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(54) Title: INTEGRATED PROCESS FOR PRODUCTION OF ALCOHOL FROM SYNGAS AND REMOVAL OF CO₂

(57) Abstract: A process for producing alcohol from syngas integrates the alcohol recovery with the removal of CO₂ from syngas. A syngas feed containing CO, H₂ and CO₂ contacts an aqueous alcohol stream to remove CO₂ from the syngas that then passes to bioreactor containing microorganisms for conversion to alcohol and other liquid products. Flashing of the scrubbing liquid releases the CO₂ and simultaneously concentrates alcohol in the overhead flash vapor. Condensation of the flash vapor provides an enriched alcohol stream for enhanced recovery of the ethanol product in a product separation zone. The remainder of the scrubbing liquid along with make-up alcohol and water from the process gets returned for continued contact with the syngas feed.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/020582**A. CLASSIFICATION OF SUBJECT MATTER***C12P 7/06(2006.01)i, C07C 29/151(2006.01)i, C07C 29/78(2006.01)i, C07C 31/08(2006.01)i, C12R 1/145(2006.01)n*

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)

C12P 7/06; C10G 5/00; C12P 7/04; C12P 7/14; C12P 7/02; C12M 1/107; C12M 1/40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: syngas, synthesis gas, clostridium, aqueous alcohol stream, bioreactor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2009-105372 A1 (Coskata, Inc.) 27 August 2009 See Abstract, Claims 1, 4, 10, 19, 22	1-15
A	WO 2009-108503 A1 (Coskata, Inc.) 03 September 2009 See Abstract, Claim 1, Paragraphs [0018],[0024]	1-15
A	US 06136577A A (James L. Gaddy) 24 October 2000 See Abstract, Claim 14	1-15
A	WO 2008-154301 A1 (Coskata, Inc.) 18 December 2008 See Abstract, Claims 1, 3, 4, 13	1-15
A	WO 2007-117157 A1 (Lanzatech New Zealand Limited) 18 October 2007 See Abstract, Claims 1, 2, 6	1-15

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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"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

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Information on patent family members

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