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(54) **METHOD OF DRYING A HYDROGEN GAS MIXTURE PRODUCED BY AN ELECTROCHEMICAL HYDROGEN COMPRESSOR**

(57) In accordance with one embodiment, a method of drying a hydrogen gas mixture is disclosed. The method may include determining a mass flow rate of water m_{H_2O} in a hydrogen gas mixture stream and an adsorbent capacity of one or more adsorbent beds; determining a first period of time based on the determined mass flow rate of water m_{H_2O} in the hydrogen gas mixture stream

and the adsorbent capacity; directing the hydrogen gas mixture stream through a first adsorbent bed of the one or more adsorbent beds for the first period of time; adsorbing a quantity of water from the hydrogen gas mixture stream into the first adsorbent bed; and regenerating the first adsorbent bed.

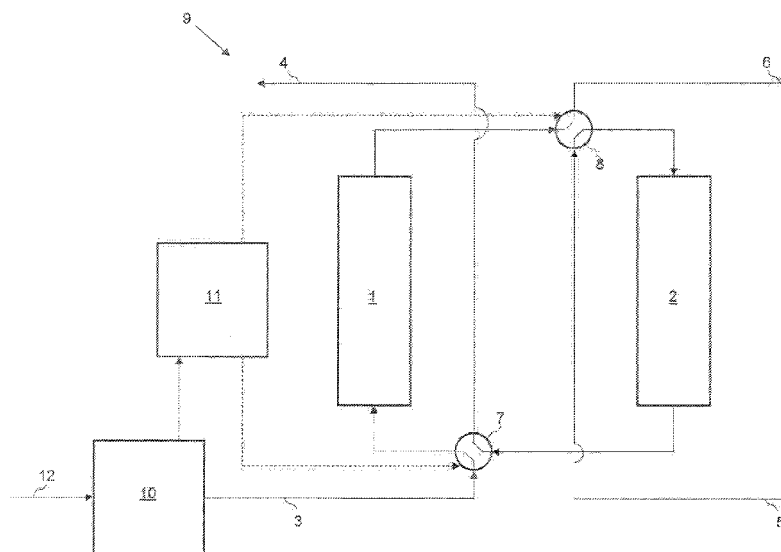


FIG. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 19 15 4354

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2010/266923 A1 (MCELROY JAMES F [US] ET AL) 21 October 2010 (2010-10-21) * abstract; figure 1 * * paragraphs [0042], [0044], [0059], [0062] *	1	INV. B01D53/047 B01D53/26 C25B1/02 C25B15/02
A	US 2005/098034 A1 (GITTLEMAN CRAIG S [US] ET AL) 12 May 2005 (2005-05-12) * claims 1, 11, 20 * * paragraph [0052] *	1	
A	US 2008/236396 A1 (MOULTHROP LAWRENCE CLINTON [US] ET AL) 2 October 2008 (2008-10-02) * paragraphs [0031] - [0034]; figures 3, 6 *	1-7	
A	US 2009/259323 A1 (KESAVAN PARTHA [US] ET AL) 15 October 2009 (2009-10-15) * abstract *	1	
A	US 7 025 801 B2 (MONEREAU CHRISTIAN [FR]) 11 April 2006 (2006-04-11) * column 1, line 25; figures 2-4 * * column 1, line 50 - column 2, line 10 * * column 2, lines 61-67 * * column 7, line 5 - column 8, lines 30, 57-60 * * column 9, lines 10-65 *	1	
A	US 3 703 068 A (WAGNER JOHN L) 21 November 1972 (1972-11-21) * abstract *	1	

-The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 4 April 2019	Examiner Artos Fernández, V
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	

EPO FORM 1503 03.02 (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

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Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

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No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

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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:

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see sheet B

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All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

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As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

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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:

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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:

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1-7

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The present supplementary 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 (Rule 164 (1) EPC).

**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:

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1. claims: 1-7

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a method of operating a pressure swing adsorption purifier, wherein the hydrogen gas mixture stream comes from an electrochemical hydrogen compressor; said method comprising switching between feeding the at least one first adsorbent bed and regenerating the at least one second adsorbent bed according to a switching time

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2. claims: 8-15

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a controller for operating one or more downstream valves of an electrochemical hydrogen compressor or an electrolyzer

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

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5 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
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04-04-2019

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