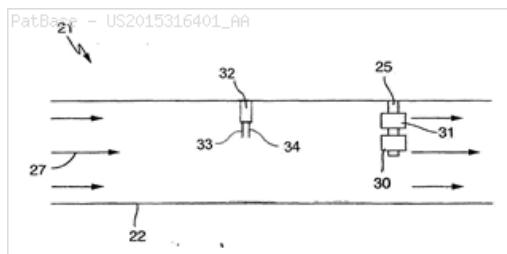
G01F15/02 G01F25/00 G01F5/00 G01K17/08 G01N25/18

G01N27/18 (Advanced/Invention)

CPC: G01F1/6842 G01F1/69 G01F5/00 G01F15/02 G01F15/022

G01N27/18 G01N25/18 G01F1/696 G01F1/684

US: 73/204.11



Family:

Publication number	Publication date	Application number	Application date
DE102013105992 A1	20140703	DE201310105992	20130610
DE102013105993 A1	20140703	DE201310105993	20130610
EP2932205 A1	20151021	EP20130802347	20131206
US2015316401 AA	20151105	US20130651289	20131206
WO14090557 A1	20140619	WO2013EP74574	20131125
WO14090691 A1	20140619	WO2013EP75739	20131206

Priority:

DE201210112305 20121214

DE201310105992 20130610

DE201310105993 20130610

WO2013EP75739 20131206

Probable Assignee: ENDRESS AND HAUSER FLOWTEC AG

Assignee(s): (std): FLOWTEC AG

Assignee(s): ENDRESS AND HAUSER FLOWTEC AG

Inventor(s): (std): PFAU AXEL ; POPP OLIVER ; BADARLIS ANASTASIOS ; STEINHOFF FRANK

Agent(s): ANDRES ANGELIKA MARIA; ANDRES ANGELIKA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

5) Family number: 49769133 (US20111252881A)

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Title: SENSOR ARRANGEMENT FOR A CALORIMETRIC MASS FLOWMETER

Abstract: A sensor arrangement including a probe and a bracket that are provided for a calorimetric mass flow meter for measuring the mass flow in a measuring tube. The probe is mounted in the bracket in such a manner that the probe is guided essentially without contact with a radial spacing through a probe recess a wall of the measuring tube and is positioned in a cross section of a flow-through area of the flow of the measuring tube. The bracket is designed in such a manner that the probe is thermally de-coupled from the measuring tube. The sensor arrangement for the calorimetric mass flow meter is capable of increasing the measuring accuracy and increasing the flexibility during operation.

Classifications:

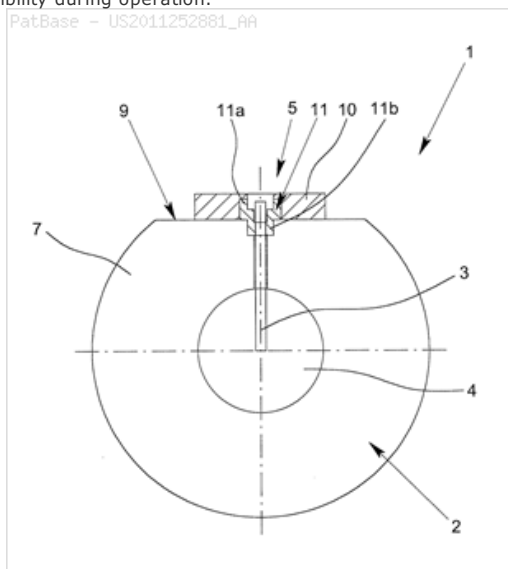
International (IPC 8-9): G01D21/00 G01F1/68 G01F1/684

G01F1/688 (Advanced/Invention)

CPC: G01F1/684

European: G01F1/684

US: 73/204.22 73/204.23 73/204.230P 73/866.5



Family:

Publication number	Publication date	Application number	Application date
■ CN102288237 A	20111221	CN201110121424	20110420
■ DE102010015813 A1	20111020	DE201010015813	20100420
■ EP2395329 A2	20111214	EP20110002965	20110408
■ EP2395329 A3	20120502	EP20110002965	20110408
■ JP2011227083 A2	20111110	JP20110094139	20110420
■ US2011252881 AA	20111020	US20100956346	20101130
■ US8544352 BB	20131001	US20100956346	20101130

Priority:

DE201010015813 20100420

Probable Assignee: KROHNE MESSTECHNIK GMBH

Assignee(s): (std): GLATZEL MICHAEL ; KROHNE MESSTECHNIK GMBH ; KROHNE MESSTECHNIK GMBH AND CO KG ; KUBE JOERG ; SEIDEL ANDREAS ; RHODE MARC

Inventor(s): (std): SEIDEL ANDREAS ; GLATZEL MICHAEL ; RHODE MARC ; KUBE JOERG ; JOERG CUBE ; MARK ROHDE ; ANDREAS SEIDEL ; MICHAEL GRAZER

Agent(s): GESTHUYSEN VON ROHR AND EGGERT; DAVID S; ROBERTS MLOTKOWSKI SAFRAN AND COLE PC

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

6) Family number: 6067179 (US4501144A)

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Title: Flow sensor

Abstract: A flow sensor comprising a pair of thin film heat sensors and a thin film heater is disclosed. A base supports the sensors and heater out of contact with the base with the sensors disposed on opposite sides of the heater and closely adjacent thereto.

Classifications:

International (IPC 8-9): G01F1/00 G01F1/68 G01F1/684 G01F1/696

G01F1/698 G01F1/699 G01N27/414 G01P5/12 H01L21/306

H01L21/82 H01L27/16 H01L29/04 (Advanced/Invention);

G01F1/00 G01F1/684 G01F1/696 G01N27/403 G01P5/10 H01L21/02

H01L29/02 (Core/Invention)

International (IPC 1-7): B32B3/14 B44C1/22 C03C25/06 G01F1/00

G01F1/68 G01P5/10 H01L21/306 H01L21/82 H01L27/16

CPC: H01L29/045 G01F1/684 G01F1/6842 G01F1/696 G01F1/699

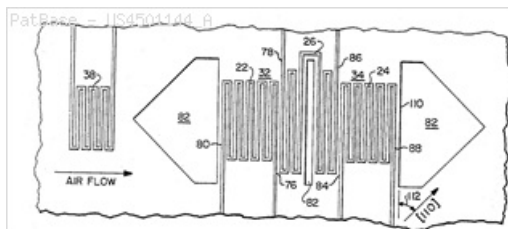
H01L21/30608 G01F1/6845 G01F1/698 Y10T428/24331

Y10T428/24926

European: G01F1/684 G01F1/684C G01F1/684M G01F1/696

G01F1/698 G01F1/699 G01N27/414 H01L21/306B3 H01L29/04B

US: 257/419 428/138 428/210 428/446 428/700 73/204 73/204.22 73/204.26



Family:

Publication number	Publication date	Application number	Application date
■ CA1197707 A1	19851210	CA19830433929	19830804
■ CA1236931 A1	19880517	CA19850484981	19850624
■ DE3584197 D1	19911031	DE19853584197	19850720
■ EP0169519 A2	19860129	EP19850109095	19850720
■ EP0169519 A3	19870812	EP19850109095	19850720
■ EP0169519 B1	19910925	EP19850109095	19850720

EP0172669 A1	19860226	EP19850305273	19850724
JP2613760 B2	19970528	JP19850163107	19850725
JP61053733 A2	19860317	JP19850163107	19850725
US4501144 A	19850226	US19820429598	19820930
US4548078 A	19851022	US19840634088	19840725
US4683159 A	19870728	US19860876651	19860617

Priority:

US19820429598 19820930 CA19830433929 19830804 US19840634088 19840725
US19840634087 19840725 US19840635877 19840730 CA19850484981 19850624
US19850798725 19851118 US19860876651 19860617

Probable Assignee: HONEYWELL INC

Assignee(s): (std): HONEYWELL INC

Assignee(s): HONEYWELL INC MINNEAPOLIS MINN US ; JOHNSON ROBERT G ; BOHRER PHILIP J ; HIGASHI ROBERT E

Inventor(s): (std): FUJITSUPU JIEI BOOREE ; ROBAATO JII JYONSON ; ROBAATO II HIGASHI ; BROSE ERNEST F ; SATREN ERNEST ; JOHNSON ROBERT G ; HIGASHI ROBERT E ; BOHRER PHILIP J

Inventor(s): HIGASHI ROBERT E BLOOMINGTON MINNESOTA 55420 US ; BOHRER PHILIP J MINNEAPOLIS MINNESOTA 55410 US ; JOHNSON ROBERT G MINNETONKA MINNESOTA 55343 US

Agent(s): SMART AND BIGGAR

Designated states: DE FR GB NL SE

7) Family number: 11077213 (US5191793A)

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Title: Fluid mass flow meter device with reduced attitude sensitivity

Abstract: Reduced attitude sensitivity is achieved in a fluid mass flow meter of the type which determines fluid flow from the temperature difference between an upstream sensor and a downstream sensor positioned along the flow path of the fluid externally of a sensing conduit for the fluid. A housing, taking particular forms, has wall structure spaced along the sensors adapted to substantially limit the ambient gaseous atmosphere along the sensors to a thin film. The housing wall structure further is spaced along portions of the sensing conduit between the sensors and the input and output ports of the conduit to substantially limit the ambient gaseous atmosphere along such portions to a thin film. In one form, such wall structure, along these portions, converges from both directions along the conduit, to provide support regions for the conduit. The sensors, specifically, are self-heating coil elements formed of temperature-sensitive resistance wire wound around the outside of the sensing conduit. They are incorporated into a bridge-type circuit for sensing their temperatures.

Classifications:

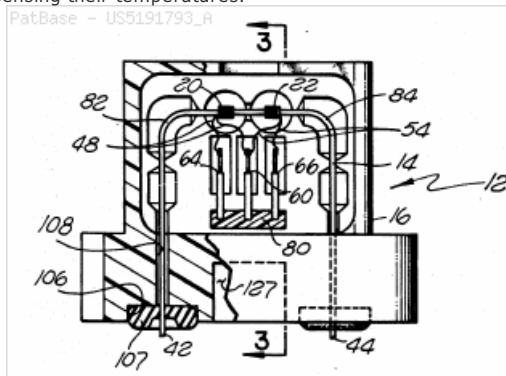
International (IPC 8-9): G01F1/684 (Advanced/Invention); G01F1/684 (Core/Invention)

International (IPC 1-7): G01F1/68

CPC: G01F1/6847

European: G01F1/684N

US: 73/204.22 73/204.25



Family:

Publication number	Publication date	Application number	Application date
US5191793 A	19930309	US19920912007	19920710

Priority:

US19840588586 19840312 US19860834150 19860226 US19870009008 19870130
US19880150463 19880205 US19880283050 19881206 US19920912007 19920710

Probable Assignee: BROOKS INSTRUMENT LLC

Assignee(s): (std): TYLAN CORP

Assignee(s): TYLAN GENERAL INC ; TYLAN GENERAL TCA CORP ; MILLIPORE CORP ; MYKROLIS CORP ; GMAC COMMERCIAL FINANCE LLC ; OBSIDIAN LLC ; MILLIPORE A MASSACHUSETTS CORP ; TYLAN GENERAL INC A DELAWARE CORP ; BANK OF NEW YORK ; BROOKS INSTRUMENT LLC ; CELERITY HOLDING CO INC ; CELERITY INC ; CELERITY SYSTEMS INC ; ENTEGRIS INC

Inventor(s): (std): DREXEL CHARLES F ; BLAIR RICHARD F

8) Family number: 31030215 (US2004099050A)

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Title: MACHINE FLUID SENSOR AND METHOD

Abstract: A method for analyzing a fluid contained within a machine, comprising the steps of providing a machine including a passage for containing a fluid; placing a sensor including a mechanical resonator in the passage; operating the resonator to have a portion thereof translate through the fluid; and monitoring the response of the resonator to the fluid in the passage. A preferred sensor includes a tuning fork resonator.

Classifications:

International (IPC 8-9): F02D45/00 F25B41/04 F25B49/00 G01B9/02 G01F23/00 G01F23/22 G01F23/296 G01L7/00 G01N11/00 G01N11/10 G01N11/16 G01N19/02 G01N24/00 G01N27/00 G01N29/00 G01N29/02 G01N29/03 G01N29/036 G01N29/22 G01N29/30 G01N29/34 G01N29/36 G01N29/44 G01N3/56 G01N31/00 G01N33/28 G01N33/487 G01N9/00 G01N9/10 G01R27/00 G06F19/00 H03H3/02

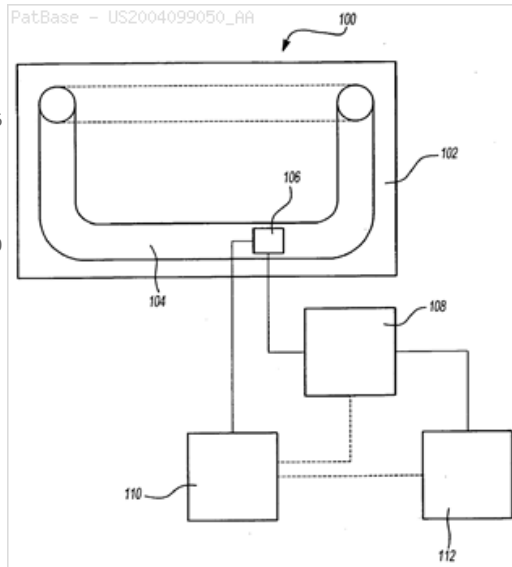
H04R17/00 H04R31/00 (Advanced/Invention);
G01N11/16 G01N33/28 G01N33/30 G01N35/00 G01N35/08
G01N9/00 (Advanced/Non-invention);
F02D45/00 F25B49/00 G01B9/02 G01F23/00 G01F23/296 G01L7/00
G01N11/00 G01N11/10 G01N19/02 G01N27/00 G01N29/00
G01N29/02 G01N29/22 G01N29/34 G01N29/36 G01N29/44 G01N3/56
G01N31/00 G01N33/26 G01N33/487 G01N9/00 G01R27/00
G06F19/00 H04R17/00 (Core/Invention);
G01N33/26 (Core/Non-invention)

International (IPC 1-7): F25B49/00 G01F23/296 G01L7/00
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G01N33/487 G01N9/00 G06F19/00 H03H3/02

CPC: G01N33/28 G01N29/022 G01N35/085 G01N2035/00237
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Y10T29/4908 G01F23/2966 G01N2009/006 G01N2291/0427

European: F02D41/02C G01F23/296H G01F23/296H2 G01F23/296T
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S01N9/00B S01N9/00B2

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331/158 333/186 333/187 333/200 356/478 62/125 62/129 62/131 62/225 702/25 702/50 702/50P 702/52 702/54 702/57
73/10 73/24.01 73/24.06 73/31.06 73/32A 73/53.01 73/53.010 73/53.05 73/54.01 73/54.010 73/54.41 73/570 73/570P
73/61.45 73/61.450P 73/61.49 73/64.42 73/64.53 73/64.530 73/64.530P 73/64.530S



Family:

Publication number	Publication date	Application number	Application date
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AT401565 E	20080815	AT20040757933T	20040319
AT546720 E	20120315	AT20040757919T	20040319
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US2004099050 AA	20040527	US20030452264	20030602
US2004107055 AA	20040603	US20030394543	20030321
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US2004250622 AA	20041216	US20040804379	20040319
US2005145019 AA	20050707	US20040951252	20040927
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US2005209796 AA	20050922	US20050122892	20050504
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WO04086029 A3	20050324	WO2004US08555	20040319
WO04086027 A3	20050609	WO2004US08526	20040319

Priority:

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WO2004US08555 20040319	US20040951252 20040927	US20050059130 20050215
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US20070837415 20070810	US20080059801 20080331	US20100783397 20100519

Probable Assignee: MEAS FRANCE

Assignee(s): (std): DALES G CAMERON ; GUAN SHENHENG ; FELAND JOHN ; DOBRINSKI HEIKO ; HELLA HUECK AND CO KG ; GAMMER VLADIMIR ; HELLA KG HUECK AND CO ; HELLA KGAA HUECK AND CO ; FELAND III JOHN M ; PINKAS DANIEL M ; SPITKOVSKY MIKHAIL ; UHRICH MARK D ; SYMYX TECHNOLOGIES INC ; KOLOSOV OLEG ; MATSIEV LEONID ; LUDTKE OLAF ; KOLOSOV OLEG V ; SPITOVSY MIKHAIL B ; PADOWITZ DAVID ; BENNETT JAMES ; BUHRDORF ANDREAS ; RUST WILLIAM ; MEAS FRANCE ; VARNI JOHN F ; WULLNER DIRK ; VISYX TECHNOLOGIES INC ; WALKER BLAKE

