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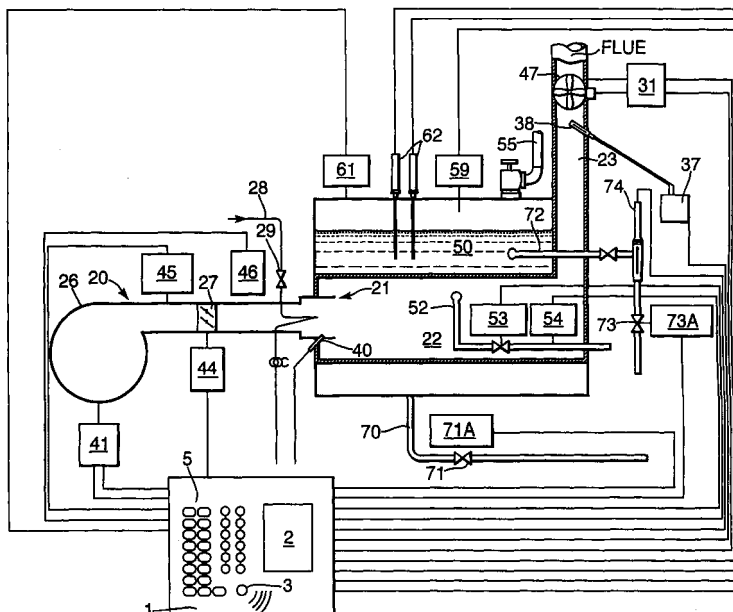
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(54) Apparatus and method for measuring total dissolved solids in a steam boiler

(57) A method and apparatus for controlling the operation of a pressurised steam boiler heated by a burner (20). The method includes the steps of monitoring the level of total dissolved solids in water contained in the boiler (50), monitoring the level of water in the boiler (50), monitoring the pressure of steam in the boiler (50), monitoring the firing rate of the burner (20); controlling

the blow down of the boiler (50) having regard to the level of total dissolved solids in water contained in the boiler (50), and controlling the flow rate of water into the boiler (50) and the firing rate of the burner (20). All input signals relating to the monitoring steps are passed to a common control unit (1) and all output signals relating to the controlling steps are transmitted from the common control unit (1).

Fig.1.





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EUROPEAN SEARCH REPORT

Application Number
EP 05 25 2163

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 398 070 A (WESTINGHOUSE ELECTRIC CORPORATION) 22 November 1990 (1990-11-22) * page 4, line 2 - line 5 * * page 4, line 29 - line 35 * * page 7, line 7 - line 12 * * page 7, line 29 - line 35 * * page 8, line 7 - line 25; figures * -----	1,7,11, 12,18, 24,28	F22B37/56
A	US 4 285 302 A (KELLY ET AL) 25 August 1981 (1981-08-25) * column 4, line 26 - line 45 * * column 8, line 1 - line 3; figures * -----	1,5,7, 11-13, 16,18, 22,24, 28,29,32	
A	GB 1 368 067 A (NALFLOC LTD) 25 September 1974 (1974-09-25) * page 1, line 17 - page 2, line 38; figures * -----	1,4,7, 11,12, 16-18, 21,24, 28,32,33	TECHNICAL FIELDS SEARCHED (Int.Cl.7) F22B
A	EP 0 340 977 A (BETZ EUROPE, INC) 8 November 1989 (1989-11-08) * abstract *	1,6,7, 18,23,24	
A	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 12, 12 December 2002 (2002-12-12) & JP 2002 243107 A (SAMSON CO LTD), 28 August 2002 (2002-08-28) * abstract * -----	1,6,7, 18,23,24	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 1 July 2005	Examiner Van Gheel, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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EPO FORM 1503 03/02 (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-33



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-33

monitoring of total dissolved solids, water level, steam
pressure and firing rate for common control of blow down,
water flow and firing rate

2. claims: 34, 40, 41

assessing the level of total dissolved solids in water using
water conductivity and temperature

3. claims: 35-37, 42-44

measuring the conductivity of water using pulses of
electrical energy

4. claims: 38, 45

assessing the level of total dissolved solids in water using
water conductivity and polarisation

5. claims: 39, 46

measuring the total dissolved solids with a turbulent water
sampling probe effecting a cleaning action

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 25 2163

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

01-07-2005

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