Abstract: Systems and methods are provided for controlling a volumetric ratio of a material to total materials in a mixing vessel (10). In various embodiments, the systems may comprise: a volumetric ratio observer for estimating the volumetric ratio of the material to the total materials in the mixing vessel and an output flowrate of the material from the mixing vessel; a flow regulator coupled to the volumetric ratio observer for dynamically recomputing a commanded input flowrate of the material based on outputs of the volumetric ratio observer; and a flow modulator coupled to the flow regulator for adjusting an input valve of the material based on the commanded input flowrate of the material. In an embodiment, the mixing vessel comprises a first mixing vessel (10) partially separated from a second mixing vessel. (12) In this case, a height observer may be used to estimate a height of the total materials in the second mixing vessel.
(88) Date of publication of the international search report:
11 October 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

PCT/GB2006/004944

A. CLASSIFICATION OF SUBJECT MATTER

INTERNATIONAL_SEARCH_REPORT

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)

G05D BOIF

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 practical, search terms used)

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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<tr>
<td>A,P</td>
<td>WO 2006/109035 A (HALLIBURTON ENERGY SERV INC [US], CURTIS PHILIP ANTHONY [GB]; DYKSTRA) 10 October 2006 (2006-10-19) the whole document</td>
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<td>US 5 103 908 A (ALLEN THOMAS E [US]) 14 April 1992 (1992-04-14) the whole document</td>
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See patent family annex

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Date of the actual completion of the international search

8 August 2007

Date of mailing of the international search report

16/08/2007

Name and mailing address of the ISA/

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Authorized officer

Philippot, Bertrand
**INTERNATIONAL SEARCH REPORT**

**Information on patent family members**

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<tr>
<td>US 5365435 A</td>
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Forni PCT/ISA/21D (patent family annex) (April 2005)