Assignee(s): MEASUREMENT SPECIALITIES INC ; DALES G ; SYMX TECHNOLOGIES INC

Inventor(s): (std): BENNETT JAMES ; PINKAS DANIEL M ; SPITKOVSKY MIKHAIL ; GUAN SHENHENG ; UHRICH MARK D ; FELAND JOHN ; KOLOSOV OLEG V ; SPITKOVSKY MIKHAIL B ; GAMMER VLADIMIR ; KOLOSOV OLEG ; MATSIEV LEONID ; VARNI JOHN F ; DALES G CAMERON ; LUDTKE OLAF ; WULLNER DIRK ; BUHRDORF ANDREAS ; DOBRINSKI HEIKO ; SPITOVSY MIKHAIL B ; PADOWITZ DAVID ; UHRICH MARK ; PADOWITZ DAVE ; LOW ERIC ; DALES G C ; SHENHENG GUAN ; MARK D UHRICH ; JAMES BENNETT ; JOHN F VARNI ; MIKHAIL SPITKOVSKY ; OLEG KOLOSOV ; LEONID MATSIEV ; DANIEL M PINKAS ; JOHN FELAND ; DALES G ; VARNI JOHN ; SPITOVSY MIKHAIL ; LUEDTKE OLAF ; FELAND III JOHN M ; WALKER BLAKE ; FELAND JOHN M III ; RUST WILLIAM

Inventor(s): FELAND JOHN MIII ; FELAND JOHN M ; PINKAS DANIEL ; KOLOSOV OLEG SAN JOSE ; DALES G CAMERON SARATOGA ; MATSIEV LEONID SAN JOSE ; VARNI JOHN F LOS GATOS

Agent(s): RIDOUT AND MAYBEE LLP ; KOENIG SZYNKA TILMANN VON RENESSE PATENTANWALTE PARTNERSCHAFT MBH ; FERAY VALERIE ET AL ; FERAY VALERIE ; CHRISTOPHER J VOICI ; MARTINE PENILLA AND GENCARELLA LLP ; SENNIGER POWERS (SMX) ; SENNIGER POWERS SMX ; SYMYX TECHNOLOGIES INC, LEGAL DEPARTMENT ; SYMYX TECHNOLOGIES INC LEGAL DEPARTMENT ; SENNIGER POWERS LLP ; HOWARD IP LAW GROUP ; MARTINE AND PENILLA LLP ; SENNIGER POWERS ; HOWARD IP LAW GROUP PC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

9) Family number: 28073227 (US2003046996A)

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Title: FLOWRATE MEASURING DEVICE

Abstract: There is provided a flow rate measuring device which comprises a means for introducing a backward flow of the main passage into the sub-passage through the outlet of the sub-passage of the flow rate measuring device is provided near the outlet of the sub-passage, in order to keep the flow rate measuring element from being destroyed under the presence of dust and water in an intake manifold and which has high reliability for a long period of use and an excellent pulsation characteristic.

Classifications:

International (IPC 8-9): G01F1/00 G01F1/68 G01F1/684 G01F15/12 G01F5/00 (Advanced/Invention);

G01F1/00 G01F1/684 G01F15/00 G01F5/00 (Core/Invention)

International (IPC 1-7): G01F1/00 G01F1/68 G01F1/684 G01F15/12 G01F5/00

CPC: G01F1/684 G01F1/6842 G01F5/00 G01F15/12

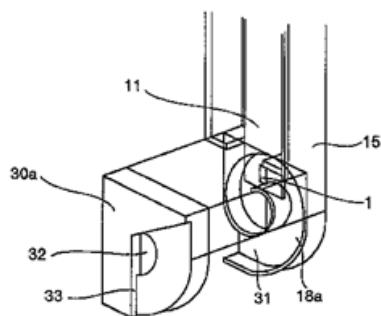
European: G01F1/684 G01F1/684C G01F15/12 G01F5/00

US: 73/202.5 73/202.500P 73/204.22

PatBase - US2003046996_AA

Patent Application Publication Mar. 13, 2003 Sheet 1 of 17 US 2003/0046996 A1

FIG.1



Family:

Publication number	Publication date	Application number	Application date
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EP1291622 A2	20030312	EP20020004281	20020227
EP1291622 A3	20060510	EP20020004281	20020227
EP1291622 B1	20100804	EP20020004281	20020227
JP2003083788 A2	20030319	JP20010274402	20010911
JP3764860 B2	20060412	JP20010274402	20010911
US2003046996 AA	20030313	US20020083403	20020227
US7032446 BB	20060425	US20020083403	20020227

Priority:

JP20010274402 20010911

Probable Assignee: HITACHI CAR ENGINEERING CO LTD

Assignee(s): (std): HITACHI CAR ENG CO LTD ; HITACHI LTD

Assignee(s): HITACHI CAR ENGINEERING CO ; HITACHI CAR ENGINEERING CO LTD

Inventor(s): (std): ONIKAWA HIROSHI ; KAMIYAMA KEI ; YAMADA MASAMICHI ; KIKAWA HIROMU ; UYEYAMA KEI ; HORIE JUNICHI ; WATANABE IZUMI ; NAKADA KEIICHI

Inventor(s): UYEYAMA KEI C O HITACHI LTD ; HORIE JUNICHI C O HITACHI LTD ; NAKADA KEIICHI C O HITACHI LTD ; YAMADA MASAMICHI C O HITACHI LTD ; WATANABE IZUMI C O HITACHI LTD ; KIKAWA HIROMU C O HITACHI CAR ENG CO LTD

Agent(s): BEETZ AND PARTNER; CROWELL AND MORING LLP

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

10) Family number: 43630247 (WO10142999A2)

© PatBase

Title: MEASUREMENT OF MASS FLOW

Abstract: A system and method for measuring mass flow of a non-gaseous phase (4) of material such as a solid particulate are described. The material flows through a conduit of which a section (14) is heated or cooled. One temperature sensor (6) is provided upstream of this section and at least another temperature sensor (7, 8) is provided downstream of it. These temperature sensors are adapted to measure the temperature of material in the non-gaseous phase directly. The section is heated or cooled for a first period of time and then neither heated nor cooled for a second period. A third temperature sensor (10) is provided in good thermal contact with the heated or cooled section - this temperature sensor. The temperature sensors measure the temperature of the non-gaseous phase of the material flowing the conduit in at least the second period of time. The mass flow of the non-gaseous phase of the material is calculated from the measurements of temperature.

Classifications:

International (IPC 8-9): G01F1/68 G01F1/684 G01F1/688 G01F1/699

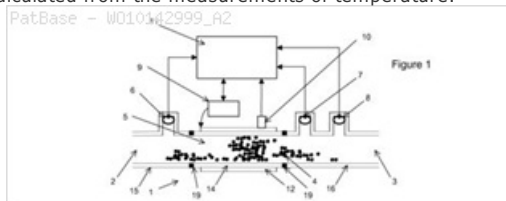
G01F1/74 (Advanced/Invention)

CPC: G01F1/74 G01F1/6847 G01F1/688 G01F1/6884 G01F1/699

G01F1/68

European: G01F1/684N G01F1/688 G01F1/688E G01F1/699

G01F1/74



Family:

Publication number	Publication date	Application number	Application date
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GB200910035 A0	20090722	GB20090010035	20090611
GB2470941 A1	20101215	GB20090010035	20090611
WO10142999 A2	20101216	WO2010GB50983	20100611
WO10142999 A3	20110203	WO2010GB50983	20100611

Priority:

GB20090010035 20090611 WO2010GB50983 20100611

Probable Assignee: UNIV GLASGOW

Assignee(s): (std): KNIGHT ELIZABETH A ; LIU QIANG ; MCGLINCHEY DONALD ; MCKENNA PAUL ; UNIV GLASGOW ; PUGH JOHN R ; ZHENG YINGNA

Assignee(s): COURT OF GLASGOW CALEDONIAN UNIV ; UNIVERSITY COURT OF GLASGOW CALEDONIAN UNIVERSITY

Inventor(s): (std): PUGH JOHN R ; MCGLINCHEY DONALD ; MCKENNA PAUL ; LIU QIANG ; ZHENG YINGNA ; KNIGHT ELIZABETH A

Inventor(s): YINGNA ZHENG ; ELIZABETH A KNIGHT ; DONALD MCGLINCHEY ; JOHN R PUGH ; PAUL MCKENNA ; QIANG LIU

Agent(s): LAWRENCE RICHARD ANTHONY; LAWRENCE RICHARD ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

11) Family number: 5349280 (US4685331A)

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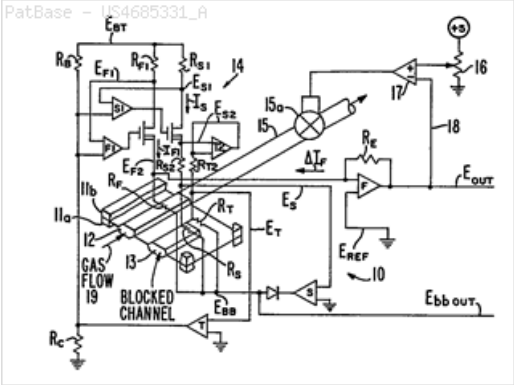
Title: THERMAL MASS FLOWMETER AND CONTROLLER

Abstract: A mass flowmeter and controller measures the mass flow rate of liquid or gaseous fluids and controls the flow rate of the fluids being utilized in a processing operation. A series of flow channels and blocked channels are micro-etched from a silicon substrate leaving an integral membrane suspended across the channels. A heater-sensor thin film resistor, diode or transistor is formed on the membranes and the substrate during manufacture to sense the temperature at particular locations. A cover housing matching channels and grooves forms flow and stagnant blocked conduits in the structure. Through a bridge circuit a signal indicative of mass flow is produced. This signal is passed to a control valve armature coil in

an in-line flow control valve. The controller includes a sensor module containing monitored flow and blocked channels and passive by-pass channels as required for additional flow capacity, a control valve cartridge, an overall housing and the magnetic armature coil which controls the flow of fluid through the valve and the sensor module.

Classifications:

International (IPC 8-9): G01F1/68 G01F1/684 G01F1/692 G01F1/698 G05D7/06 (Advanced/Invention);
G01F1/68 G01F1/684 G01F1/696 G05D7/06 (Core/Invention)
International (IPC 1-7): G01F1/68 G05D7/06
CPC: Y10T137/7759 G01F1/698 G01F1/6842 G01F1/6845 G05D7/0635
European: G01F1/684C G01F1/684M G01F1/698 G05D7/06F4B
US: 137/486 73/204 73/204.15 73/204.21 73/204.26



Family:

Publication number	Publication date	Application number	Application date
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EP0203622 A3	19870422	EP19860200194	19860212
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JP2041909 C3	19960409	JP19860050247	19860307
JP61235726 A2	19861021	JP19860050247	19860307
JP7065915 B4	19950719	JP19860050247	19860307
US4685331 A	19870811	US19850721535	19850410

Priority:

US19850721535 19850410

Probable Assignee: UNIT INSTRUMENTS INC

Assignee(s): (std): INNOVUS ; INOBASU

Assignee(s): OBSIDIAN LLC ; UNIT INSTRUMENTS INC A CORP OF CALIFORNIA ; INNOVUS FREMONT CALIF ; INNOVUS A CORP ; BACH VIET SEE RECORD FOR REMAINING ASSIGNEES ; INNOVUS A CORP OF CA ; UNIT INSTRUMENTS INC ; TENNENBAUM CAPITAL PARTNERS LLC ; KINETICS GROUP INC ; MEGA SYSTEMS AND CHEMICALS INC ; INSYNC SYSTEMS INC ; THOMAS CONVEYOR CO ; INNOVUS FREMONT CALIF US ; APPLIED MATERIALS INC ; ASHIDA JUNKO ; BACH VIET ; BACH VIET (SEE RECORD FOR REMAINING ASSIGNEES) ; INNOVUS 51 WHITNEY PLACE FREMONT CA 94539 A CORP ; BANK ONE NA ; CELERITY GROUP INC ; FTS SYSTEMS INC

Inventor(s): (std): DAN BII RUUMEI ; UEIN JII RENKEN ; RIKARUDO EMU TAKAHASHI ; TAKAHASHI RICHARD M ; TAKAHASHI RICARDO M ; LEMAY DAN B ; RENKEN WAYNE G

Inventor(s): TAKAHASHI RICHARD M BEN LOMAND CA 95005 US ; RENKEN WAYNE G SAN JOSE CA 95120 US ; LEMAY DAN B PALOS VERDES ESTATES CA 90274 US

Designated states: BE CH DE FR GB LI NL

12) Family number: 60401336 (US2017131127A)

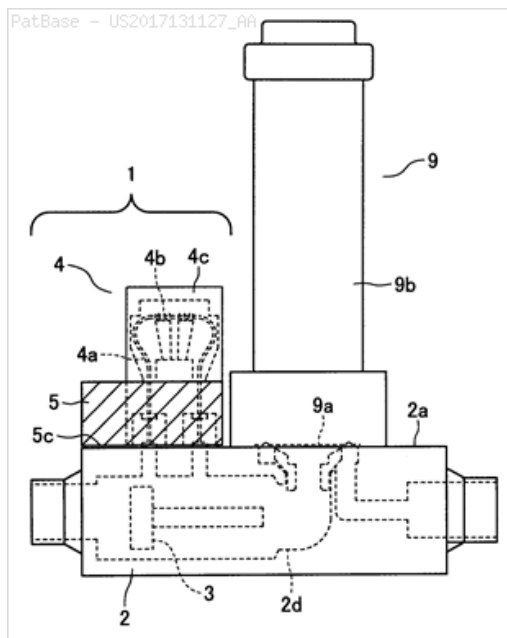
© PatBase

Title: THERMAL MASS-FLOW METER AND MASS-FLOW CONTROL DEVICE USING SAME

Abstract: A thermal mass-flow meter and mass-flow controller using the mass-flow meter are disclosed. The mass flow meter includes a base having an installation surface, a passage for fluid, and a bypass in the middle of the passage. The mass-flow meter also includes a case in contact with the installation surface of the base and housing a sensor tube and sensor wires. The mass flow sensor also includes a sensor circuit including a bridge circuit including the sensor wires and other resistive elements. A heat-transfer block is positioned adjacent to the case and in contact with the installation surface of the base. A bottom surface of the heat-transfer block and the installation surface of the base are in surface contact with each other, and at least one lateral surface of said heat-transfer block and a lateral surface of said case are in surface contact with each other.

Classifications:

International (IPC 8-9): G01F1/00 G01F1/684 G01F15/00 G01F5/00 G05D7/00 (Advanced/Invention)
CPC: G05D7/0635 G01F15/00 G05D7/00 G01F1/684 G01F5/00
US: 1/1 73/202.5



Family:

Publication number	Publication date	Application number	Application date
■ CN106104222 A	20161109	CN201580015243	20150226
■ CN106104222 B	20181026	CN201580015243	20150226
■ JP2015141437 A1	20170406	JP20160508640T	20150226
■ JP6399085 B1	20181003	JP20160508640T	20150226
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■ US2017131127 AA	20170511	US20150127392	20150226
■ US9970801 BB	20180515	US20150127392	20150226
■ WO15141437 A1	20150924	WO2015JP55694	20150226

Priority:

JP20140058170 20140320 WO2015JP55694 20150226

Probable Assignee: HITACHI METALS LTD

Assignee(s): (std): HITACHI METALS LTD

Inventor(s): (std): ISHII MAMORU

Agent(s): PROSPEC PATENT FIRM; NEUGEBOREN ODOWD PC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

13) Family number: 56140340 (US2015377691A)

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Title: FLOW MEASURING DEVICE, AS WELL AS USE OF SUCH DEVICE AND METHOD FOR ASCERTAINING FLOW VELOCITY

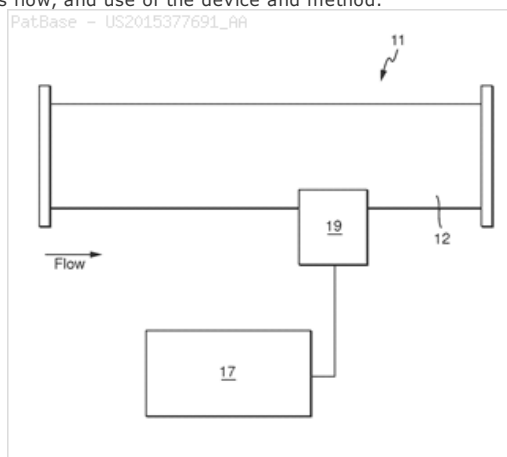
Abstract: A flow measuring device for ascertaining a corrected measured value of a flow velocity and/or a corrected mass flow of a medium, especially a gas, in a measuring tube, including: an apparatus for ascertaining a first measured value of flow velocity and/or mass flow of the medium by thermal, mass flow measurement; an apparatus for ascertaining velocity of sound and/or frequency dependent damping of an acoustic signal, especially an ultrasonic signal, in the medium and/or an apparatus for ascertaining an optical, wavelength dependent absorption of an optical and/or excited fluorescence of the medium, and an evaluation unit for correcting the ascertained first measured value of mass flow or flow velocity based on the ascertained sound velocity values and/or the frequency dependent, ascertained damping values of the acoustic signal and/or the ascertained absorption values of the optical signal and/or the fluorescence values of the medium, and method for ascertaining a corrected measured value of flow velocity and/or mass flow, and use of the device and method.

