

## PATENT ASSIGNMENT

Electronic Version v1.1

Stylesheet Version v1.1

| SUBMISSION TYPE:                                                                                                                                                                                                                                                                                                                                                                      | NEW ASSIGNMENT                      |               |                                     |                     |                    |                  |                      |                   |            |              |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------|-------------------------------------|---------------------|--------------------|------------------|----------------------|-------------------|------------|--------------|---------|
| NATURE OF CONVEYANCE:                                                                                                                                                                                                                                                                                                                                                                 | ASSIGNMENT                          |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| CONVEYING PARTY DATA                                                                                                                                                                                                                                                                                                                                                                  |                                     |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| <table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Hironobu INAMASU</td> <td>05/21/2013</td> </tr> <tr> <td>Hideo MATSUSHITA</td> <td>05/21/2013</td> </tr> <tr> <td>Takashi YOSHIHARA</td> <td>05/21/2013</td> </tr> </tbody> </table>                                                                                            |                                     | Name          | Execution Date                      | Hironobu INAMASU    | 05/21/2013         | Hideo MATSUSHITA | 05/21/2013           | Takashi YOSHIHARA | 05/21/2013 |              |         |
| Name                                                                                                                                                                                                                                                                                                                                                                                  | Execution Date                      |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Hironobu INAMASU                                                                                                                                                                                                                                                                                                                                                                      | 05/21/2013                          |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Hideo MATSUSHITA                                                                                                                                                                                                                                                                                                                                                                      | 05/21/2013                          |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Takashi YOSHIHARA                                                                                                                                                                                                                                                                                                                                                                     | 05/21/2013                          |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| RECEIVING PARTY DATA                                                                                                                                                                                                                                                                                                                                                                  |                                     |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| <table border="1"> <tr> <td>Name:</td> <td>KANSAI COKE AND CHEMICALS CO., LTD.</td> </tr> <tr> <td>Street Address:</td> <td>2-6, Shioe 1-chome</td> </tr> <tr> <td>City:</td> <td>Amagasaki-shi, Hyogo</td> </tr> <tr> <td>State/Country:</td> <td>JAPAN</td> </tr> <tr> <td>Postal Code:</td> <td>6610976</td> </tr> </table>                                                        |                                     | Name:         | KANSAI COKE AND CHEMICALS CO., LTD. | Street Address:     | 2-6, Shioe 1-chome | City:            | Amagasaki-shi, Hyogo | State/Country:    | JAPAN      | Postal Code: | 6610976 |
| Name:                                                                                                                                                                                                                                                                                                                                                                                 | KANSAI COKE AND CHEMICALS CO., LTD. |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Street Address:                                                                                                                                                                                                                                                                                                                                                                       | 2-6, Shioe 1-chome                  |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| City:                                                                                                                                                                                                                                                                                                                                                                                 | Amagasaki-shi, Hyogo                |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| State/Country:                                                                                                                                                                                                                                                                                                                                                                        | JAPAN                               |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Postal Code:                                                                                                                                                                                                                                                                                                                                                                          | 6610976                             |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| PROPERTY NUMBERS Total: 1                                                                                                                                                                                                                                                                                                                                                             |                                     |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| <table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13989707</td> </tr> </tbody> </table>                                                                                                                                                                                                             |                                     | Property Type | Number                              | Application Number: | 13989707           |                  |                      |                   |            |              |         |
| Property Type                                                                                                                                                                                                                                                                                                                                                                         | Number                              |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Application Number:                                                                                                                                                                                                                                                                                                                                                                   | 13989707                            |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| CORRESPONDENCE DATA                                                                                                                                                                                                                                                                                                                                                                   |                                     |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| <p>Fax Number: 7032058050</p> <p><i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: 703-205-8000</p> <p>Email: mailroom@bskb.com, yolanda.askew-sampson@bskb.com</p> <p>Correspondent Name: Birch, Stewart, Kolasch &amp; Birch, LLP</p> <p>Address Line 1: P.O. Box 747</p> <p>Address Line 4: Falls Church, VIRGINIA 22040-0747</p> |                                     |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| ATTORNEY DOCKET NUMBER:                                                                                                                                                                                                                                                                                                                                                               | 4991-0163PUS1                       |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| NAME OF SUBMITTER:                                                                                                                                                                                                                                                                                                                                                                    | Yolanda Askew-Sampson               |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Signature:                                                                                                                                                                                                                                                                                                                                                                            | /yolanda askew-sampson/             |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| Date:                                                                                                                                                                                                                                                                                                                                                                                 | 05/28/2013                          |               |                                     |                     |                    |                  |                      |                   |            |              |         |
| <p>Total Attachments: 2</p> <p>source=20130524ASSIGNMENT_4991_0163PUS1#page1.tif</p> <p>source=20130524ASSIGNMENT_4991_0163PUS1#page2.tif</p>                                                                                                                                                                                                                                         |                                     |               |                                     |                     |                    |                  |                      |                   |            |              |         |

