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(71) Applicant: VISTA ENGINEERING TECHNOLOGIES L.L.C. [US/US]; 8203 West Quinault, Suite 200, Kennewick, WA 99336 (US).

(72) Inventors: BRATTON, Wesley, L.; 1714 Darby Place, Richland, WA 99352 (US). MARESCA, Joseph, W., Jr.; 780 Fife Way, Sunnyvale, CA 94087 (US).

(74) Agent: JAFFER, David, H.; Pillsbury Winthrop LLP, 2550 Hanover Street, Palo Alto, CA 94304-1115 (US).

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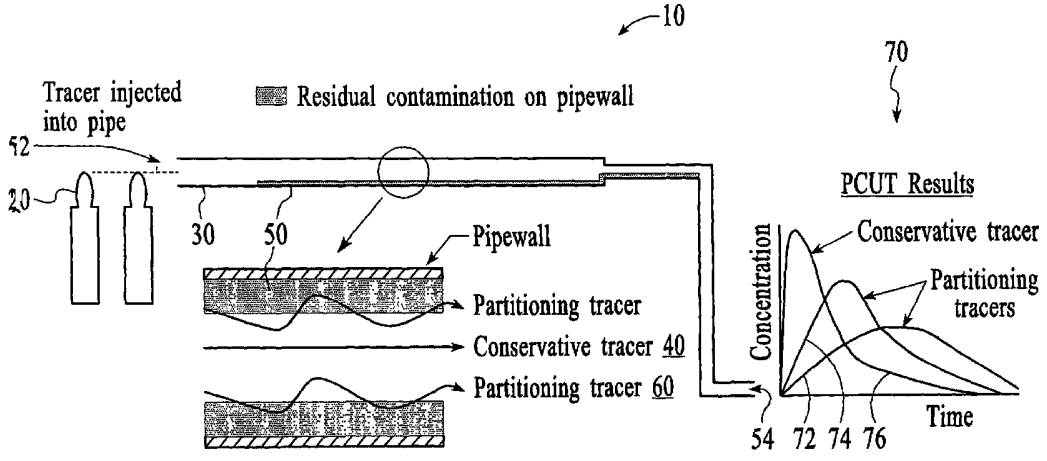
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(54) Title: METHOD TO DETECT AND CHARACTERIZE CONTAMINANTS IN PIPES AND DUCTS WITH INTERACTIVE TRACERS



(57) Abstract: A method and an apparatus (10) for detecting, locating, and quantifying contamination (50) in a fluid flow system like a pipe or duct (30). This characterization technique uses a conservative and one or more interactive tracers that are injected into the fluid flow system and then monitored at another location in the system. Detection, location, and quantification are accomplished by analysis of the characteristic features of measured curves (72, 74, 76) of tracer concentration.

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INTERNATIONAL SEARCH REPORT

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PCT/US03/21889

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G01N 35/08, 37/00,
US CL : 436/52,56; 422/62; 73/60.11,61.62
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 436/52,56; 422/62; 73/60.11,61.62, 40.7, 865.8

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 6,329,165 B1 (CHATTORAJ et al) 11 December 2001 (11.12.2001), Figure 1, abstract, column 10 lines 1-32, column 13 lines 4-42, column 14 line 65 through column 15 line 50.	1-6,8,10,11,13,17 ---------- 7,12,18-20
Y	US 5,413,719 (SIVAKUMAR et al) 09 May 1995 (09.05.1995), column 4 lines 52+.	7,12
Y	US 5,767,390 (CHAPMAN) 16 June 1998 (16.06.1998), Figure 1, column 10 lines 49-56.	18-20
A	US 4,773,255 (MALCOSKY et al) 27 September 1988 (27.09.1988). See entire document.	1-20
A	US 5,981,283 (ANDERSON et al) 09 November 1999 (09.11.1999), see entire document.	1-20

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

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Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703) 305-3230

Authorized officer
Michael Cygan
Telephone No. 571-272-1751

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