

**TOTAL ENERGY SERVICES INC.  
BY-LAW NO. 1**

(formerly By-Law No. 1 of Biomerge  
as ratified by the shareholders of  
Total at an Annual and Special Meeting  
held on May 17, 2010)

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# BIOMERGE INDUSTRIES LTD.

## BY-LAW NO. 1

A by-law relating generally to the conduct of the business and affairs of Biomerge Industries Ltd. (hereinafter called the "Corporation").

IT IS HEREBY ENACTED as a by-law of the Corporation as follows:

### DEFINITIONS

1. In this by-law and all other by-laws of the Corporation, unless the context otherwise specifies or requires:
  - (a) "Act" means the *Business Corporations Act* (Alberta) and the regulations made thereunder, as from time to time amended, and in the case of such amendment any reference in the by-laws shall be read as referring to the amended provisions thereof;
  - (b) "board" means the board of directors of the Corporation;
  - (c) "by-laws" means the by-laws of the Corporation from time to time in force and effect;
  - (d) all terms contained in the by-laws which are defined in the Act shall have the meanings given to such terms in the Act;
  - (e) words importing the singular number only shall include the plural and vice versa; words importing the masculine gender shall include the feminine and neuter genders; and
  - (f) the headings used in the by-laws are inserted for reference purposes only and are not to be considered or taken into account in construing the terms or provisions thereof or to be deemed in any way to clarify, modify or explain the effect of any such terms or provisions.

### REGISTERED OFFICE

2. The Corporation shall at all times have a registered office within Alberta. Subject to subsection (4) of section 20 of the Act, the directors of the Corporation may at any time:
  - (a) change the address of the registered office within Alberta;
  - (b) designate, or revoke or change a designation of, a records office within Alberta; or
  - (c) designate, or revoke or change a designation of, a post office box within Alberta as the address for service by mail of the Corporation.

SEAL

3. The corporate seal of the Corporation shall be such as the directors may by resolution from time to time adopt.

DIRECTORS

4. Number. The number of directors shall be the number fixed by the articles, or where the articles specify a variable number, the number shall be not less than the minimum and not more than the maximum number so specified and shall be determined from time to time within such limits by resolution of the shareholders or the board of directors. At least one-quarter of the directors shall be resident Canadians.

5. Vacancies. Subject to section 111 of the Act, a quorum of directors may fill a vacancy among the directors, except a vacancy resulting from an increase in the number or minimum number of directors or from a failure to elect the number or minimum number of directors required by the articles. If there is not a quorum of directors, or if there has been a failure to elect the number or minimum number of directors required by the articles, the directors then in office shall forthwith call a special meeting of shareholders to fill the vacancy and, if they fail to call a meeting or if there are no directors then in office, the meeting may be called by any shareholder. If the shareholders have adopted an amendment to the articles to increase the number or minimum number of directors, and have not, at the meeting at which they adopted the amendment, elected an additional number of directors authorized by the amendment, the directors then in office shall forthwith call a special meeting of shareholders to fill the vacancy.

A director appointed or elected to fill a vacancy holds office for the unexpired term of his predecessor.

6. Powers. Subject to any unanimous shareholder agreement, the directors shall manage the business and affairs of the Corporation and may exercise all such powers and do all such acts and things as may be exercised or done by the Corporation and are not expressly directed or required to be done in some other manner by the Act, the articles, the by-laws, any special resolution of the Corporation, a unanimous shareholder agreement or by statute.

7. Duties. Every director and officer of the Corporation in exercising his powers and discharging his duties shall:

- (a) act honestly and in good faith with a view to the best interests of the Corporation; and
- (b) exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances.

8. Qualification. The following persons are disqualified from being a director of the Corporation:

- (a) anyone who is less than 18 years of age;
- (b) anyone who

- (i) is a dependent adult as defined in the *Dependent Adults Act* or is the subject of a certificate of incapacity under that Act,
  - (ii) is a formal patient as defined in the *Mental Health Act*,
  - (iii) is the subject of an order under the *Mentally Incapacitated Persons Act* appointing a committee of his person or estate or both, or
  - (iv) has been found to be a person of unsound mind by a court elsewhere than in Alberta;
- (c) a person who is not an individual; and
- (d) a person who has the status of bankrupt.

Unless the articles otherwise provide, a director of the Corporation is not required to hold shares issued by the Corporation.

9. Term of Office. A director's term of office (subject to the provisions, if any, of the Corporation's articles or any unanimous shareholder agreement, and subject to his election for an expressly stated term) shall be from the date of the meeting at which he is elected or appointed until the close of the first annual meeting of shareholders following his election or appointment or until his successor is elected or appointed.