OP \$40.00 13989707

BIRCH, STEWART, KOLASCH & BIRCH, LLP

UNITED STATES PATENT RIGHTS, OR  
UNITED STATES PLUS ALL FOREIGN PATENT RIGHTS

**ASSIGNMENT**

Application No.: 13/989,707 Filed: May 24, 2013

\*\*\*[Given Name FAMILY NAME (ALL CAPS)]\*\*\*  
Insert Name(s) of Inventor(s) ⇒ WHEREAS, Hironobu INAMASU, Hideo MATSUSHITA and Takashi YOSHIHARA  
(hereinafter designated as the undersigned) has (have) invented certain new and useful improvements in:

Insert Title of Invention ⇒ METHOD FOR MONITORING INSIDE A CHAMBER OF A COKE OVEN, MANAGEMENT METHOD FOR A CHMBER WALL OF A COKE OVEN, AND MONITORING SYSTEM

for which an application for Letters Patent of the United States of America has been executed by the undersigned (except in the case of a provisional application)

Insert Date of Signing of Appln. ⇒ on May 21, 2013; and

Insert Name of Assignee ⇒ WHEREAS, KANSAI COKE AND CHEMICALS CO., LTD.

Insert Address of Assignee ⇒ of 2-6, Shioe 1-chome, Amagasaki-shi, Hyogo 6610976 Japan

its heirs, successors, legal representatives and assigns (hereinafter designated as the Assignee) is desirous of acquiring the entire right, title and interest in and to said invention and in and to any Letters Patent(s) that may be granted therefor in the United States of America and

Check Box if Appropriate ⇒ ☐ in any foreign countries.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, the undersigned has (have) sold, assigned and transferred, and by these presents does (do) sell, assign and transfer unto said Assignee the full and exclusive right to the said invention in the United States of America, its territories, dependencies and possessions and the entire right, title and interest in and to any and all Letters Patent(s) which may be granted therefor in the United States of America, its territories, dependencies and possessions, and if the box above is designated, in any and all foreign countries; and to any and all divisions, reissues, continuations, conversions and extensions thereof for the full term or terms for which the same may be granted.

4991-0163PUS1

The undersigned agree(s) to execute all papers necessary in connection with this application and any continuing, divisional, conversion or reissue applications thereof and also to execute separate assignments in connection with such applications as the Assignee may deem necessary or expedient.

The undersigned agree(s) to execute all papers necessary in connection with any interference which may be declared concerning this application or continuation, division, conversion or reissue thereof or Letters Patent(s) or reissue patent issued thereon and to cooperate with the Assignee in every way possible in obtaining and producing evidence and proceeding with such interference.

The undersigned agree(s) to execute all papers and documents and to perform any act which may be necessary in connection with claims or provisions of the International Convention for the Protection of Industrial Property or similar agreements.

The undersigned agree(s) to perform all affirmative acts which may be necessary to obtain a grant of (a) valid United States of America patent(s) or a grant of (a) valid United States of America and any foreign patent(s) to the Assignee and to vest all rights therein hereby conveyed to said Assignee as fully and entirely as the same would have been held by the undersigned if this Assignment and sale had not been made.

The undersigned hereby authorize(s) and request(s) the Patent and Trademark Office Officials in the United States of America and in any foreign countries to issue any and all Letters Patent(s) resulting from said application or any continuing, divisional conversion or reissue applications thereof to the said Assignee, as Assignee of the entire interest, and hereby covenants that he has (they have) the full right to convey the entire interest herein assigned, and that he has (they have) not executed, and will not execute, any agreement in conflict herewith.

The undersigned hereby grant(s) the law firm of Birch, Stewart, Kolasch & Birch, LLP the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office for recordation of this document.

The undersigned hereby covenant(s) that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this Assignment.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s).

|      |                     |                  |                                                                                                                              |
|------|---------------------|------------------|------------------------------------------------------------------------------------------------------------------------------|
| Date | <u>May 21, 2013</u> | Name of Inventor | <u></u><br>(Signature) Hironobu INAMASU  |
| Date | <u>May 21, 2013</u> | Name of Inventor | <u></u><br>(Signature) Hideo MATSUSHITA   |
| Date | <u>May 21, 2013</u> | Name of Inventor | <u></u><br>(Signature) Takashi YOSHIHARA |
| Date | _____               | Name of Inventor | _____<br>(Signature)                                                                                                         |
| Date | _____               | Name of Inventor | _____<br>(Signature)                                                                                                         |
| Date | _____               | Name of Inventor | _____<br>(Signature)                                                                                                         |