Classifications:

International (IPC 8-9): G01D11/24 G01F1/66 G01F1/68 G01F1/692 G01F1/708 G01F25/00 G01F7/00 G01P21/00 G01P5/00 (Advanced/Invention)

CPC: G01F25/0053 G01F1/66 G01F1/692 G01F1/7082 G01F7/00

US: 73/1.16



Family:

Publication number	Publication date	Application number	Application date
DE102012109237 A1	20140403	DE201210109237	20120928
US2015377691 AA	20151231	US20130432221	20130919
US10281316 BB	20190507	US20130432221	20130919
WO14060175 A1	20140424	WO2013EP69436	20130919

Priority:

DE201210109237 20120928 WO2013EP69436 20130919

Probable Assignee: FLOWTEC AG**Assignee(s):** (std): FLOWTEC AG**Assignee(s):** ENDRESS AND HAUSER FLOWTEC AG**Inventor(s):** (std): BRUMBERG OLIVER ; WIEST ACHIM ; CEGLIA PAUL**Agent(s):** BACON AND THOMAS PLLC; ANDRES ANGELIKA**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**14) Family number: 33197348 (WO06084263A2)**

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Title: MULTI-POSITION FLUID SENSORS AND METHODS

Abstract: Fluid monitoring methods, sensors and systems are disclosed. Preferred embodiments comprise two or more mechanical resonators, preferably two or more flexural resonators configured for sensing, monitoring or evaluating one or more fluids at multiple positions within one or more fluidic systems. In the methods, sensors and systems of the invention, signals generated in response to stimulation of the mechanical resonators are communicated by multiplexing over a common communication path, and then deconvoluted with respect to the position of the resonators.

Classifications:**International (IPC 8-9):** G01F23/296 G01H13/00 G01N29/02

G01N29/036 G01N29/22 (Advanced/Invention);

G01F23/296 G01H13/00 G01N29/02 G01N29/22 (Core/Invention)

CPC: G01F23/2967 G01F23/2966 G01H13/00 G01N29/022

G01N29/036 G01N29/22 G01N2291/0226 G01N2291/02818

G01N2291/02836 G01N2291/0422 G01N2291/0423 G01N2291/0426

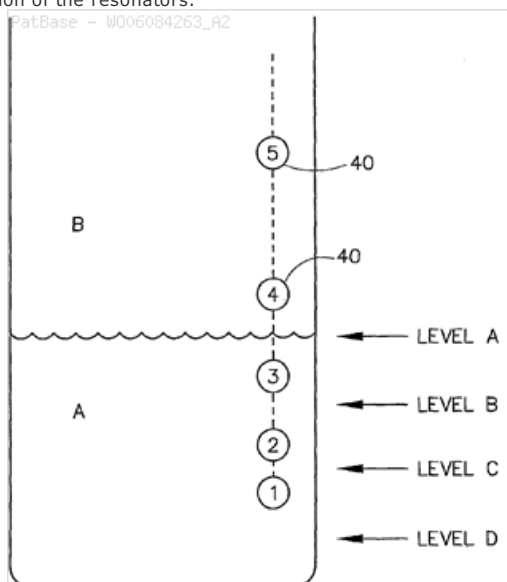
G01N2291/0427 G01N2291/106 H01R13/658

European: G01F23/296H G01F23/296H2 G01H13/00 G01N29/02F

G01N29/036 G01N29/22 S01N291/022H S01N291/028D

S01N291/028F S01N291/042C S01N291/042E S01N291/042H

S01N291/042J S01N291/106

**Family:**

Publication number	Publication date	Application number	Application date
WO06084263 A2	20060810	WO2006US04231	20060203
WO06084263 A3	20061123	WO2006US04231	20060203

Priority:

US20050650010P 20050204

Probable Assignee: SYMYX TECHNOLOGIES INC**Assignee(s):** (std): BENNETT JAMES ; GAMMER VLADIMIR ; KOLOSOV OLEG ; MATSEIV LEONID ; SPITKOVSKY MIKHAIL ; SYMYX TECHNOLOGIES INC**Inventor(s):** (std): KOLOSOV OLEG ; SPITKOVSKY MIKHAIL ; BENNETT JAMES ; MATSEIV LEONID ; GAMMER VLADIMIR**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW**15) Family number: 3611359 (US4651564A)**

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Title: Semiconductor device

Abstract: A flow sensor comprising a pair of thin film heat sensors and a thin film heater is disclosed. A base supports the sensors and heater out of contact with the base with the sensors disposed on opposite sides of the heater. Also disclosed is a semiconductor device comprising a thin film member which comprises an electrical element. The device further comprises a semiconductor body supporting the thin film member out of contact with the body and apparatus for electrically pulsing the

electrical element. Such devices are the basis for many types of apparatus, including flow sensors.

Classifications:

International (IPC 8-9): G01F1/56 G01F1/68

G01F1/684 (Advanced/Invention);

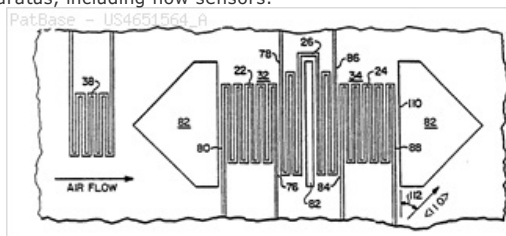
G01F1/56 G01F1/68 G01F1/684 (Core/Invention)

International (IPC 1-7): G01F1/56 G01F1/68

CPC: G01F1/6845

European: G01F1/684M

US: 219/538 73/204 73/204.26



Family:

Publication number	Publication date	Application number	Application date
CA1220359 A1	19870414	CA19830433871	19830804
CA1233666 A1	19880308	CA19830524034	19830804
CA1233666 A2	19880308	CA19860524034	19861127
US4651564 A	19870324	US19860858832	19860429

Priority:

US19820431851 19820930

CA19830433871 19830804

CA19830524034 19830804

US19860858832 19860429

CA19860524034 19861127

Probable Assignee:

HONEYWELL INC

Assignee(s): (std):

HONEYWELL INC

Assignee(s):

JOHNSON ROBERT G ; HIGASHI ROBERT E

Inventor(s): (std):

JOHNSON ROBERT G ; HIGASHI ROBERT E

Agent(s):

SMART AND BIGGAR

16) Family number: 30123381 (US2002163827A)

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Title: Circuit for programming antifuse bits

Abstract: Circuitry for programming antifuse elements is provided which permits all antifuse elements in a bank to be programmed simultaneously, thereby enhancing the speed at which antifuse elements may be programmed. In one embodiment, a feedback circuit is associated with each antifuse element to stop the flow of current through the antifuse element once it is programmed. In another embodiment, circuitry is provided for generating a separate programming pulse for each antifuse element, which is selected for programming.

Classifications:

International (IPC 8-9): F16K31/02 F16K31/12 G01F1/00 G01F1/48

G01F1/66 G01F1/68 G01F1/684 G01F1/696 G01F1/86 G01F15/02

G01F15/04 G01F25/00 G01F5/00 G01F7/00 G01P5/12 G05D11/00

G05D7/00 G05D7/06 G06F17/00 G11C17/00 G11C17/16

G11C17/18 (Advanced/Invention);

G01F1/68 G05D7/06 (Advanced/Non-invention);

G01F1/00 G01F1/66 G01F1/68 G01F1/684 G01F1/696 G01F1/76

G01F15/00 G01F25/00 G01F5/00 G01F7/00 G01P5/10 G05D7/06

G06F17/00 G11C17/00 (Core/Invention)

International (IPC 1-7): F17D3/00 G01F1/00 G01F1/68 G01F15/02

G01F25/00 G01F7/00 G05D7/00 G05D7/06 G11C17/00 G11C5/00

G11C7/00

CPC: G11C17/18 G11C17/16 Y10T137/0396 Y10T137/7759

Y10T137/776 Y10T137/0379 Y10T137/7761 Y10T137/87354

Y10T137/87298 Y10T137/0318 G01F15/024 G01F1/68 G01F1/696

G01F25/0007 G01F15/043 G01F15/02 G05D7/0617 G05D7/0635

G01F1/684 G01F1/6847 G01F1/6965 G01F1/86 G01F5/00 G01F15/046 G01F25/0038 G01F25/0053 G05D7/06

European: G01F1/66F G01F1/68 G01F1/684 G01F1/684N G01F1/696 G01F1/696K G01F1/86 G01F15/02 G01F15/02B2

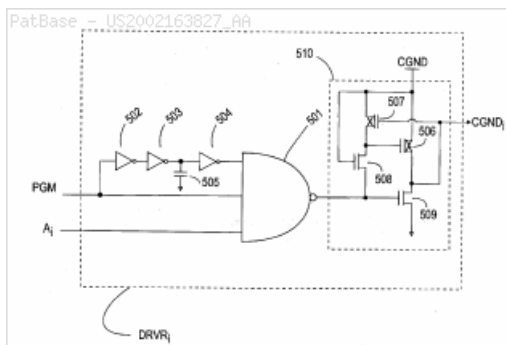
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G11C17/16 G11C17/18 S05D7/06F S05D7/06F4B

US: 123/350 137/1 137/12 137/12P 137/14 137/486 137/487 137/487.5 137/487.500S 137/599.05 137/599.13

326/38 327/51 327/525 365/200 365/225.7 365/225.700P 365/96 365/96P 60/39.281 700/2 700/275 700/281 700/282

700/282P 702/100 702/100P 702/45 702/50 73/1.35 73/1.36 73/13.5 73/135 73/202.5



Family:

Publication number	Publication date	Application number	Application date
DE10392770 B3	20130801	DE20031092770	20030624
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Priority:

US19950522174 19950831	US19970891669 19970710	US19970891669 19970711
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US20100873089 20100831	US20120425784 20120321	JP20090160666 20120501
JP20120104625 20120501		

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Inventor(s): (std): KOTTENSETTE NICHOLAS ; HABERSETZER DARYL L ; GRAALUM JASON ; KURTH CASEY R ; MULLARKEY PATRICK J ; SHAJII ALI ; KOTTENSTETTE NICHOLAS ; AMBROSINA JESSE ; SMITH JOHN A ; JOHN A SMITH ; CLARK WILLIAM R ; SMITH DONALD K ; MULLARKEY PATICK J

Inventor(s): AMBROSINA JESSE ; JOHN A SMITH ; JESSE AMBROSINA ; NICHOLAS KOTTENSTETTE ; ALI SHAJII ; NICHOLAS KOTTENSETTE ; MULLARKEY PATRICK ; KURTH CASEY ; HABERSETZER DARYL

Agent(s): SHAMOTO ICHIO ; MASUI CHUJI ; TOMITA HIROYUKI ; KOBAYASHI YASUSHI ; CHIBA AKIO ; OHTSUKA TAKAHIKO ; ONO SHINJIRO ; SAKAI HIROAKI ; WONG CABELLO LUTSCH RUTHERFORD AND BRUCCULERI PC ; MCDERMOTT WILL AND EMERY LLP, ATTN: INTELLECTUAL PROPERTY DEPARTMENT ; MCDERMOTT WILL AND EMERY LLP ATTN INTELLECTUAL PROPERTY DEPARTMENT ; MCDERMOTT WILL AND EMERY LLP ; MCDERMOTT WILL AND EMERY ; WONG CABELLO LUTSCH RUTHERFORD AND BRUCCULERI LLP

Designated states: DE GB JP KR

17) Family number: 53007381 (US2013036833A)

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Title: GAS FLOW-RATE VERIFICATION SYSTEM AND GAS FLOW-RATE VERIFICATION UNIT

Abstract: A gas flow-rate verification system includes: process gas lines each being arranged to supply gas from a process gas supply source to a process chamber through a first line cutoff valve, a second line a cutoff valve, and flow control device; and a shared gas line connected in a branch form to the process gas lines to discharge gas from a shared gas supply source through the second line cutoff valve and the flow control device. The shared gas line includes a shared cutoff valve, a measuring tank, a first pressure sensor, and a pressure regulating valve. When the first line cutoff valve and the shared cutoff valve are closed, the first pressure sensor measures a pressure drop of gas in the tank to verify a flow rate of the flow control device. The pressure regulating valve feedback-controls secondary side pressure of the pressure regulating valve.

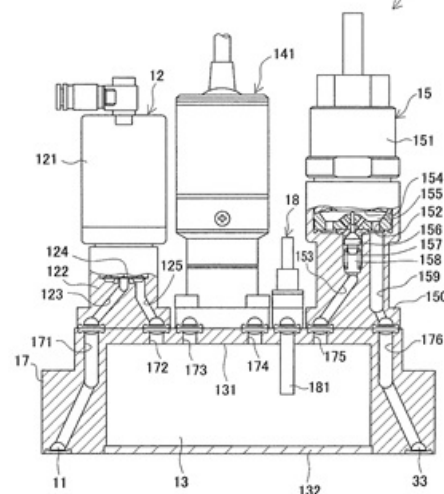
Classifications:

International (IPC 8-9): C23C16/455 G01F1/34 G01F1/88 G01F25/00 G05D16/06 G05D7/00 G05D7/01 G05D7/06 H01L21/3065 H01L21/67 (Advanced/Invention)

CPC: G01F25/0053 G05D7/0641 G01F1/34

US: 73/861 73/861.42

PatBase - US2013036833_AR



Family:

Publication number	Publication date	Application number	Application date
■ CN102954819 A	20130306	CN201210262118	20120726
■ CN102954819 B	20170412	CN201210262118	20120726
■ JP2013037614 A2	20130221	JP20110174867	20110810
■ JP5430621 B2	20140305	JP20110174867	20110810
■ KR101827887 B1	20180209	KR20120085015	20120803
■ KR20130018129 A	20130220	KR20120085015	20120803
■ TW201314402 A	20130401	TW20120115074	20120427
■ TWI541626 B	20160711	TW20120115074	20120427
■ US2013036833 AA	20130214	US20120523206	20120614
■ US8910529 BB	20141216	US20120523206	20120614

Priority:

JP20110174867 20110810

Probable Assignee: CKD CORP

Assignee(s): (std): CKD CORP ; NAKADA AKIKO

Inventor(s): (std): NAKADA AKIKO

Agent(s): COSMOS PATENT OFFICE; COSMOS INT PATENT AND TRADEMARK OFFICE; OLIFF PLC

Title: Thermal mass flow sensor with improved sensitivity and response time

Abstract: A thermal mass flow sensor having superior sensitivity and response time includes a flow sensor tube defining an interior channel for fluid flow between input and output ends, a heating element in thermal communication with a portion of the flow sensor tube for heating a fluid flowing through the tube, a pair of spatially compact thermal sensors located at the upstream and downstream ends of the heating element for sensing the temperature of the fluid flowing through the tube at their respective locations and providing a signal representative of the fluid temperature at those locations, and a pair of thermal grounding members on the flow sensor tube, yet positioned at specified locations substantially beyond the heated portion of the tube, for establishing reference temperatures for the fluid flowing therethrough at those locations.

Classifications:

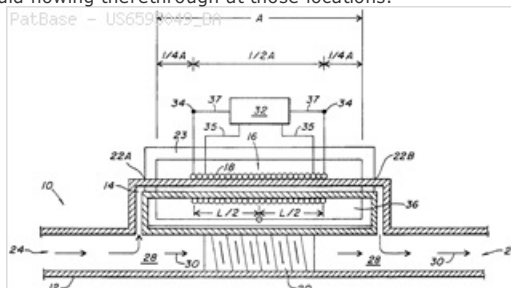
International (IPC 8-9): G01F1/684 G01F5/00 (Advanced/Invention);
G01F1/684 G01F5/00 (Core/Invention)

International (IPC 1-7): G01F1/68 G01F1/684 G01F1/688 G01F1/696
G01K7/16

CPC: G01F1/6847 G01F5/00

European: G01F1/684N G01F5/00

US: 73/202.5 73/204.25 73/204.27



Family:

Publication number	Publication date	Application number	Application date
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GB200014475 A0	20000809	GB20000014475	20000615
GB2352045 A1	20010117	GB20000014475	20000615
GB2352045 B2	20031022	GB20000014475	20000615
US6595049 BA	20030722	US19990335953	19990618

Priority:

US19990335953 19990618

Probable Assignee: MKS INSTRUMENTS INC

Assignee(s): (std): MKS INSTR INC

Assignee(s): MKS INSTRUMENTS INC ; MKS INSTRUMENTS INC ANDOVER ; DEUTSCHE BANK NEW YORK BRANCH AG ; NEWPORT CORP ; BARCLAYS BANK PLC ; BARCLAYS BANK PLC COLLATERAL AGENT AS

Inventor(s): (std): BAXTER JR WILFRED J ; BAXTER WILFRED J ; MAGGINIS THOMAS O ; MAGINNIS JR THOMAS O

Inventor(s): WILFRED J BAXTER JR ; THOMAS O MAGINNIS JR

Title: PORTABLE FLUID SENSING DEVICE AND METHOD

Abstract: Fluid monitoring methods, systems and apparatus are disclosed. Preferred embodiments comprise one or more flexural resonator sensing elements. In preferred embodiments a sensor or a sensor subassembly is ported to multiple fluidic systems.

