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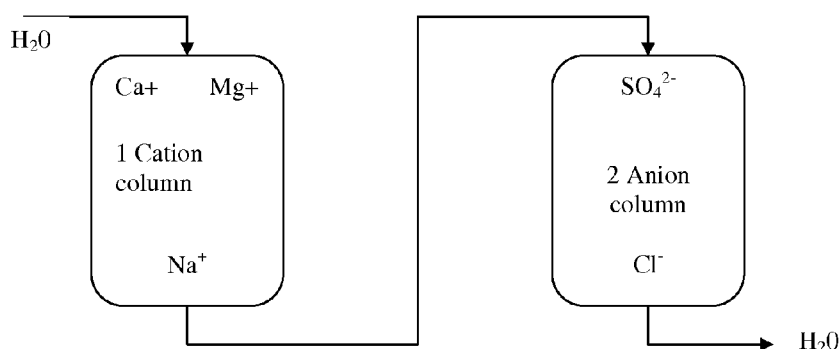


Figure 4

(57) Abstract: The invention comprises water desalination methods and a system for such, which includes treatment of water in cation and anion ion exchange columns, and regenerating the columns after treatment of the water to set them up again for a further treatment cycle, and also providing recoverable by-products during the regeneration of the ion exchange columns instead of waste.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT / IB 2011/050740

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC: C02F 1/42 (2006.01); B01J 49/00 (2006.01) According to International Patent Classification (IPC) or to both national classification and IPC</p>		
<p>B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) B01J, C02F Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>		
<p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPODOC, WPI</p>		
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 1464007 A (DYNAMIT NOBEL AG) 09 February 1977 (09.02.1977) Figures, page 3 line 8 - line 121, page 5 line 60 - page 8 line 35	1,2, 11-14, 22
A	WO 2007116247 A2 (FACILITATING INNOVATIVE RES EN) 18 October 2007 (18.10.2007) claims	1,22
A	GB866856 A (BASF AG) 03 May 1961 (03.05.1961) claims	15-17
<input type="checkbox"/> Further documents are listed in the continuation of Box C.		<input checked="" type="checkbox"/> See patent family annex.
<p>* Special categories of cited documents:</p> <p>“A” document defining the general state of the art which is not considered to be of particular relevance</p> <p>“E” earlier application or patent but published on or after the international filing date</p> <p>“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>“O” document referring to an oral disclosure, use, exhibition or other means</p> <p>“P” document published prior to the international filing date but later than the priority date claimed</p> <p>“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>“&” document member of the same patent family</p>		
Date of the actual completion of the international search 29 July 2013 (29.07.2013)		Date of mailing of the international search report 12 August 2013 (12.08.2013)
Name and mailing address of the ISA/AT Austrian Patent Office Dresdner Straße 87, A-1200 Vienna Facsimile No. +43 / 1 / 534 24-535		Authorized officer SLABY S. Telephone No. +43 / 1 / 534 24-348

INTERNATIONAL SEARCH REPORT

International application No.

PCT / IB 2011/050740

Box No. II	Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)
<p>This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:</p> <p>1. <input type="checkbox"/> Claims Nos.:</p> <p style="padding-left: 20px;">because they relate to subject matter not required to be searched by this Authority, namely:</p> <p>2. <input checked="" type="checkbox"/> Claims Nos.: 19</p> <p style="padding-left: 20px;">because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:</p> <p>The reference back to claim 17 in claim 19 is not possible, as claim 19 refers to an ammonium sulphate solution not given in claim 17. Therefore the context of claim 19 is unclear.</p> <p>3. <input type="checkbox"/> Claims Nos.:</p> <p style="padding-left: 20px;">because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).</p>	
Box No. III	Observations where unity of invention is lacking (Continuation of item 3 of first sheet)
<p>This International Searching Authority found multiple inventions in this international application, as follows:</p> <p>1. Claims 1-14, 20-24 relate to a method/system for water desalination by removing cations by ion exchange using a cation resin, regenerating the cation resin, adsorbing anions from the effluent of the cation removal step using an anion exchange resin and regenerating the anion exchange resin.</p> <p>2. Claims 15, 16, 17, 19 relate to a method for the treatment of water by passing water through a cation exchange resin and regenerating the resin</p> <p>3. Claim 18 relates to a method for the treatment of water by passing water through an anion exchange resin and regenerating the resin.</p> <p>1. <input type="checkbox"/> As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.</p> <p>2. <input type="checkbox"/> As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.</p> <p>3. <input checked="" type="checkbox"/> As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:</p> <p>1-17, 19-24</p> <p>4. <input type="checkbox"/> No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:</p>	
<p>Remark on Protest</p> <p><input type="checkbox"/> The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.</p> <p><input type="checkbox"/> The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.</p> <p><input type="checkbox"/> No protest accompanied the payment of additional search fees.</p>	

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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Patent document cited in search report			Patent family member(s)			Publication date
GB	A	1464007	GB	A	1464007	1977-02-09
WO	A2	2007116247	WO	A2	2007116247	2007-10-18
			US	A1	2009026141	2009-01-29
			CA	A1	2642753	2007-10-18
			BR	A2	PI0707835	2011-06-28
			CN	A	101421193	2009-04-29
			AU	A1	2007235678	2007-10-18
			EP	A2	1989148	2008-11-12