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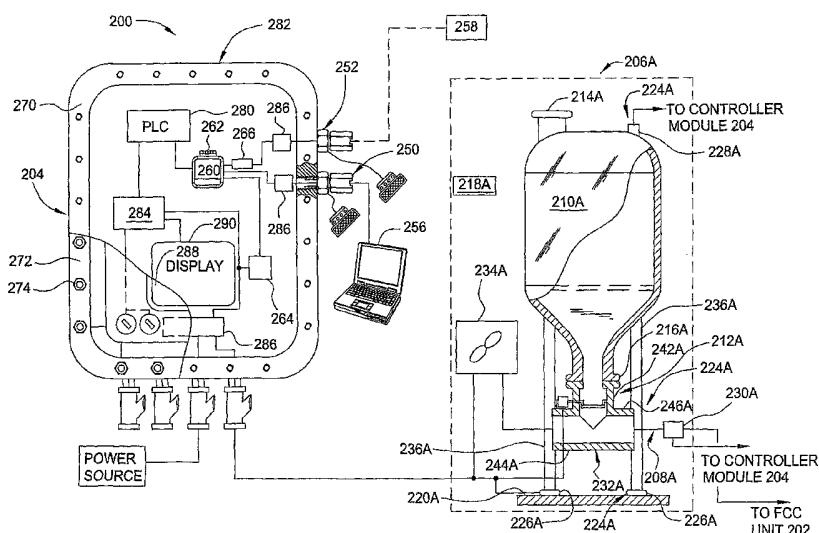
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Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM,

[Continued on next page]

(54) Title: FCC CATALYST INJECTION SYSTEM HAVING CLOSED LOOP CONTROL



(57) Abstract: A system and method for injecting catalyst into a fluid catalyst cracking (FCC) unit (202) is provided. In one embodiment, a system for injecting catalyst into a FCC unit includes at least one catalyst injection apparatus (206A) for providing catalyst to a fluid catalyst cracking unit (202), at least one sensor (224) adapted to provide a metric indicative of the composition of a product stream produced in the fluid catalyst cracking unit, and a controller (204) coupled to the sensor (224), for controlling the additions made by the catalyst injection system (206A) in response to the metric provided by the sensor (224). Another embodiment of the invention comprises a method for injecting catalyst from a catalyst injection system into a FCC unit that includes the steps of dispensing catalyst for a catalyst injection system into a fluid catalytic cracking unit, sensing an output in the fluid catalytic cracking unit, and automatically adjusting the amount of catalyst dispensed in response to the at least one sensed metric.

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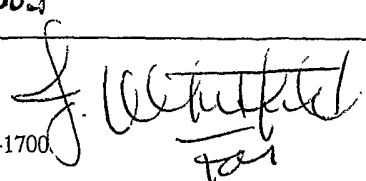
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/16514

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : B01J 8/08; G05D 7/00; C10G 11/00 US CL : 422/139, 141, 145, 105, 107, 108, 110, 111; 208/106, 108, 113 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) U.S. : 422/139, 141, 145, 105, 107, 108, 110, 111; 208/106, 108, 113 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) Please See Continuation Sheet		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/0089426 A1 (POOR et al) 15 May 2003 (15.05.2003), page 7, paragraphs 0071-0073 and page 14, paragraph 0108.	1-8, 10, 11, 14-27
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Y		9, 12, 13
Y	US 5,059,331 A1 (GOYAL) 22 October 1991 (22.10.1991), column 7, lines 47-55.	9
Y	Everlasting Valve Company, www.everlastingvalveco.com, printed 06 February 2003, see "Process Valves".	12, 21
Y	Richardson Electronics - Engineered Solutions, RF & Wireless Communications, Honeywell Wireless Transceiver, 3-4 June 2002, pages 1-3.	13
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> 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	"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	
"E" earlier application or patent published on or after the international filing date	"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	
"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)	"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	
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 16 March 2005 (16.03.2005)	Date of mailing of the international search report 01 APR 2005	
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Alexa A. Doroshenk Telephone No. 571-272-1700 	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/16514

Continuation of B. FIELDS SEARCHED Item 3:
EAST
search terms: FCC catalyst inject; sensor

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/16514

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:

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 fee, this Authority did not invite payment of any additional fee.
 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.:
- Remark on Protest The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.