Title: A METHOD AND A SYSTEM FOR TREATING LIQUID FLOWS AT A CHEMICAL PULP MILL

Abstract: The invention relates to a method for treating liquid flows at a chemical pulp mill. The method comprises conveying at least one predetermined water flow to at least one predetermined place at the system. In addition, the invention relates to a system for treating liquid flows.

Published:
— with international search report (Art. 21(3))
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

Date of publication of the international search report: 20 March 2014
INTERNATIONAL SEARCH REPORT

PCT/FI2013/05Q273

A. CLASSIFICATION OF SUBJECT MATTER

INV. D21C11/00 D21C11/12

ADD.

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): D21C

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):

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
<tr>
<td>A</td>
<td>US 5 938 892 A (MAPLES GERALD E [US] ET AL) 17 August 1999 (1999-08-17) page 14, line 4 - page 15, line 27; claims 1-20</td>
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<td>A</td>
<td>US 5 380 402 A (RYHAMS ROLF [US] ET AL) page 14, line 4 - page 15, line 27; claims 1-20</td>
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X Further documents are listed in the continuation of Box C. X See patent family annex.

* Special categories of cited documents:

A* document defining the general state of the art which is not considered to be of particular relevance.

E* earlier application or patent but published on or after the international filing date.

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).

O* document referring to an oral disclosure, use, exhibition or other means.

P* document published prior to the international filing date but later than the priority date claimed.

I* 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.

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.

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.

A+ document member of the same patent family.

Date of the actual completion of the international search

24 September 2013

Date of mailing of the international search report

22/01/2014

Name and mailing address of the ISA/Authorized officer

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Fax: (+31-70) 340-3016

Karlsson, Lennart
### DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<td>A</td>
<td><strong>WO 96/38627 A2</strong> (INT PAPER CO [US]) 5 December 1996 (1996-12-05) the whole document</td>
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<td><strong>EP 0 903 436 A2</strong> (KVAERNER PULPING TECH [SE]) 24 March 1999 (1999-03-24) the whole document</td>
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<td><strong>US 2011/232853 Al</strong> (YIN CAI FANG F [US]) 29 September 2011 (2011-09-29) the whole document</td>
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### INTERNATIONAL SEARCH REPORT

#### Box No. II  Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.: 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:

3. ☐ Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

#### Box No. III  Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☑ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☑ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ 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.:

4. ☑ 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.:

   1, 2, 7, 10-12 (all partially)

**Remark on Protest**

☐ The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.

☐ 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.

☒ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1, 2, 7, 10-12 (al 1 partly)

   The first group of inventions pertains to a method for treating liquid flows at a chemical pulp mill comprising:
   - a wood handling unit (10),
   - a brown stock preparation unit (20) comprising cooking, washing, screening and oxygen delignification on stages for producing pulp,
   - a bleaching unit (30) to bleach the produced pulp,
   - a chemical recovery unit (60),
   - a pulp dryer machine (80),
   - a recovery boiler (70) generating boiler blowdown water,
   - an evaporator (40) generating condensates,
   - a waste water treatment plant (50), and
   - a raw water treatment plant, wherein the water sources from A or D are used in H, I, J or K (see below).

2. Claims: 1, 2, 7, 10-12 (al 1 partly)

   The second group of inventions pertains to a method for treating liquid flows at a chemical pulp mill comprising:
   - a wood handling unit (10),
   - a brown stock preparation unit (20) comprising cooking, washing, screening and oxygen delignification on stages for producing pulp,
   - a bleaching unit (30) to bleach the produced pulp,
   - a chemical recovery unit (60),
   - a pulp dryer machine (80),
   - a recovery boiler (70) generating boiler blowdown water,
   - an evaporator (40) generating condensates,
   - a waste water treatment plant (50), and
   - a raw water treatment plant, wherein the water sources from A, B or D are used in L or M (see below).

3. Claims: 3-5 (completely) ; 1, 7, 10-12 (partially)

   The third group of inventions pertains to a method for treating liquid flows at a chemical pulp mill comprising:
   - a wood handling unit (10),
   - a brown stock preparation unit (20) comprising cooking, washing, screening and oxygen delignification on stages for producing pulp,
   - a bleaching unit (30) to bleach the produced pulp,
   - a chemical recovery unit (60),
   - a pulp dryer machine (80),
   - a recovery boiler (70) generating boiler blowdown water,
   - an evaporator (40) generating condensates,
   - a waste water treatment plant (50), and
   - a raw water treatment plant, wherein the water sources from B are used in N, O, P or Q (see below).
FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

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4. claims: incompletely; 1, 10-12 (partially)

The fourth group of inventions pertains to a method for treating liquid flows at a chemical pulp mill comprising:
- a wood handling unit (10),
- a brown stock preparation unit (20) comprising cooking, washing, screening, and oxygen delignification on stages for producing pulp,
- a bleaching unit (30) to bleach the produced pulp,
- a chemical recovery unit (60),
- a pulp dryer machine (80),
- a recovery boiler (70) generating boiler blowdown water,
- an evaporator (40) generating condensates,
- a waste water treatment plant (50), and
- a raw water treatment plant, where the water sources from A, B, C, D, E or F are used in R (see below).

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5. claims: 8(completely); 1, 2, 7, 10-12 (partially)

The fifth group of inventions pertains to a method for treating liquid flows at a chemical pulp mill comprising:
- a wood handling unit (10),
- a brown stock preparation unit (20) comprising cooking, washing, screening, and oxygen delignification on stages for producing pulp,
- a bleaching unit (30) to bleach the produced pulp,
- a chemical recovery unit (60),
- a pulp dryer machine (80),
- a recovery boiler (70) generating boiler blowdown water,
- an evaporator (40) generating condensates,
- a waste water treatment plant (50), and
- a raw water treatment plant, where the water sources from G are used in S or T (see below).

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6. claims: 6(completely); 1, 7, 10-12 (partially)

The sixth group of inventions pertains to a method for treating liquid flows at a chemical pulp mill comprising:
- a wood handling unit (10),
- a brown stock preparation unit (20) comprising cooking, washing, screening, and oxygen delignification on stages for producing pulp,
- a bleaching unit (30) to bleach the produced pulp,
- a chemical recovery unit (60),
- a pulp dryer machine (80),
- a recovery boiler (70) generating boiler blowdown water,
- an evaporator (40) generating condensates,
- a waste water treatment plant (50), and
- a raw water treatment plant, where the water sources from E or F are used in U (see below).

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<td>WO 2008152187 A2</td>
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