Classifications:

International (IPC 8-9): G01F23/00 G01F23/296 G01F25/00
G01H13/00 G01L27/00 G01N11/00 G01N11/16 G01N29/02

G01N29/22 G01N9/00 (Advanced/Invention);

G01F23/00 G01F23/296 G01F25/00 G01H13/00 G01L27/00

G01N11/00 G01N11/10 G01N29/02 G01N29/22

G01N9/00 (Core/Invention)

International (IPC 1-7): G01H13/00 G01N11/16 G01N29/02

G01N29/22 G01N9/00

CPC: G01F23/2967 G01N9/002 G01N11/16 G01N29/022 G01N29/222

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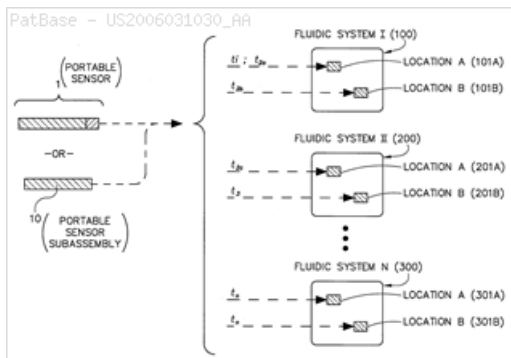
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S01N291/028D S01N291/028F S01N291/042C S01N291/042E

S01N291/042H S01N291/042J S01N9/00B

US: 702/100 702/50



Family:

Publication number	Publication date	Application number	Application date
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US7272525 BB	20070918	US20050111846	20050420
WO05103674 A2	20051103	WO2005US13642	20050420
WO05103674 A3	20060601	WO2005US13642	20050420

Priority:

US20040564371P 20040421

US20050111846 20050420

Probable Assignee: MEAS FRANCE

Assignee(s): (std): FEELAND JOHN M III ; KOLOSOV OLEG ; LOW ERIC ; SYMYX TECHNOLOGIES INC ; MATSEIV LEONID ; RUST WILLIAM C ; SPITKOVSKY MIKHAIL ; UHRICH MARK ; VISYX TECHNOLOGIES INC ; BENNETT JAMES ; DALES CAMERON G

Assignee(s): FEELAND JOHN M ; MEASUREMENT SPECIALITIES INC ; MEAS FRANCE

Inventor(s): (std): BENNETT JAMES ; DALES CAMERON G ; FEELAND JOHN M III ; KOLOSOV OLEG ; LOW ERIC ; MATSEIV LEONID ; RUST WILLIAM C ; SPITKOVSKY MIKHAIL ; UHRICH MARK ; DALES G C ; FELAND JOHN M III ; MATSIEV LEONID ; DALES G ; DALES G CAMERON ; FELAND III JOHN M

Inventor(s): FELAND JOHN ; RUST WILLIAM ; FEELAND JOHN M ; FELAND JOHN M ; FELAND JOHN MIII
Agent(s): SYMYX TECHNOLOGIES INC, LEGAL DEPARTMENT; SYMYX TECHNOLOGIES INC LEGAL DEPARTMENT
Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

20) Family number: 5000431 (US4478077A)

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Title: Flow sensor

Abstract: A flow sensor comprising a pair of thin film heat sensors and a thin film heater is disclosed. The flow sensor further comprises a semiconductor body with a depression therein and structure connecting the heater and the sensors to the body and bridging the depression so that at least a major portion of the heater and the sensors are out of contact with the body. The sensors are disposed on opposite sides of the heater, the structure connecting comprising two thin film members bridging the depression, each member comprising one sensor and a portion of the heater.

Classifications:

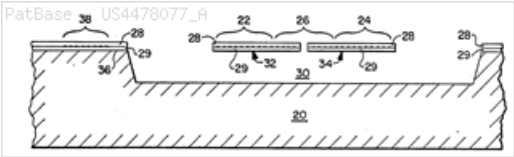
International (IPC 8-9): G01F1/56 G01F1/68 G01F1/684 G01F1/692 G01F1/696 G01F1/698 G01F1/699 G01P5/12 H01L21/306 (Advanced/Invention); G01F1/68 G01F1/684 G01F1/696 G01P5/10 H01L21/02 (Core/Invention)

International (IPC 1-7): B44C1/22 C03C15/00 C03C25/06 C23F1/00 G01F1/56 G01F1/68 G01P5/10 G01P5/12 H01L21/306 H01L21/308 H01L27/01

CPC: G01F1/698 G01F1/699 G01F1/6845 G01F1/696

European: G01F1/684M G01F1/696 G01F1/698 G01F1/699

US: 156/653 156/657 156/659.1 156/662 257/419 257/467 257/622 257/712 338/23 338/25 338/308 338/318 438/53 438/54 438/700 438/739 73/204.16 73/204.25 73/204.26



Family:

Publication number	Publication date	Application number	Application date
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CA1249139 A1	19890124	CA19850491899	19850930
CA1273227 A1	19900828	CA19850491906	19850930
DE3583099 D1	19910711	DE19853583099	19850928
EP0176996 A2	19860409	EP19850112327	19850928
EP0176996 A3	19870902	EP19850112327	19850928
EP0176996 B1	19910605	EP19850112327	19850928
JP1930961 C3	19950512	JP19850219000	19851001
JP6058376 B4	19940803	JP19850219000	19851001
JP61088532 A2	19860506	JP19850219000	19851001
US4478077 A	19841023	US19820431538	19820930
US4581928 A	19860415	US19840656300	19841001
US4825693 A	19890502	US19860921807	19861020
US4867842 A	19890919	US19880194366	19880516

Priority:

US19820431536 19820930 US19820431538 19820930 CA19830433934 19830804
US19840656300 19841001 US19840656301 19841001 CA19850491899 19850930
CA19850491906 19850930 US19860921807 19861020 US19880194366 19880516

Probable Assignee: HONEYWELL INC

Assignee(s): (std): HONEYWELL INC

Assignee(s): HONEYWELL INC A CORP OF DE ; HONEYWELL INC MINNEAPOLIS MINN US ; JOHNSON ROBERT G ; BOHRER PHILIP J

Inventor(s): (std): JOHNSON ROBERT G ; ROBAATO JII JIYONSON ; FUIRITSUPU JIEI BOORAA ; BOHRER PHILIP J

Inventor(s): BOHRER PHILIP J MINNEAPOLIS MINN 55410 US ; JOHNSON ROBERT G MINNETONKA MINN 55343 US

Agent(s): SMART AND BIGGAR

Designated states: DE FR GB IT NL

21) Family number: 9635435 (US5351561A)

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Title: Coriolis-type flow meter having an improved temperature range of operation

Abstract: A Coriolis principle mass flow meter is provided which is insertable into a conduit of a given diameter so as to be axially aligned with the conduit and through which flows a fluid to be measured. The flow meter includes two measuring tubes each having the same inner diameter and the same wall thickness. The two measuring tubes are coupled to an inlet manifold and an outlet manifold. The inlet and outlet manifolds are coupled to an external support tube. The flow meter also includes an internal supporting element that is parallel to the measuring tubes. Opposite ends of the internal supporting element are coupled to the inlet manifold and outlet manifold, respectively. The internal supporting element has a thermal transition resistance to the fluid which is lower than the thermal transition resistance of the external support tube to the fluid.

Classifications:

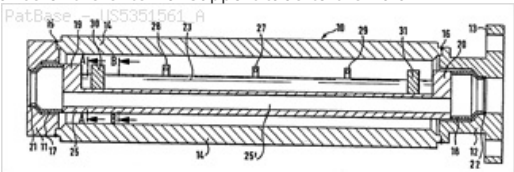
International (IPC 8-9): G01F1/84 (Advanced/Invention); G01F1/76 (Core/Invention)

International (IPC 1-7): G01F1/84

CPC: G01F1/8409 G01F1/8413 G01F1/8495

European: G01F1/84D G01F1/84D2 G01F1/84F8S2

US: 73/861.357 738/613.8



Family:

Publication number	Publication date	Application number	Application date
■ CN1055763 C	20000823	CN19931014214	19931105
■ CN1090040 A	19940727	CN19931014214	19931105
■ DE59201347 D1	19950316	DE19925001347	19921106
■ DK0596178 T3	19950626	DK19920810859T	19921106
■ EP0596178 A1	19940511	EP19920810859	19921106
■ EP0596178 B1	19950201	EP19920810859	19921106
■ ES2068020 T3	19950401	ES19920810859T	19921106
■ JP1994758 C3	19951122	JP19930276576	19931105
■ JP6201428 A2	19940719	JP19930276576	19931105
■ JP7026863 B4	19950329	JP19930276576	19931105
■ US5351561 A	19941004	US19930116374	19930903

Priority:

EP19920810859 19921106

Probable Assignee: ENDRESS AND HAUSER FLOWTEC AG

Assignee(s): (std): FLOWTEC AG

Assignee(s): ENDLESS AND HAUZAA FUROOTEC AG ; ENDRESS AND HAUSER FLOWTEC AG ; ENDRESS AND HAUSER FLOWTEC AG REINACH BASEL LAND ; ENDRESS AND HAUSER FLOWTEC AG REINACH BASEL LANDSCHAFT CH

Inventor(s): (std): WENGER ALFRED DR RER NAT ; BITTO ENNIO ; WENGER ALFRED ; ARUFUREETO BUENGAA ; ENIO BITTO

Inventor(s): BITTO ENNIO CH 4147 AESCH BL CH ; ALFRED WENGER ; ENNIO BITTO

Designated states: CH DE DK ES FR GB IT LI NL

22) Family number: 1765453 (US4339949A)

© PatBase

Title: Process and apparatus for the thermal measurement of mass flow

Abstract: A thermal measurement of mass flow is obtained by passing a flowing mass through a hollow passageway, measuring the temperature of the mass at the inlet and at the outlet of said passageway and additionally measuring the heat flow released or absorbed through the walls of the passageway and then determining the mass flow by setting up the heat balance equation on the basis of the obtained data. Preferably, the data are fed into a computer to solve the resulting heat balance equation. The invention also comprises an apparatus wherein temperature sensors are arranged at both ends of a tubular passageway and wherein the heat flow meter comprises concentric wire coils of a thermic resistance material wound around the outer periphery of the tube and an interposed layer of predetermined thickness formed of a material of at most moderate heat conductivity.

Classifications:

International (IPC 8-9): G01F1/684 (Advanced/Invention)

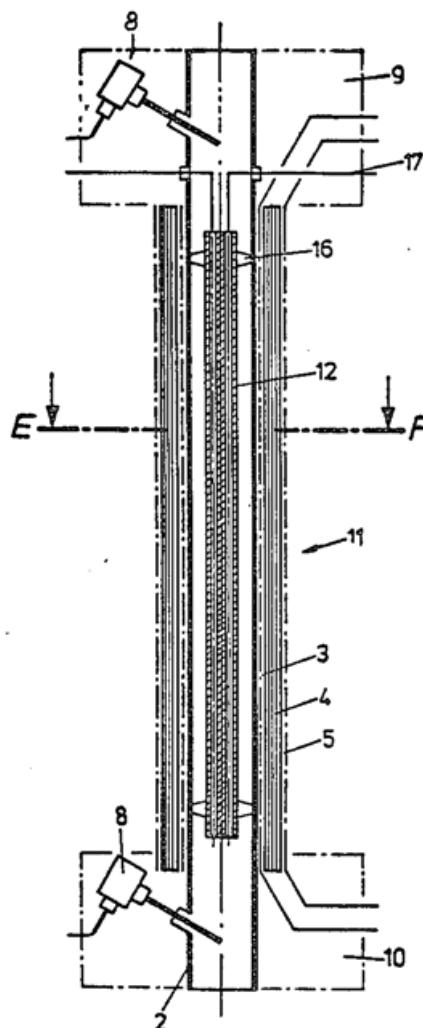
International (IPC 1-7): G01F1/68 G01K17/08

CPC: G01F1/684

European: G01F1/684

US: 73/204.11 73/204.27

PatBase - US4339949_A



Family:

Publication number	Publication date	Application number	Application date
DE2856289 A1	19800717	DE19782856289	19781227
DE2856289 C2	19870102	DE19782856289	19781227
FR2445516 A1	19800725	FR19790030982	19791218
IT7951209 A0	19791227	IT19790051209	19791227
US4339949 A	19820720	US19790107653	19791227

Priority:

DE19782856289 19781227

Probable Assignee: BABCOCK BSH AG**Assignee(s):** (std): BABCOCK BSH AG**Assignee(s):** BABCOCK BSH AG VORMALS BUETTNER SCHILDE HAAS AG ; BABCOCK BSH AG VORMALS BUETTNER SCHILDE HAAS AG 4150 KREFELD DE ; BABCOCK BSH AG VORMALS BUTTNER ; BABCOCK BSH GIA BUTTNER SCHILDE AG ; BABCOCK BSH AKTIENGESSELLSCHAFT GIA' BUTTNER SCHILDE HASS AG**Inventor(s):** (std): PLEVA HARRY ; BAHNER FRIEDRICH ; PLEVA HARRY DIPL ING ; BAHNER FRIEDRICH DIPL PHYS**Inventor(s):** PLEVA HARRY DIPL ING 7240 HORB DE ; BAHNER FRIEDRICH DIPL PHYS 6442 ROTENBURG DE ; FRIEDRICH BAHNER**23) Family number: 43872463 (US2009260431A)**

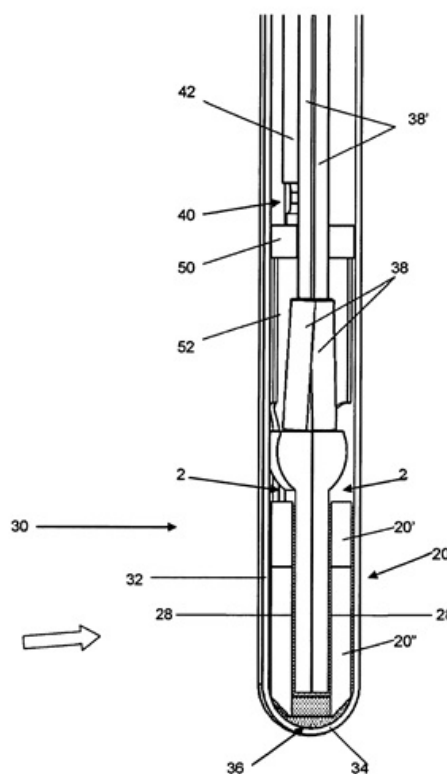
© PatBase

Title: MASS FLOW METER WITH SOLDER/BRAZE-FLOW SECURED SPACER

Abstract: A thermal anemometer or mass flow meter typically having temperature and flow velocity sensor elements is provided in which a thin film temperature sensor is used in the heated sensor of the fluid velocity sensor element of the system. At least one thin-film RTD sensor is held within a spacer or interface member and the spacer, optionally, received within a housing. The thermal anemometer is preferably constructed to offer sufficient precision and accuracy in its design to be suitable for sensitive scientific and industrial applications. This goal is achieved while using cost effective parts by employing a construction approach in which the spacer and RTD sensor(s) is secured in place by solder, braze or another compound flowed into place while inserting the spacer and/or sensor(s).

Classifications:**International (IPC 8-9):** B23K31/02 G01F1/68 (Advanced/Invention); B23K31/02 G01F1/68 (Core/Invention)**CPC:** G01F1/684 G01F1/692 G01P1/026 G01P5/12**European:** G01F1/684 G01F1/692 G01P1/02C G01P5/12**US:** 228/245 73/204.22 73/204.26

PatBase - US2009260431_AA

**Family:**

Publication number	Publication date	Application number	Application date
US2009260431 AA	20091022	US20080106772	20080421
US7748267 BB	20100706	US20080106772	20080421

Priority:

US20080106772 20080421

Probable Assignee: SIERRA INSTRUMENTS**Assignee(s):** (std): OLIN JOHN G ; SIERRA INSTRUMENTS INC ; SMITHERMAN JOHN P**Assignee(s):** SIERRA INSTRUMENTS**Inventor(s):** (std): SMITHERMAN JOHN P ; OLIN JOHN G**Agent(s):** PATENT LAW OFFICE OF FRANK P BECKING; LARIVIERE GRUBMAN AND PAYNE LLP

Title: Axial thermal mass flowmeter

Abstract: Thermal mass flowmeter comprising a conduit defining a flow path and an elongated thermal mass flow sensor. The thermal mass flow sensor is coupled to the conduit with the longitudinal axis of the thermal mass flow sensor being aligned substantially parallel to the general direction of the fluid flow within the conduit. A method of measuring flowrates provides the same axial alignment of the thermal mass flow sensor.

