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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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11/839,566

08/16/2007

Shazad Mahmood Butt

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28395 7590 01/06/2009  
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EXAMINER

SUITTE, BRYANT P

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

01/06/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 11/839,566	<b>Applicant(s)</b> BUTT ET AL.	
	<b>Examiner</b> BRYANT SUITTE	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 12-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/16/07</u> .   | 6) <input type="checkbox"/> Other: _____                          |

**HUMIDITY GAS CONDITIONER**

Examiner: Suitte

11/839,566

December 29, 2008

***Election/Restrictions***

1. Applicant's election without traverse of Group I claims 1-11 in the reply filed on August 15, 2008 is acknowledged. Claims 12-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan (US 2006/0263652) in view of Matsuoka (WO 2004/055928) (see corresponding US 2006/0115699 for translation).

Regarding claim 1, Logan discloses a fuel cell system with a relative humidity control. The fuel cell system comprises a fuel cell stack (22) with an outlet for coolant (50). The coolant outlet temperature is higher than the coolant inlet temperature

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because the coolant absorbs the heat within the fuel cell stack. See paragraphs 100 and 101 and tables 2, 3 and 4. The coolant supply subsystem is utilized in the fuel cell based upon the cathode gas inlet target temperature settings. See figure 4.

Furthermore, Logan discloses coolant supply subsystem (30) (conditioning device) disposed within a fuel cell comprising a strategy or mechanizations for a fuel cell system comprising a heat exchanger that can be utilized in both the cathode and coolant inlet plumbing to allow the cathode gas and coolant to achieve a substantially same temperature prior to entering their respective flow paths in the fuel cell stack. See paragraph 108. Logan does not disclose a system module that humidifies the fluid stream to a predetermined temperature per se.

Matsuoka discloses a fuel cell system comprising a method for humidifying (conditioning) the temperature of the anode and cathode gas that is introduced into the fuel cell stack. See figure 1 and paragraphs 26 and 27. A system comprising a controller (7) that controls the state of humidification of the humidifiers (4, 5) based on the temperature (predetermined temperature) of the fuel cell (1, 50), that humidify the hydrogen and oxidant introduced to the fuel cell. See paragraphs 29 and 26. The fuel cell stack (50) comprises an inlet adapted to receive the hydrogen gas (fluid stream) that has been humidified to a temperature by the humidifier, which is different than the temperature of the fuel cell. See figure 3. Therefore, it would have been obvious to one having ordinary skill in the art to utilize the humidifying system with the fuel cell system of Logan because Matsuoka discloses the controlling of the state of humidification of the gas inlet introduced into the fuel cell. See paragraph 29 and figure 1.

Regarding claims 2 and 3, Logan discloses a schematic diagram disclosing a controller (32) and a determining of the temperature (temperature sensor) of the cathode inlet gas. The determination of the cathode gas inlet temperature generates a signal that is delivered to the controller. The coolant required to achieve the target cathode inlet gas temperature is determined (amount of coolant). See figure 4 and table 2.

Regarding claims 4, 5 and 6, Logan discloses sensors (62) communicate with the controller (32) to enable controller (32) to control and coordinate the operation of coolant supply subsystem (30) to obtain a desired temperature for the coolant flowing into and out of the coolant flow path. Controller (32) communicates with pump (52) and bypass valve (60) to control the speed of pump (52) and the position of bypass valve (60). By adjusting the speed of pump (52) and the position of bypass valve (60), the inlet and outlet temperatures for the coolant flowing through the coolant flow path of fuel cell stack (22) can be controlled. See paragraph 27.

Regarding claims 7 and 8, Logan discloses a coolant supply subsystem (30) (conditioning device) disposed within a fuel cell system (20). See figure 1. The coolant supply subsystem (30) is disposed within (cavity) a housing (outer shell) comprising first and second ends as disclosed by the dotted line in figure 1. The dotted housing comprises a supply pipe (48) and exit pipe (50) for the coolant to be introduced to the fuel cell stack. See figure 1. Logan does not disclose a system module that humidifies the fluid stream to a predetermined temperature per se.

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Matsuoka discloses a fuel cell system comprising a method for humidifying (conditioning) the temperature of the anode and cathode gas that is introduced into the fuel cell stack. See figure 1 and paragraphs 26 and 27. A system comprising a controller (7) that controls the state of humidification of the humidifiers (4, 5) based on the temperature (predetermined temperature) of the fuel cell (1, 50), that humidify the hydrogen and oxidant introduced to the fuel cell. See paragraphs 29 and 26. The fuel cell stack (50) comprises an inlet adapted to receive the hydrogen gas (fluid stream) that has been humidified to a temperature by the humidifier, which is different than the temperature of the fuel cell. See figure 3. Therefore, it would have been obvious to one having ordinary skill in the art to utilize the humidifying system with the fuel cell system of Logan because Matsuoka discloses the controlling of the state of humidification of the gas inlet introduced into the fuel cell. See paragraph 29 and figure 1.

Furthermore, Logan and Matsuoka disclose the claimed invention except for the conditioning device enclosing and delivering the fluid stream to the fuel cell stack. It would have been obvious to one having ordinary skill in the art at the time the invention was made to supply the fluid stream through the enclosure of the conditioning device and delivered to the fuel cell stack, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claims 9, 10 and 11, Logan discloses a fuel cell system comprising a coolant supply subsystem (conditioning system) comprising sensors (47 and 62), temperature and humidity sensors, that measure the humidity and temperature of the cathode gas before the gas is introduced to the fuel cell system and the humidity and

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temperature of the coolant after it has exited the fuel cell system respectively. See figure 1. It would have been obvious to one having ordinary skill in the art at the time the invention was made to couple the humidity sensor and temperature sensor to a pipe with exposure to the gas that is introduced and/or exited from the fuel cell, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYANT SUITTE whose telephone number is (571)270-3961. The examiner can normally be reached on Mon-Fri 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/BRYANT SUITTE/  
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 1795