Classifications:

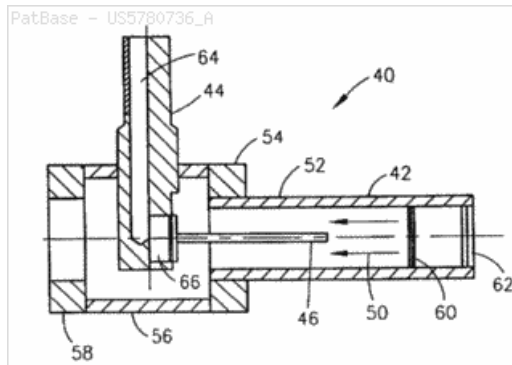
International (IPC 8-9): G01F1/684 (Advanced/Invention);
G01F1/684 (Core/Invention)

International (IPC 1-7): G01F1/68

CPC: G01F1/684 G01F1/6842

European: G01F1/684 G01F1/684C

US: 73/204.11 73/204.19 73/204.23



Family:

Publication number	Publication date	Application number	Application date
US5780736 A	19980714	US19960757934	19961127

Priority:

US19960757934 19961127

Probable Assignee:

SIERRA INSTRUMENTS INC

Assignee(s): (std):

SIERRA INSTR

Assignee(s):

SIERRA INSTRUMENTS INC

Inventor(s): (std):

RUSSELL GARY A

Title: THERMAL GAS FLOWMETER COMPRISING A GAS QUALITY INDICATOR

Abstract: The invention relates to a method and a device for measuring a gas consumption by means of a gas meter. A gas meter with thermal mass flow sensor for determining mass flow signals (S_M) and with a calibration as energy meter for outputting energy value signals (S_E) is known. According to the invention, a gas type is determined by the gas meter insofar as combustible and non-combustible gas mixtures are differentiated. The gas meter is operated, in the case of a non-combustible gas mixture, with calibration in mass or standard volume units (l/min) and, in the case of a combustible gas mixture, with calibration in energy units (kWh). Embodiments concern inter alia: measurement of a gas parameter (λ , α , c , etc) of the gas or determining the gas type; gas quality sensor with an identical construction to thermal flow sensor; measuring intervals lengthened in the case of non-combustible gas and shortened in the case of combustible gas. Advantages are inter alia: reliable energy measurement because of automatic differentiation between non-meterable gas and high-quality useful gas; detection of manipulation attempts; and automatic heat value tracking even without heat value measurement.

Classifications:

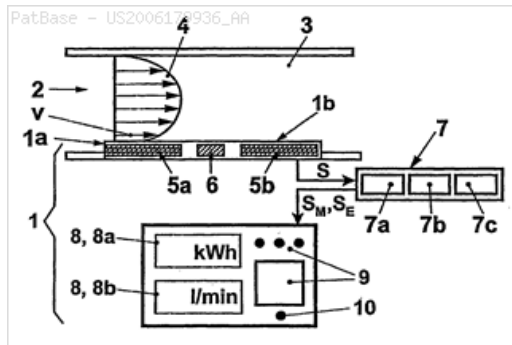
International (IPC 8-9): G01F1/00 G01F1/68 G01F1/696 G01F15/00 G01F15/04 G01F15/06 G01F25/00 G01F3/22 G01F7/00 G01K17/00 G01K17/06 G01N25/00 G01N25/18 G01N33/22 (Advanced/Invention);
G01F1/68 G01F15/00 G01F15/04 G01F25/00 (Advanced/Non-invention);
G01F1/68 G01F1/696 G01F15/00 G01F15/06 G01F25/00 G01N33/22 (Core/Invention)

International (IPC 1-7): G01F1/00 G01F1/68 G01F15/00 G01F15/04 G01F25/00 G01K17/06

CPC: G01F1/6965 G01F15/046 G01F25/0053 G01N33/225

European: G01F1/696K G01F15/04B2 G01F25/00A12 G01N33/22C

US: 374/31 374/32 374/36 374/43 73/195 73/195P 73/204.11 73/204.19 73/23.31 73/25.01 73/25.05



Family:

Publication number	Publication date	Application number	Application date
AT352770 E	20070215	AT20020405715T	20020822
AU2003290747 AA	20040311	AU20030290747	20030722
AU2003290747 BB	20080911	AU20030290747	20030722
AU2003290747 BH	20081002	AU20030290747	20030722
BRPI0313704 A	20050712	BR2003PI13704	20030722
CA2496489 AA	20050221	CA20032496489	20030722
DE50209352 D1	20070315	DE20025009352	20020822
EP1391703 A1	20040225	EP20020405715	20020822
EP1391703 B1	20070124	EP20020405715	20020822
JP2006501442 T2	20060112	JP20040529635T	20030722
JP4365787 B2	20091118	JP20040529635T	20030722
KR100857159 B1	20080905	KR20057003015	20030722
KR20050058449 A	20050616	KR20057003015	20030722
NO20050866 A	20050322	NO20050000866	20050217
NO20050866 L	20050322	NO20050000866	20050217

NZ538262 A	20080131	NZ20030538262	20030722
RU2005105041 A	20051010	RU20050105041	20030722
RU2297601 C2	20070420	RU20050105041	20030722
US2006179936 AA	20060817	US20050524948	20050818
US7399118 BB	20080715	US20050524948	20050818
WO04018976 A2	20040304	WO2003CH00492	20030722
WO04018976 A3	20040422	WO2003CH00492	20030722

Priority:

EP20020405715 20020822 WO2003CH00492 20030722 WO2003CH00492 20050222

Probable Assignee: EMS PATENT AG

Assignee(s): (std): ABB RESEARCH LTD ; EHMS PATENT AG ; EMS PATENT AG ; EMS PATVAG AG ; KRAMER BEAT ; LUCHSINGER ROLF ; MATTER DANIEL ; SABBATTINI BRUNO

Inventor(s): (std): MATTER DANIEL ; LUCHSINGER ROLF ; KRAMER BEAT ; SABBATTINI BRUNO ; SABBATTINI BRUNO ; MATTER DANIEHL ; LUKZINGEN ROL F ; BEAT KRAMER ; ROLF LUCHSINGER ; BRUNO SABBATTINI ; DANIEL MATTER ; SABBATTINI BRUNO

Inventor(s): BRUNO SABBATTINI ; MATTER DANIEHL' ; LUKZINGEN ROL'F

Agent(s): GRIFFITH HACK; MARKS AND CLERK; MARSHALL AND MELHORN, FOUR SEAGATE; MARSHALL AND MELHORN FOUR SEAGATE; MARSHALL AND MELHORN LLC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

26) Family number: 54742509 (US2015234393A)

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Title: SYSTEM AND METHOD FOR IMPROVING THE ACCURACY OF A RATE OF DECAY MEASUREMENT FOR REAL TIME CORRECTION IN A MASS FLOW CONTROLLER OR MASS FLOW METER BY USING A THERMAL MODEL TO MINIMIZE THERMALLY INDUCED ERROR IN THE ROD MEASUREMENT

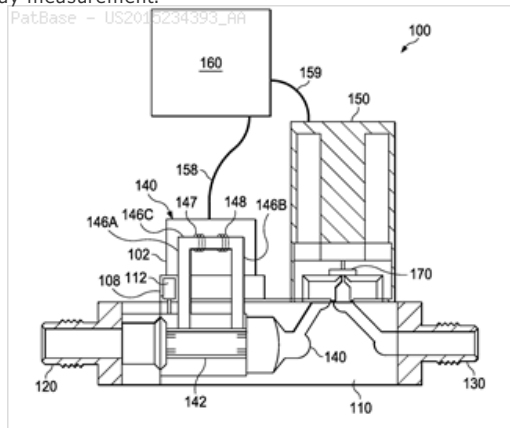
Abstract: The disclosed embodiments include a method, apparatus, and computer program product for improving the accuracy of a rate of decay measurement for real time correction in a mass flow controller or mass flow meter by using a thermal model to minimize thermally induced error in the rate of decay measurement.

Classifications:

International (IPC 8-9): G01F1/68 G01F1/684 G01F1/86 G01F15/00 G01F15/06 G01F25/00 G05D7/06 (Advanced/Invention)

CPC: G01F1/6847 G01F1/86 G01F15/005 G01F25/0007 G01F25/0053 G05D7/0635 Y10T137/0324 Y10T137/7722 G01F25/00 G05D7/06

US: 137/2 137/455



Family:

Publication number	Publication date	Application number	Application date
JP2015509642 T2	20150330	JP20140561002T	20130304
JP6426475 B2	20181121	JP20140561002T	20130304
KR20140135185 A	20141125	KR20147025108	20130304
US2015234393 AA	20150820	US20130378584	20130304
US10437264 BB	20191008	US20130378584	20130304
WO13134150 A1	20130912	WO2013US28914	20130304

Priority:

US20120607974P 20120307 US20130378584 20130304 WO2013US28914 20130304

Probable Assignee: ILLINOIS TOOL WORKS INC

Assignee(s): (std): ILLINOIS TOOL WORKS ; ILLINOIS TOOL WORKS INC

Inventor(s): (std): KEHOE ANTHONY ; BANARES BERWIN ; ELLEC CHRIS ; LULL JOHN ; VALENTINE WILLIAM

Agent(s): AOKI ATSUSHI; SHIMADA TETSURO; MCGUIREWOODS LLP; COLLINS DARREN W ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

27) Family number: 53121511 (WO13028200A1)

© PatBase

Title: TRANSMITTER MOUNT FOR A FLUID FLOWMETER

Abstract: A transmitter mount (501) for coupling a sensor assembly (10) to a transmitter (20) of a fluid meter (500) is provided. The transmitter mount (501) includes a first end (502) comprising a first cross-sectional area (A1). The transmitter mount (501) also includes a first transition section (504). The first transition section (504) extends from the first end (502)

towards a second end (503) and decreases from the first cross-sectional area (A1) to a second cross-sectional area (A2).

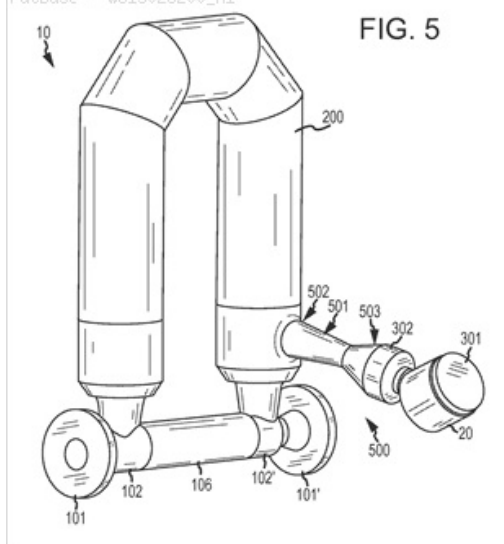
Classifications:

International (IPC 8-9): G01D11/30 G01F1/84

G01F15/18 (Advanced/Invention)

CPC: G01F15/18 G01D11/30 G01F1/8409

PatBase - W013028200_A1



Family:

Publication number	Publication date	Application number	Application date
AR087625 AA	20140409	AR2012P103083	20120822
WO13028200 A1	20130228	WO2011US49166	20110825

Priority:

WO2011US49166 20110825

Probable Assignee: MICRO MOTION INC

Assignee(s): (std): CRISFIELD MATTHEW T ; LANHAM GREGORY TREAT ; MICRO MOTION INC ; SOHM HOWARD IRVING JR

Inventor(s): (std): CRISFIELD MATTHEW T ; LANHAM GREGORY TREAT ; SOHM HOWARD IRVING JR

Agent(s): WILBERT DAVID W ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

28) Family number: 29259515 (US5728952A)

© PatBase

Title: Vibration measuring instrument

Abstract: The precision of phase difference obtained by a phase difference calculating unit is improved by correction through outputs of a frequency ratio calculating unit and a temperature calculating unit considering that the phase or time difference of each output signal of a vibration sensor indicating the mass flow or density of a fluid is a function of the temperature and axial force on a measurement pipe, or that the axial force is a function of the ratio between two resonant frequencies.

Classifications:

International (IPC 8-9): G01F1/84 G01H13/00 G01H3/06

G01N9/00 (Advanced/Invention);

G01F1/76 G01H13/00 G01H3/00 (Core/Invention)

International (IPC 1-7): B29C43/14 G01F1/00 G01F1/05 G01F1/66

G01F1/78 G01F1/84 G01H13/00 G01H3/00 G01N9/00 H03H9/46

CPC: G01F1/8418 G01F1/8431 G01F1/8436 G01F1/849 G01H3/06

G01H13/00 G01F1/8427 G01N9/002 B29C2043/046 B29K2105/251

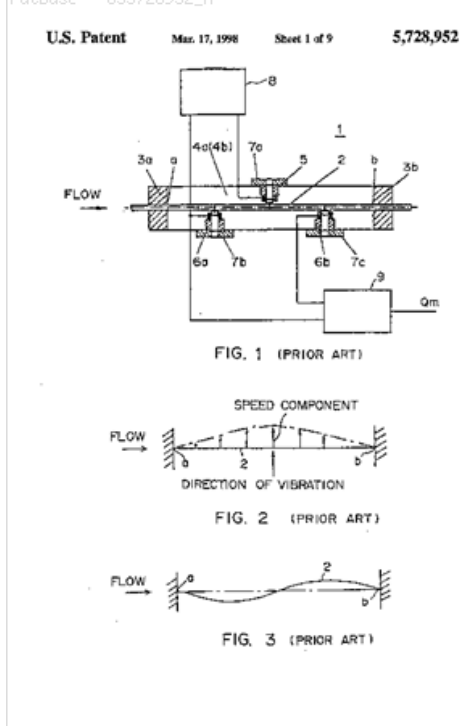
European: G01F1/84D10 G01F1/84D2B G01F1/84D6 G01F1/84D8

G01F1/84F8S G01H13/00 G01H3/06 G01N9/00B L29C43/04B

L29K105/25B

US: 264/101 264/113 264/120 73/32A 73/861.356 73/861.357

PatBase - US5728952_A



Family:

Publication number	Publication date	Application number	Application date
AU199664345 A1	19970313	AU19960064345	19960829
AU717965 B2	20000406	AU19960064345	19960829
DE19634663 A1	19970306	DE19961034663	19960828
DE19634663 B4	20051103	DE19961034663	19960828
DE69515576 D1	20000420	DE19956015576	19950907
DE69515576 T2	20000914	DE19956015576T	19950907
EP0701107 A2	19960313	EP19950114040	19950907
EP0701107 A3	19961211	EP19950114040	19950907
EP0701107 B1	20000315	EP19950114040	19950907
JP3058074 B2	20000704	JP19950333837	19951222
JP3262193 B2	20020304	JP19950017588	19950206
JP8075521 A2	19960322	JP19940215663	19940909
JP8210892 A2	19960820	JP19950017588	19950206
JP9126851 A2	19970516	JP19950333837	19951222
US5728952 A	19980317	US19950525466	19950908
US5831178 A	19981103	US19960705343	19960829
US5885496 A	19990323	US19970953597	19971017

Priority:

JP19940215663 19940909 JP19950017588 19950206 JP19950220128 19950829
US19950525466 19950908 JP19950333837 19951222 US19960705343 19960829
US19970953597 19971017

Probable Assignee: GLENN BEANE LLC**Assignee(s):** (std): FLOWTEC AG ; FUJI ELECTRIC CO LTD ; MATERIALS INNOVATION INC**Assignee(s):** FUJI ELECTRIC CO LTD KAWASAKI KANAGAWA JP ; LASHMORE DAVID S ; GLENN BEANE LLC ; FUJI ELECTRIC CO ; BEANE GLENN L ; ENDRESS AND HAUSER FLOWTEC AG ; ENDRESS AND HAUSER FLOWTEC AG REINACH ; ENDRESS AND HAUSER FLOWTEC REINACH AG**Inventor(s):** (std): KUDO TAKAHIRO ; KISHIRO MASAMI ; YAO HIRONOBU ; YOSHIMURA HIROYUKI ; TAKAHASHI MASATO ; TSURUOKA MICHIIKO ; MATSUMOTO IWAO ; KAWAKAMI MASAKAZU ; OKAWA KEITA ; KIDAI MASAMI ; HIROYUKI YOSHIMURA ; TAKAHIRO KUDO ; MASAMI KISHIRO ; LASHMORE DAVID S ; BEANE GLENN L**Inventor(s):** KUDO TAKAHIRO KAWASAKI KANAGAWA JP ; YOSHIMURA HIROYUKI KAWASAKI KANAGAWA JP ; KISHIRO MASAMI KAWASAKI KANAGAWA JP**Agent(s):** SPRUSON AND FERGUSON; ASPEN PHARMA PTY LTD**Designated states:** CH DE FR GB IT LI**29) Family number: 62169546 (DE102014114848A1)**

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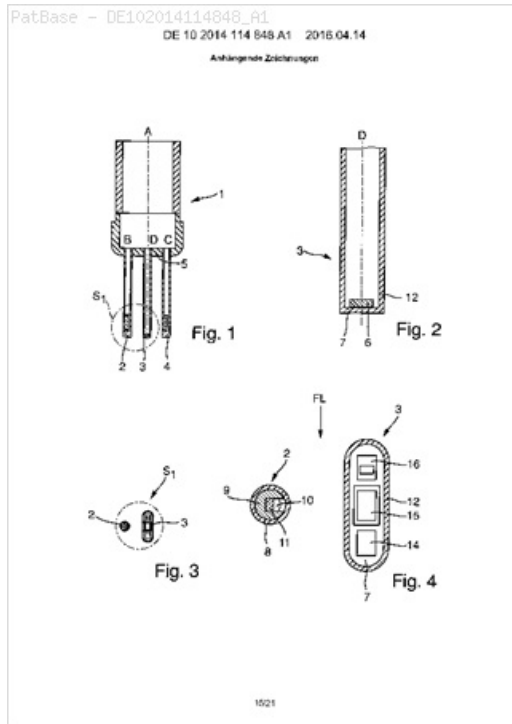
Title: THERMISCHES DURCHFLOSSMESSGERAET, VERFAHREN ZUR DRIFTUEBERWACHUNG EINES THERMISCHEN DURCHFLOSSMESSGERAETES UND VERFAHREN ZUR BESTIMMUNG DER STROEMUNGSRICHTUNG THERMAL flowmeter, METHOD FOR DRIFTUEBERWACHUNG OF THERMAL FLOW MEASUREMENT AND METHOD FOR DETERMINING THE APPLIANCE STROEMUNGSRICHTUNG (Machine translation)

Abstract: Source: DE102014114848A1 [DE] Thermisches Durchflussmessgeraet zur Ermittlung eines Massendurchflusses oder einer Durchflussgeschwindigkeit eines Mediums in einem Rohr bzw. einem Rohrabschnitt mit einem Sensor, welcher zumindest zwei Sensorelemente umfasst, wobei ein Sensorelement ein erstes Heizelement erfasst und ein zweites Sensorelement ein zweites Heizelement und einen Temperatursensor umfasst; sowie ein Verfahren zur ueberwachung eines thermischen Durchflussmessgeraetes und ein Verfahren zur Bestimmung der Stroemungsrichtung, sowie ein Verfahren zur Drifterkennung. **Machine translation:** The thermal flow meter for determining a mass flow rate or a flow velocity of a medium in a pipe or a pipe section with a sensor which comprises at least two sensor elements, whereby one sensor element detects a first heating element and a second sensor element comprises a second heating element and a temperature sensor; and a method for monitoring a thermal flow measuring device and a method for determining the Stroemungsrichtung, and a method for drift detection.

Classifications:**International (IPC 8-9):** G01F1/684 G01F1/69 G01F25/00 G01P13/00

G01P5/10 (Advanced/Invention)

CPC: G01F1/684 G01F1/69 G01P5/10 G01F25/00



Family:

Publication number	Publication date	Application number	Application date
DE102014114848 A1	20160414	DE201410114848	20141014

Priority:

DE201410114848 20141014

Probable Assignee: FLOWTEC AG

Assignee(s): (std): FLOWTEC AG

Assignee(s): ENDRESS AND HAUSER FLOWTEC AG

Inventor(s): (std): GABERTHUEEL STEPHAN ; PAPATHANASIOU PANAGIOTIS ; PFAU AXEL

30) Family number: 23438557 (EP1223411A1)

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Title: Universal sensor for measuring shear stress, mass flow or velocity of a fluid or gas, for determining a number of drops, or detecting drip or leakage

Abstract: Disclosed is a universal sensor, based on a heat flux sensor, for measuring shear stress, mass flow and velocity, for determining a number of drops or for detecting drip or leakage. With this sensor, when installed on a wall or in a pipe, said physical quantities can be determined with high speed in about less than 50 mikroseconds, with high accuracy and without need to preamplify the measured signal. Moreover the sensor's signal is sufficient for direct use with a voltmeter or a computer's analog-digital converter. After calibration of the sensor, the measured signal can be correlated with the above mentioned physical quantities.

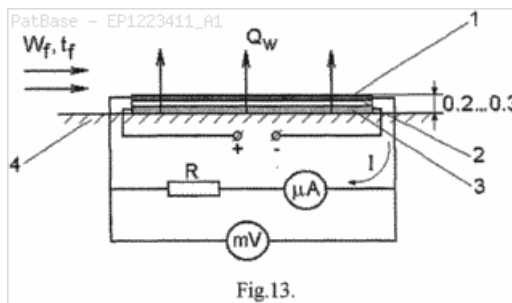
Classifications:

International (IPC 8-9): G01F1/688 G01K7/02 G01M3/00 G01N13/00 G01P5/10 G01P5/12 (Advanced/Invention); G01N35/10 (Advanced/Non-invention); G01F1/684 G01K7/02 G01M3/00 G01N13/00 G01P5/10 (Core/Invention); G01N35/10 (Core/Non-invention)

International (IPC 1-7): G01F1/688 G01K7/02 G01M3/00 G01N13/00 G01N25/32 G01P5/12

CPC: G01F1/6888 G01K7/02 G01K7/028 G01M3/002 G01N13/00 G01N2035/102 G01P5/10 G01P5/12

European: G01F1/688T G01K7/02 G01K7/02M G01M3/00B G01N13/00 G01P5/10 G01P5/12 S01N35/10C3B



Family:

Publication number	Publication date	Application number	Application date
EP1223411 A1	20020717	EP20010100730	20010112

Priority:

EP20010100730 20010112

Probable Assignee: LIDACT GMBH

Assignee(s): (std): LIDACT GMBH

Inventor(s): (std): DIVIN NIKOLAI PETROVICH ; MITIAKOV ANDREI VLADIMIROVICH ; SAPOZHNIKOV SERGEI ZAHAROVICH ; MITIAKOV VLADIMIR YURIEVICH

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

Title: THERMAL MASS FLOW SENSOR

Abstract: An apparatus for sensing a mass flow rate of a fluid in a thermal mass flow meter has a sensor tube. The sensor tube has a tube for carrying the fluid flow at the flow rate to be sensed. A temperature responsive member is disposed in good heat transfer relation with the tube. The temperature responsive member, when energized, produces at a sensor signal node a sensor signal responsive to the rate of mass flow of the fluid through the tube. The sensor signal is offset from a null signal condition by an unsymmetrical temperature distribution along the sensor tube when the mass flow rate of the fluid is zero. A means for modifying the temperature distribution along the sensor tube alters the unsymmetrical temperature distribution and causes the sensor signal node to produce a substantially null signal condition when the mass flow rate of the fluid through the tube is zero.

Classifications:

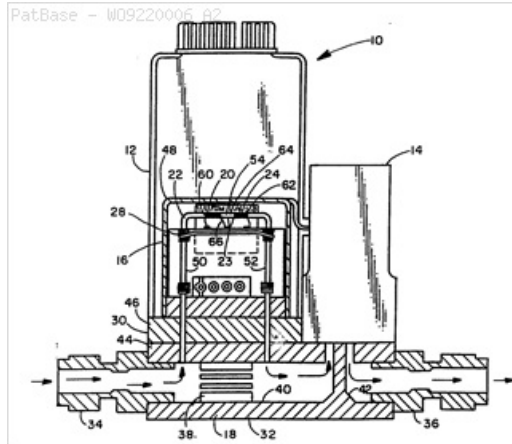
International (IPC 8-9): B43M5/04 G01F1/68 G01F1/684 G01F25/00 G01F5/00 (Advanced/Invention);

G01F1/68 G01F1/684 G01F25/00 G01F5/00 (Core/Invention)

International (IPC 1-7): G01F1/68 G01F25/00

CPC: G01F1/68 G01F1/6847 G01F5/00 G01F25/0007

European: G01F1/68 G01F1/684N G01F25/00A G01F5/00



Family:

Publication number	Publication date	Application number	Application date
EP0581896 A1	19940209	EP19920913613	19920423
JP6507713 T2	19940901	JP19940511905T	19920423
WO9220006 A2	19921112	WO1992US03341	19920423
WO9220006 A3	19921223	WO1992US03341	19920423

Priority:

US19910692181 19910426 JP19940511905 19920423

Probable Assignee: UNIT INSTR INC

Assignee(s): (std): UNIT INSTR INC

Assignee(s): UNIT INSTRUMENTS INC

Inventor(s): (std): DOYLE MICHAEL JOHN ; VU KIM NGOC ; VAVRA RANDALL JAMES ; LEMAY DAN BROWN

Designated states: AT BE CH DE DK ES FR GB GR IT JP LI LU MC NL SE

Title: FLUID FLOW SENSORS

Abstract: The sensor device includes a heater (26) and two heat sensors (22, 24) disposed on opposite sides of the heater, the heater and sensors being defined by thin film members (32, 34) suspended above a depression (30) in a semiconductor base (20). the air flow to be sensed passing over both sides of the thin film members.

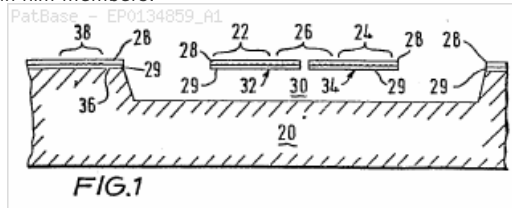
Classifications:

International (IPC 8-9): G01F1/684 G01F1/696 G01F1/698 G01F1/699 (Advanced/Invention)

International (IPC 1-7): G01F1/68

CPC: G01F1/6845 G01F1/696 G01F1/698 G01F1/699

European: G01F1/684M G01F1/696 G01F1/698 G01F1/699



Family:

Publication number	Publication date	Application number	Application date
EP0134859 A1	19850327	EP19830305554	19830921

Priority:

EP19830305554 19830921

Probable Assignee: HONEYWELL INC

Assignee(s): (std): HONEYWELL INC

Inventor(s): (std): JOHNSON ROBERT G ; HIGASHI ROBERT E ; BOHRER PHILIP J

Designated states: DE FR GB IT NL

Title: VAPOR MASS FLOW CONTROL SYSTEM

Abstract: A system for precisely controlling the mass flow rate of vapor from a bubbler by a carrier gas stream.

Classifications:

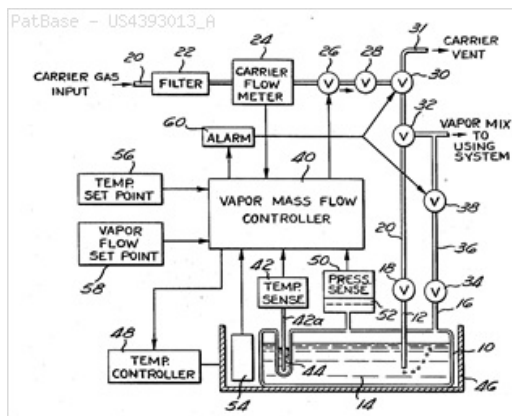
International (IPC 8-9): B01F15/04 B01J4/00 B01J7/02 C03B37/014 C23C16/448 C23C16/52 C30B25/14 C30B25/16 C30B31/16 G01F1/68 G05D7/06 H01L21/205 (Advanced/Invention); B01J4/00 B01J7/00 C03B37/014 C23C16/448 C23C16/52 C30B25/14 C30B25/16 C30B31/00 G01F1/68 G05D7/06 H01L21/02 (Core/Invention)

International (IPC 1-7): B01F15/04 B01F3/04 B01J4/00 B01J7/00 C30B25/14 G01F1/68 G05D11/00 G05D7/00 G05D7/06 H01L21/02 H01L21/205

CPC: Y10S261/65 C23C16/45561 C23C16/4482 C30B25/14 C30B31/165 C03B2207/90 C03B37/01413 B01J4/008 C03B2207/86 C03B2207/87 C03B2207/88 C03B2207/89 C23C16/52 G01F1/68 G05D7/0635 Y10T137/2534

European: B01J4/00D C03B37/014B C23C16/448B2 C23C16/455J C23C16/52 C30B25/14 C30B31/16B G01F1/68 G05D7/06F4B M03B207/86 M03B207/87 M03B207/88 M03B207/89

US: 118/692 118/726 137/101.25 261/128 261/130 261/64.3 261/64.5 261/64B 261/64D 261/DIG.65 427/8 73/861.04



Family:

Publication number	Publication date	Application number	Application date
CA1171940 A1	19840731	CA19810377928	19810520
DE3175862 D1	19870226	DE19813175862	19810519
EP0040540 A2	19811125	EP19810302204	19810519
EP0040540 A3	19820630	EP19810302204	19810519
EP0040540 B1	19870121	EP19810302204	19810519
JP1270780 C3	19850625	JP19810076377	19810519
JP57010323 A2	19820119	JP19810076377	19810519
JP59034420 B4	19840822	JP19810076377	19810519
US4393013 A	19830712	US19810288360	19810730
US4436674 A	19840313	US19830484198	19830412

Priority:

US19700151741 19700520 US19800151741 19800520 CA19810377928 19810520
US19810288360 19810730 US19830484198 19830412

Probable Assignee: VERSUM MATERIALS

Assignee(s): (std): JIEI SHII SHIYUUMAAKAA CO ; SCHUMACHER J C CO ; SCHUMACHER CO J C

Assignee(s): SECURITY PACIFIC NATIONAL BANK ; JEI SHII SHUUMAAKAA CO ; SCHUMACHER J C COMPANY ; MCMENAMIN JOSEPH C ; SCHUMACHER JC CO ; VERSUM MATERIALS US LLC ; VERSUM MATERIALS ; AIR PRODUCTS AND CHEMICALS INC ; AIR PRODUCTS AND CHEMICALS INC A CORP OF DE ; J C SCHUMACHER CO ; J C SCHUMACHER COMPANY ; JC SCHUMACHER CO ; JC SCHUMACHER CO A CORP OF CA

Inventor(s): (std): JIYOOJIFU SHII MAKUMENAMIN ; JOOJIFU SHII MAKUMENAMIN ; MCMENAMIN JOSEPH C

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: DE FR GB NL

34) Family number: 50457662 (US2013269428A)

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Title: MEASUREMENT TRANSDUCER OF A THERMAL MASS FLOW METER FOR DETERMINING THE FLOW OF A MEDIUM THROUGH A PIPE AND METHOD FOR FABRICATING IT

Abstract: A measurement transducer of a thermal mass flow meter for determining the flow rate of a medium that flows through a pipe, which comprises at least one thin film resistance thermometer, which is arranged in a sheath, wherein the sheath comprises a first open end, out of which at least one cable for electrical contact with the resistance thermometer is led out of the sheath, wherein the cable in the sheath is embedded in a first fill material, at least in sections, and wherein the thin film resistance thermometer is at least partially covered by a second fill material, which is a gaseous, liquid, semi-liquid, powder or solid and in the case cited last, comprises a hardness of at most Shore A 90, and that the first fill material comprises a hardness of at most Shore D 98.

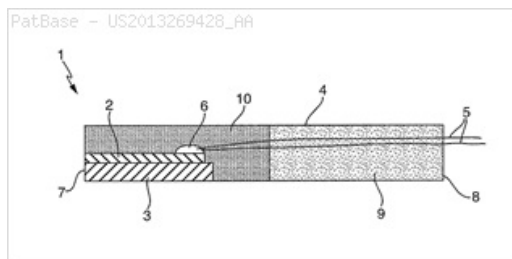
Classifications:

International (IPC 8-9): G01F1/684 G01F1/692 G01K1/08 G01K13/02 G01K7/16 H01L29/40 (Advanced/Invention)

CPC: G01F1/684 G01F1/692 G01K1/08 G01K7/16 G01K13/02 Y10T29/49007 H01L29/401

European: G01F1/684 G01F1/692 G01K1/08 G01K13/02 G01K7/16

US: 29/595 73/204.26



Family:

Publication number	Publication date	Application number	Application date
DE102010031127 A1	20120112	DE201010031127	20100708
DE502011013194 D1	20171130	DE201150013194T	20110620
EP2591318 A1	20130515	EP20110741530	20110620
EP2591318 B1	20171025	EP20110741530	20110620
US2013269428 AA	20131017	US20110808305	20110620
WO12004117 A1	20120112	WO2011EP60205	20110620

Priority:

DE201010031127 20100708 EP20110741530 20110620 WO2011EP60205 20110620

Probable Assignee: ENDRESS AND HAUSER FLOWTEC AG

Assignee(s): (std): BARTH MARTIN ; BAUR TOBIAS ; CHRISTODOULOU FANOS ; ENDRESS AND HAUSER FLOWTEC AG ; FLOWTEC AG ; PFAU AXEL ; LANG ARNO

Inventor(s): (std): PFAU AXEL ; BAUR TOBIAS ; LANG ARNO ; BARTH MARTIN ; CHRISTODOULOU FANOS

Agent(s): ANDRES ANGELIKA MARIA; ANDRES ANGELIKA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

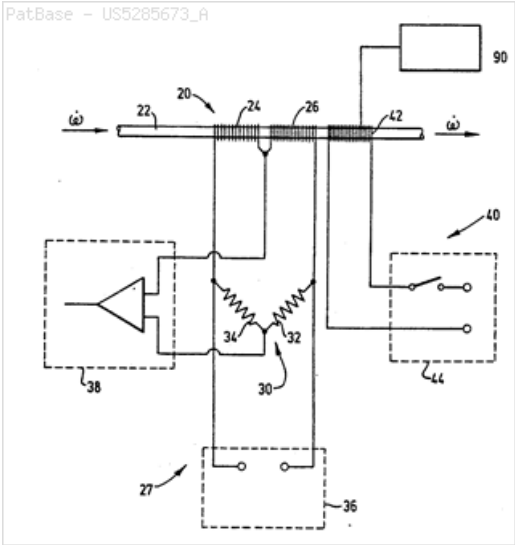
35) Family number: 11707717 (US5285673A)

© PatBase

Title: Method for in-line calibration verification of mass flow meters

Abstract: An apparatus for verifying the calibration of a flow meter contains a flow sensor assembly which has a flow tube defining an axial fluid path through the flow sensor assembly; an upstream temperature sensor in thermal contact with the flow tube; a downstream temperature sensor in thermal contact with the flow tube, the two sensors being operationally connected to a means for producing an output in response to a temperature difference between the first and second sensors; and means for asymmetrically transferring heat to the first and second temperature sensors independently of fluid flow through the flow tube. The calibration of the flow meter's thermal and electronic systems is verified by measuring the flow meter's output in response to a first asymmetric heat transfer to the upstream and downstream temperature sensors when the flow meter is calibrated. The output of the flow meter in response to a second asymmetric transfer to the upstream and downstream sensors is subsequently measured and comparison of the two readings verifies whether the flow meter's thermal and electronic systems remains calibrated.

Classifications:
International (ipc 8-9): G01F1/68 G01F1/684 G01F1/688 G01F1/696 G01F25/00 (Advanced/Invention); G01F1/696 (Core/Invention)
International (ipc 1-7): G01F1/68 G01F25/00
CPC: G01F1/6847 G01F1/6888
European: G01F1/684N G01F1/688T
US: 73/1.16 73/204.27



Family:

Publication number	Publication date	Application number	Application date
JP6018317 A2	19940125	JP19910224397	19910904
JP7111367 B4	19951129	JP19910224397	19910904
US5285673 A	19940215	US19910789364	19911108
US5359878 A	19941101	US19940186101	19940125

Priority:
US19910661570 19910226 US19910789364 19911108 US19910792235 19911114
US19940186101 19940125

Probable Assignee: DXL USA INC

Assignee(s): (std): DXL USA INC

Assignee(s): D EKUSU L INTERNATL INC ; DEII EKUSU ERU INTERN INC ; DXL INT ; DXL INT INC

Inventor(s): (std): DREXEL CHARLES F ; MUDD DANIEL T ; DANIERU TEII MUTSUDO

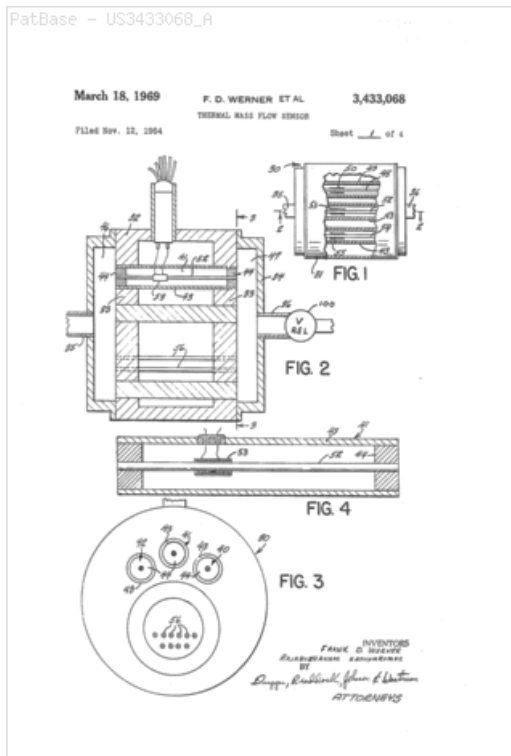
36) Family number: 858748 (US3433068A)

© PatBase

Title: THERMAL MASS FLOW SENSOR

Abstract: (Claim 1) 1. A mass flow sensor comprising a first tubular element that passes fluid, a second element that does not change temperature as a result of fluid passing through said first element, means mounting said first and second elements in close thermal relationship at their mounting points, said first and second elements having third and fourth separate resistance elements mounted thereon in heat-conductin.- relationship thereto, respectively, said third resistance element comprising a resistance wire wrapped around the first tubular element so as to encircle the first tubular element, and electrical means connected to said resistance elements, said electrical means including means to pass a current through the resistance elements to cause said resistance elements to be heated, and means to compare the changes in resistance of said respective resistance elements when fluid is flowing through the first tubular element.

Classifications:
International (ipc 8-9): G01F1/684 (Advanced/Invention); G01F1/684 (Core/Invention)
International (ipc 1-7): G01F1/00 G01F1/68 G01F23/24
CPC: G01F1/6847
European: G01F1/684N
US: 73/204.19

**Family:**

Publication number	Publication date	Application number	Application date
US3433068 A	19690318	US19640410602	19641112

Priority:

US19640410602 19641112

Probable Assignee: ROSEMOUNT ENG CO LTD
Assignee(s): (std): ROSEMOUNT ENG CO LTD
Assignee(s): ROSEMOUNT ENG CO
Inventor(s): (std): SATHYAKUMAR RAJABUSHANAM ; WERNER FRANK D
Inventor(s): FRANK D WERNER ; RAJABUSHANAM SATHYAKUMAR

37) Family number: 43710782 (US2010286931A)

© PatBase

Title: SYSTEM, METHOD AND COMPUTER PROGRAM FOR DETERMINING FLUID FLOW RATE USING A PRESSURE SENSOR AND A THERMAL MASS FLOW SENSOR

Abstract: The present invention relates to a system, method, and computer program product for determining the flow rate of a fluid. The system, method, and computer program product generate a thermal sensor based mass flow rate for the fluid, where the thermal sensor based mass flow rate is determined at least in part from the thermal sensor signal (36). The system, method, and computer program product generate a pressure sensor based mass flow rate for the fluid, wherein the pressure sensor based mass flow rate is determined at least in part from the pressure sensor signal (51a). The system, method, and computer program product generate at least one calibration factor (?) using the thermal sensor based mass flow rate and the pressure sensor based mass flow rate. The system, method, and computer program product may generate a calibrated pressure sensor based mass flow rate by using the at least one calibration factor (?) to modify the pressure sensor based mass flow rate. The system, method, and computer program product may generate a calibrated thermal sensor based mass flow rate by using the at least one calibration factor (?) to modify the thermal sensor based mass flow rate.

Classifications:

International (IPC 8-9): F16K37/00 G01F1/36 G01F1/50 G01F1/68 G01F1/86 G01F1/88 G01F15/00 G01F25/00

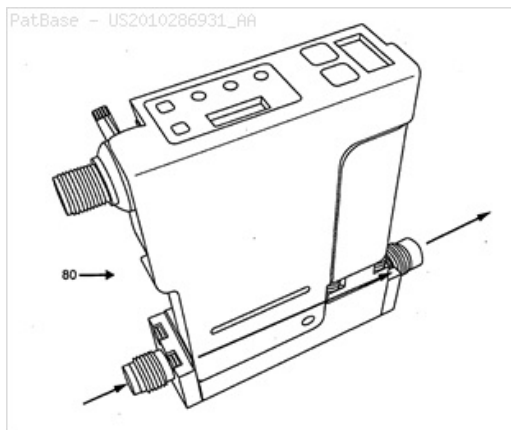
G05D7/06 (Advanced/Invention);
 F16K37/00 G01F1/34 G01F1/68 G01F1/76 G01F15/00 G01F25/00 G05D7/06 (Core/Invention)

CPC: G01F1/36 G01F1/68 G01F1/86 G01F1/88 G01F15/005 G01F25/0007 G05D7/0635

European: G01F1/36 G01F1/68 G01F1/86 G01F1/88 G01F15/00C G01F25/00A G05D7/06F4B

US: 702/100 702/100S 702/45 702/47 702/47P 702/50

PatBase - US2010286931_AA

**Family:**

Publication number	Publication date	Application number	Application date
US2010286931 AA	20101111	US20080440367	20080305

US8504318 BB	20130806	US20080440367	20080305
WO09110895 A1	20090911	WO2008US55911	20080305

Priority:

US20080440367 20080305 WO2008US55911 20080305

Probable Assignee: BROOKS INSTRUMENT LLC

Assignee(s): (std): BERGER TODD ; BROOKS INSTR LLC ; DILLE JOSEPH C ; MENDELSON JAY ; ROBERTSON WALTER DENNIS III ; KEHOE ANTHONY B ; WHITELEY JEFFREY L ; ROBERTSON III WALTER DENNIS

Assignee(s): BROOKS INSTRUMENT LLC ; BROOKS INSTRUMENTS LLC

Inventor(s): (std): DILLE JOSEPH C ; KEHOE ANTHONY B ; BERGER TODD ; MENDELSON JAY ; ROBERTSON WALTER DENNIS III ; WHITELEY JEFFREY L ; ROBERTSON III WALTER DENNIS

Agent(s): SONNENSCHN NATH AND ROSENTHAL LLP; PATTON BOGGS LLP; COLLINS DARREN W ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

38) Family number: 5355795 (US4686856A)

© PatBase

Title: Mass flow meter

Abstract: A fluid mass flow meter that responds rapidly to changes in the rate of flow of a fluid and that is insensitive to variations in ambient temperature. The flow meter has a thermal clamp that clamps the sensor tube adjacent the extremities of a sensor disposed along the tube; a frequency compensating amplifier that, in cooperation with the thermal clamp, increases the frequency response of the meter; and an offset null bias circuit that, in combination with a bridge balancing potentiometer, corrects for the effects of variations in ambient temperature.

Classifications:

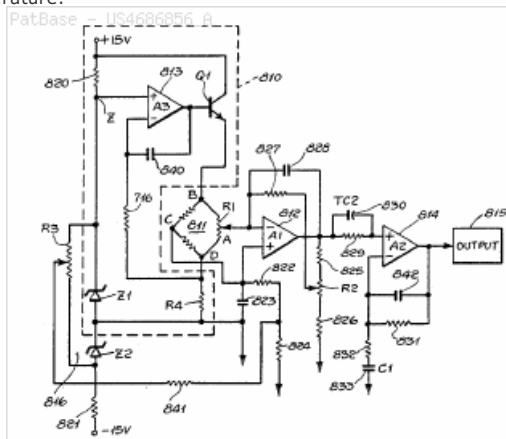
International (IPC 8-9): G01F1/684 (Advanced/Invention); G01F1/684 (Core/Invention)

International (IPC 1-7): G01F1/68

CPC: G01F1/6847

European: G01F1/684N

US: 73/204 73/204.15 73/204.19



Family:

Publication number	Publication date	Application number	Application date
US4686856 A	19870818	US19860851262	19860409

Priority:

US19830470097 19830228 US19860851262 19860409

Probable Assignee: DOYLE MICHAEL J

Assignee(s): (std): DOYLE MICHAEL J ; VAVRA RANDALL J

Inventor(s): (std): VAVRA RANDALL J ; DOYLE MICHAEL J

39) Family number: 48338801 (US2013041234A)

© PatBase

Title: FLOW RATE METER

Abstract: The present invention is flow rate meters which are able to accurately measure the volumetric rate of flow of a liquid through a conduit without requiring foreknowledge of the physicochemical characteristics of the liquid, e.g., for the purpose of calibration of the thermal mass flow rate. One application of the flow meters of the invention is to incorporate them in a system for measuring the flow rate of urine excreted by a catheterized patient. The invention also provides methods for using the flow rate meters.

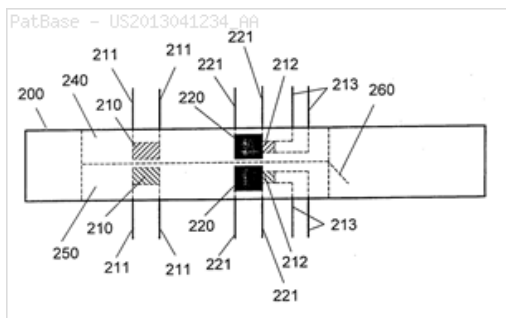
Classifications:

International (IPC 8-9): A61B5/01 A61B5/20 A61M25/00 G01F G01F1/00 G01F1/68 G01F1/684 G01F23/26 G01F25/00 G01F3/36 G01F5/00 (Advanced/Invention); A61B G01F (Subclass/Invention)

CPC: G01F1/68 A61M25/0017 G01F3/36 G01F5/00 G01F25/0038 G01F23/266 A61B5/208 A61B2562/0271 G01F1/007 G01F1/684

European: G01F1/00C G01F1/68 G01F3/36 G01F5/00

US: 600/301 600/549 73/204.11



Family:

Publication number	Publication date	Application number	Application date
CN102893134 A	20130123	CN201180022590	20110404
CN102893134 B	20160525	CN201180022590	20110404
DE602011028392 D1	20160901	DE201160028392T	20110404
DK2567199 T3	20160919	DK20110777354T	20110404
EA024961 B1	20161130	EA20120001478	20110404
EA201201478 A1	20130430	EA20120001478	20110404
EP2567199 A1	20130313	EP20110777354	20110404
EP2567199 A4	20140716	EP20110777354	20110404
EP2567199 B1	20160720	EP20110777354	20110404
ES2589679 T3	20161115	ES20110777354T	20110404
IL205614 A0	20101130	IL20100205614	20100503
IL222449 A0	20121231	IL20110222449	20110404
IL222449 A1	20150730	IL20110222449	20110404
TR201611704 T4	20160921	TR20160011704T	20110404
US2013041234 AA	20130214	US20110642602	20110404
US9021878 BB	20150505	US20110642602	20110404
WO11138774 A1	20111110	WO20111L00289	20110404

Priority:

US20090215580P 20090508 IL20100205614 20100503 EP20110777354 20110404
WO20111L00289 20110404 IL2012022449 20121015

Probable Assignee: RENALSENSE LTD

Assignee(s): (std): ADLER MICHAEL ; BENTOV SHMUEL ; GRINSTEIN MOR ; JACK YEHOOSHUA MANTINBAND ; MANTINBAND JACK YEHOOSHUA ; RENALSENSE LTD ; MOR GRINSTEIN ; SHMUELBENTOV ; MICHAEL ADLER ; RENAL SENSE LTD

Assignee(s): SHMUEL BENTOV

Inventor(s): (std): ADLER MICHAEL ; MANTINBAND JACK YEHOOSHUA ; GRINSTEIN MOR ; BENTOV SHMUEL

Inventor(s): JACK YEHOOSHUA MANTINBAND ; MOR GRINSTEIN ; MICHAEL ADLER ; SHMUEL BENTOV

Agent(s): STOLMAR AND PARTNER PATENTANWALTE PARTG MBB ; SGOBBA MARCO ; PERANI AURELIO ; DE ELZABURU ALBERTO ; LUZZATTO AND LUZZATTO ; AYLIN SENER ; ROACH BROWN MCCARTHY AND GRUBER PC ; KEVIN D ; LUZZATTO AND LUZZATTO ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

40) Family number: 3473868 (US4932255A)

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Title: FLOW SENSING USING SURFACE ACOUSTIC WAVES

Abstract: A sensor employs a SAW oscillator heated above the ambient by converting RF energy to heat via acoustic dissipation in energy absorbers located outside the path of propagation. The oscillator utilizes a delay line designed to support single mode operation, fabricated on a substrate. Low insertion loss results from placing the energy absorbers outside the propagation path. Thermally conductive paths around the substrate periphery reduce thermal gradients. Used to measure fluid flow, fluid is directed across the SAW delay line lowering the substrate temperature which is elevated by the heat generating energy absorbers outside the propagation path. The temperature reduction changes the oscillator frequency, indicative of the gas velocity. In operation, gases are passed across the top of the delay-line while liquids are passed across the bottom of the delay-line in a back-side sensing operation. To measure gas or vapor contaminants, chemically sensitive coatings placed on the substrate in the propagation path can be used to sense contaminants in a gas flowing over the substrate. In mass flow sensing applications a difference frequency between an oscillator with a delay-line having end absorbers and operating at elevated temperatures and a reference oscillator with a delay-line operating at ambient is determined.

Classifications:

International (IPC 8-9): G01F1/00 G01F1/66 G01F1/68 G01F1/688

G01F1/69 G01N29/02 G01P5/12 (Advanced/Invention);
G01F1/00 G01F1/66 G01F1/68 G01F1/684 G01N29/02
G01P5/10 (Core/Invention)

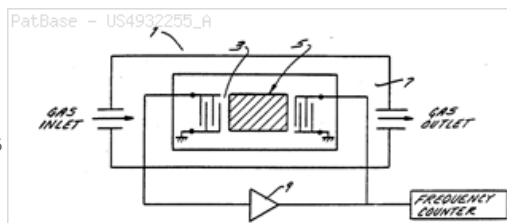
International (IPC 1-7): G01F1/00 G01F1/68 G01N30/00 G01P5/12

CPC: Y10S73/04 G01F1/66 G01F1/6882 G01N29/022 G01N2291/0256
G01N2291/02836 G01N2291/0423

European: G01F1/66 G01F1/688A G01N29/02F S01N291/025G

S01N291/028F S01N291/042E

US: 310/313R 73/204.11 73/24.03 73/DIG.4



Family:

Publication number	Publication date	Application number	Application date
JP2276915 A2	19901113	JP19890325761	19891215
JP2792695 B2	19980903	JP19890325761	19891215
US4932255 A	19900612	US19880285625	19881216

Priority:

US19880285625 19881216

Probable Assignee: JOHNSON SERVICE CO

Assignee(s): (std): JOHNSON SERVICE CO

Assignee(s): JOHNSON SERVICE CO A CORP OF NV ; JONSON SAABISU CO ; JOHNSON SERVICE COMPANY

Inventor(s): (std): BRACE JOHN G ; SANFELIPPO THOMAS S ; JIYON JII BUREISU ; TOOMASU ESU SANFUERITSUPO

Inventor(s): JON JII BUREISU ; TOOMASU ESU SANFUERITSUHO

Title: TEMPERATURE SENSOR AND METHOD FOR ITS MANUFACTURE

Abstract: A thermal, flow measuring device for determining and/or monitoring flow of a measured medium through a measuring tube. The thermal, flow measuring device includes: a first pin-shaped shell and at least a second pin-shaped shell; a first resistance thermometer and at least a second resistance thermometer. At least the first resistance thermometer is embodied so as to be heatable, wherein the resistance thermometers, in each case, have a first surface, and at least a second surface, which lies opposite the first surface. The first pin-shaped shell surrounds the first resistance thermometer, and the second pin-shaped shell surrounds the second resistance thermometer. The pin-shaped shells are fillable with a fill material; wherein, in each case, at least one spacer is placeable between the pin-shaped shell and the first surface of the resistance thermometer, and the second surface of the resistance thermometer is at least partially covered with fill material.

Classifications:

International (IPC 8-9): B23P11/00 G01F1/68 G01F1/684 G01F1/69 G01K1/08 H05K13/00 (Advanced/Invention); G01F1/684 (Core/Invention)

CPC: G01F1/69 G01F1/684 Y10T29/49002 Y10T29/49826 Y10T29/49936

European: G01F1/684 G01F1/69

US: 29/428 29/428S 29/521 29/592.1 338/22R 338/25 338/28 374/141 374/163 374/185 73/170.12 73/204.11 73/204.110P 73/204.22

PatBase - US2011005311_AA

Patent Application Publication Jan. 13, 2011 Sheet 1 of 2 US 2011/005311 A1

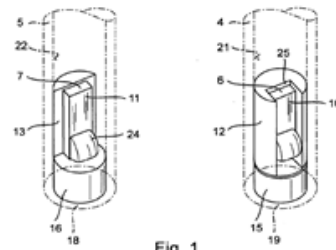


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
DE102008015359 A1	20090924	DE200810015359	20080320
DE502009004925 D1	20121122	DE200950004925T	20090312
DE502009011327 D1	20150910	DE200950011327T	20090312
DK2282179 T3	20130102	DK20090189476T	20090312
EP2255160 A2	20101201	EP20090722216	20090312
EP2255160 B1	20150729	EP20090722216	20090312
EP2282179 A1	20110209	EP20100189476	20090312
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US2011005311 AA	20110113	US20090736190	20090312
US2012266451 AA	20121025	US20120444258	20120709
US8166813 BB	20120501	US20090736190	20090312
US8935843 BB	20150120	US20120444258	20120709
WO09115452 A2	20090924	WO2009EP52942	20090312
WO09115452 A3	20100107	WO2009EP52942	20090312

Priority:

DE200810015359 20080320 EP20090722216 20090312 WO2009EP52942 20090312
EP20100189476 20090312 US20100736190 20100917 US20120444258 20120709

Probable Assignee: ENDRESS AND HAUSER FLOWTEC AG

Assignee(s): (std): FLOWTEC AG ; HOLOUBEK JIRI ; PFAU AXEL ; POLAK JIRI ; POPP OLIVER ; BOGHUN DIRK ; BOGUHN DIRK

Assignee(s): ENDRESS AND HAUSER FLOWTEC AG ; WRIGHT LINEAR PUMP ; WRIGHT THERAPY PRODUCTS INC

Inventor(s): (std): BOGHUN DIRK ; HOLOUBEK JIRI ; BOGUHN DIRK ; POPP OLIVER ; PFAU AXEL ; POLAK JIRI

Inventor(s): POLAK JIRI 9652 ; HOLOUBEK JIRI 9630 ; PFAU AXEL 4144 ; BOGUHN DIRK 81245 ; POPP OLIVER 4104

Agent(s): ANDRES ANGELIKA MARIA ; BACON AND THOMAS PLLC ; ANDRES ANGELIKA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: Flow sensor

Abstract: The invention is directed to a flow sensor having a heater, two temperature measuring sensors, a heater temperature sensor and a medium temperature sensor. A control circuit is provided which controls the overtemperature of the heater in dependence upon the temperature of the flowing medium. With this arrangement, the influence of the temperature dependency of the following on the sensor characteristic are compensated: viscosity, thermal conductance and thermal capacity of the medium. The relationship between the heater temperature and the temperature of the medium is adjusted in a slightly nonlinear manner by means of special evaluation circuits. In this way, a further improvement of the

Classifications:

International (pc 8-9): F02D41/18 G01D3/036 G01F1/68 G01F1/684 G01F1/688 G01F1/692 G01F1/696 G01F1/698 G01F1/699 G01F15/04 G01K7/16 G01P1/00 (Advanced/Invention);
F02D41/18 G01D3/028 G01F1/68 G01F1/684 G01F1/696 G01F15/00 G01K7/16 G01P1/00 (Core/Invention)

International (pc 1-7): F02D41/18 G01D3/04 G01F1/68 G01F1/698 G01K7/16 G01P5/10 G05D23/19

CPC: G01D3/0365 G01F1/6845 G01F1/698 G01F1/699 G01P1/006

European: G01D3/036B G01F1/684M G01F1/698 G01F1/699 G01P1/00C

US: 73/204.16



Priority:

DE19924223968 19920721 DE19934324040 19930717

Probable Assignee: ROBERT BOSCH GMBH

Assignee(s): (std): BOSCH GMBH ROBERT

Assignee(s): ROBERT BOSCH GMBH

Inventor(s): (std): URURITSUHI KUUN ; YOOZEFU KURAINHANSU ; RUUDORUFU ZAUAA ; ETSUKARUTO RAIREN ; HANSU HEHITO ; KUHN ULRICH ; REIHLEN ECKART ; SAUER RUDOLF ; KLEINHANS JOSEF ; HECHT HANS ; REIHLEN ECKART DIPL ING DR ; KUHN ULRICH DIPL PHYS DR ; HECHT HANS DIPL PHYS ; KLEINHANS JOSEF DIPL ING ; SAUER RUDOLF DIPL ING DR

Inventor(s): HECHT HANS DIPL PHYS 70825 KORNTAL MUENCHINGEN DE ; KLEINHANS JOSEF DIPL ING 71665 VAIHINGEN DE ; SAUER RUDOLF DIPL ING DR 71726 BENNINGEN DE ; REIHLEN ECKART DIPL ING DR 72766 REUTLINGEN DE ; KUHN ULRICH DIPL PHYS DR 71272 REININGEN DE

43) Family number: 56089963 (US2015192442A)

Title: MASS FLOW METER HARDWARE

Abstract: Microprocessor-based thermal dispersion probe mass flow meters (i.e., thermal anemometers) are described that use temperature sensing elements in its flow sensor probe(s) in addition to the two elements commonly used. Such systems allow for automatically managing changes in gas selection, gas temperature, gas pressure, and outside temperature. One mass flow meter described has a flow sensor with four temperature sensing elements, wherein one pair is provided in a temperature sensor probe and another pair in a velocity sensor probe. Another variation operates without a separate temperature sensor probe and integrates all function into a single three-sensor probe. Such a device may also be used in conjunction with a one- or two-sensor temperature probe.

Classifications:

International (IPC 8-9): G01F1/68 G01F1/692

G01F1/696 (Advanced/Invention)

CPC: G01F1/698 G01F1/684 G01F1/6965 G01F1/692 G01F1/6842

G01F1/69 G01F15/00 G01F15/024 G01F15/046

US: 1/1 702/45 73/204.26



Priority:

WO2012US56664	20120921	US20150664404	20150320	US20150664440	20150320
US20150664456	20150320	US20150664468	20150320		

Probable Assignee: SIERRA INSTRUMENTS INC

Assignee(s): (std): SIERRA INSTR

Assignee(s): SIERRA INSTRUMENTS INC

Inventor(s): (std): OLIN JOHN G

Agent(s): ONE LLP; DORSEY AND WHITNEY LLP ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

44) Family number: 59547988 (WO15088452A1)

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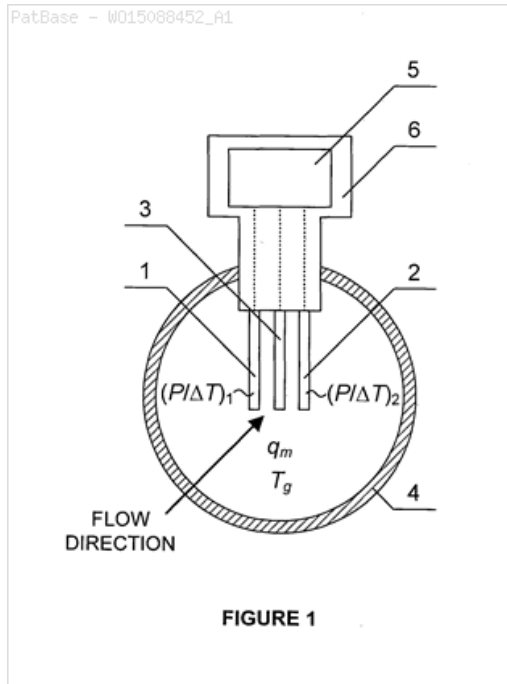
Title: THERMAL MASS FLOW METER AND THE GAS-IDENTIFICATION METHOD

Abstract: The subject of the invention is a thermal mass flow meter and a gas-identification method. The thermal mass flow meter according to the invention is characterized by comprising at least two thermal flow sensors with different constructional parameters and/or different operational parameters, and by the capability to identify the type of gas flowing through the thermal mass flow meter employing the gas-identification method according to the invention. The gas- identification method is characterized in that the mass flow readings for different types of gases are determined on the basis of the output signals and the measurement characteristics of at least two thermal flow sensors, these mass flow readings are used as the inputs for the gas- identification algorithm, and the identified gas is the gas that represents the optimal solution of the defined objective function.

Classifications:

International (IPC 8-9): G01F1/684 G01F1/688 G01F1/69 G01F1/696 G01F15/02 G01F15/04 (Advanced/Invention); G01F1/00 (Core/Invention)

CPC: G01F1/688 G01F1/69 G01F1/6965 G01F15/02 G01F15/04 G01F1/684



Family:

Publication number	Publication date	Application number	Application date
SI24577 C	20150630	SI20130000425	20131213
WO15088452 A1	20150618	WO2014SI00070	20141202

Priority:

SI20130000425 20131213

Probable Assignee: UNIV LJUBLJANI

Assignee(s): (std): UNIV LJUBLJANI

Assignee(s): UNIVERZA V LJUBLJANI FAKULTETA ZA STROJNIŠTVO LMPS ; UNIVERZA V LJUBLJANI FAKULTETA ZA STROJNIŠTVO LMPS

Inventor(s): (std): BAJSIC IVAN ; KUTIN JOZE ; RUPNIK KLEMEN

Agent(s): ITEM DOO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

45) Family number: 32300998 (US2005223828A)

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Title: IMMERSIBLE THERMAL MASS FLOW METER

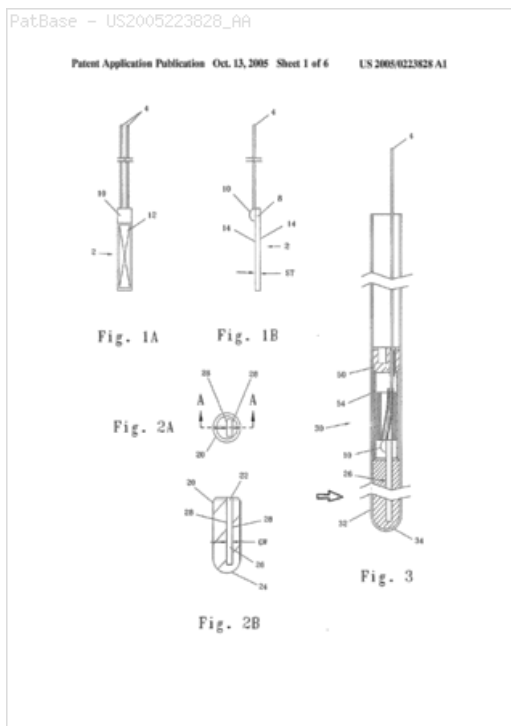
Abstract: A thermal anemometer or mass flow meter having temperature and flow velocity sensor elements is provided in which a thin film temperature sensor is provided in the heated sensor of the fluid velocity sensor element of the system. The thin-film sensor is captured at least partially within a spacer or interface member, the spacer being received within a housing. The thermal anemometer is constructed to offer sufficient precision and accuracy in its design to be suitable for sensitive scientific and industrial applications. This goal is achieved while using cost effective parts-as in the thin film temperature sensor(s)-in connection with a construction approach minimizing or eliminating gaps or other system configuration variability.

Classifications:

International (IPC 8-9): G01D21/00 G01F1/68 G01F1/684 (Advanced/Invention); G01D21/00 G01F1/68 G01F1/684 (Core/Invention)

International (IPC 1-7): G01D21/00 G01F1/68

CPC: G01F1/684 G01F1/6842
European: G01F1/684 G01F1/684C
US: 73/204.22 73/866.5



Family:

Publication number	Publication date	Application number	Application date
US2005223828 AA	20051013	US20040817319	20040402
US2006053911 AA	20060316	US20050270154	20051109
US6971274 BB	20051206	US20040817319	20040402
US7197953 BB	20070403	US20050270154	20051109

Priority:

US20040817319 20040402 US20050270154 20051109

Probable Assignee: SIERRA INSTRUMENTS INC

Assignee(s): (std): OLIN JOHN G ; SIERRA INSTR

Assignee(s): SIERRA INSTRUMENTS INC

Inventor(s): (std): OLIN JOHN G ; OLIN JOHN GEORGE

Inventor(s): OLIN JOHN

Agent(s): BOZICEVIC FIELD AND FRANCIS LLP; PATENT LAW OFFICE OF FRANK P BECKING; FRANK P

46) Family number: 2425998 (US4478076A)

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Title: Flow sensor

Abstract: A flow sensor comprising a pair of thin film heat sensors and a thin film heater is disclosed. A base supports the sensors and heater out of contact with the base with the sensors disposed on opposite sides of the heater. The heater is operated at a constant temperature above ambient temperature under both flow and no-flow conditions. Also disclosed is a flow sensor wherein a portion of the depression is devoid of a side wall.

Classifications:

International (IPC 8-9): G01F1/68 G01F1/684 G01F1/698

G01P5/12 (Advanced/Invention);

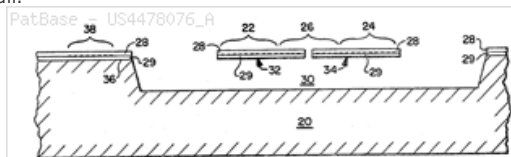
G01F1/684 G01F1/696 G01P5/10 (Core/Invention)

International (IPC 1-7): G01F1/68

CPC: G01F1/6845 G01F1/698 G01P5/12

European: G01F1/684M G01F1/698 G01P5/12

US: 73/204 73/204.16 73/204.19 73/204.26



Family:

Publication number	Publication date	Application number	Application date
CA1197394 A1	19851203	CA19830433925	19830804
US4478076 A	19841023	US19820431537	19820930

Priority:

US19820431537 19820930 CA19830433925 19830804

Probable Assignee: HONEYWELL INC

Assignee(s): (std): HONEYWELL INC

Assignee(s): BOHRER PHILIP J

Inventor(s): (std): BOHRER PHILIP J

Agent(s): SMART AND BIGGAR