10. Election. Subject to sections 106 and 107 of the Act, shareholders of the Corporation shall, by ordinary resolution at the first meeting of shareholders and at each succeeding annual meeting at which an election of directors is required, elect directors to hold office for a term expiring not later than the close of the next annual meeting of shareholders following the election. A director not elected for an expressly stated term ceases to hold office at the close of the first annual meeting of shareholders following his election but, if qualified, is eligible for re-election. Notwithstanding the foregoing, if directors are not elected at a meeting of shareholders, the incumbent directors continue in office until their successors are elected.

If a meeting of shareholders fails to elect the number or the minimum number of directors required by the articles by reason of the disqualification or death of any candidate, the directors elected at that meeting may exercise all the powers of the directors if the number of directors so elected constitutes a quorum.

11. Consent to Election. A person who is elected or appointed a director is not a director unless he was present at the meeting when he was elected or appointed and did not refuse to act as a director or, if he was not present at the meeting when he was elected or appointed, he consented to act as a director in writing before his election or appointment or within 10 days after it or he has acted as a director pursuant to the election or appointment.

12. Removal. Subject to sections 107 and 109 of the Act, the shareholders of the Corporation may by ordinary resolution at a special meeting remove any director from office before the expiration of his term of office and may, by a majority of votes cast at the meeting, elect any person in his stead for the remainder of his term.

13. Vacation of Office. A director of the Corporation ceases to hold office when:

- (a) he dies or resigns;
- (b) he is removed from office; or
- (c) he becomes disqualified.

A resignation of a director becomes effective at the time a written resignation is sent to the Corporation, or at the time specified in the resignation, whichever is later.

14. Validity of Acts. An act of a director or officer is valid notwithstanding an irregularity in his election or appointment or a defect in his qualification. An act of the directors or a committee of directors is valid notwithstanding non-compliance with paragraphs 4, 21 or 23 hereof.

#### MEETINGS OF DIRECTORS

15. Place of Meeting. Unless the articles otherwise provide, meetings of directors and of any committee of directors may be held at any place. A meeting of directors may be convened by the Chairman of the Board (if any), the President or any director at any time and the Secretary shall upon direction of any of the foregoing convene a meeting of directors.

16. Notice. Notice of the time and place for the holding of any meeting of directors or of any committee of directors shall be sent to each director or each director who is a member of such committee, as the case may be, not less than forty-eight (48) hours before the time of the meeting; provided that a meeting of directors or of any committee of directors may be held at any time without notice if all the directors or members of such committee are present (except where a director attends the meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called) or if all the absent directors waive notice of the meeting. The notice of a meeting of directors shall specify any matter referred to in subsection (3) of section 115 of the Act that is to be dealt with at the meeting, but need not specify the purpose or the business to be transacted at the meeting.

For the first meeting of directors to be held following the election of directors at an annual or special meeting of the shareholders or for a meeting of directors at which a director is appointed to fill a vacancy in the board, no notice of such meeting need be given to the newly elected or appointed director or directors in order for the meeting to be duly constituted, provided a quorum of the directors is present.

17. Waiver of Notice. Notice of any meeting of directors or of any committee of directors or the time for the giving of any such notice or any irregularity in any meeting or in the notice thereof may be waived by any director in writing or by telecopy, telegram, cable or telex addressed to the Corporation or in any other manner, and any such waiver may be validly given either before or after the meeting to which such waiver relates. Attendance of a director at any meeting of directors or of any committee of directors is a waiver of notice of such meeting, except when a director attends a meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called.



18. Omission of Notice. The accidental omission to give notice of any meeting of directors or of any committee of directors to or the non-receipt of any notice by any person shall not invalidate any resolution passed or any proceeding taken at such meeting.

19. Telephone Participation. A director may participate in a meeting of directors or of any committee of directors by means of telephone or other communication facilities that permit all persons participating in the meeting to hear each other, and a director participating in a meeting by those means is deemed for the purposes of the Act and this by-law to be present at that meeting.

20. Adjournment. Any meeting of directors or of any committee of directors may be adjourned from time to time by the chairman of the meeting, with the consent of the meeting, to a fixed time and place. Notice of an adjourned meeting of directors or committee of directors is not required to be given if the time and place of the adjourned meeting is announced at the original meeting. Any adjourned meeting shall be duly constituted if held in accordance with the terms of the adjournment and a quorum is present thereat. The directors who formed a quorum at the original meeting are not required to form the quorum at the adjourned meeting. If there is no quorum present at the adjourned meeting, the original meeting shall be deemed to have terminated forthwith after its adjournment. Any business may be brought before or dealt with at the adjourned meeting which might have been brought before or dealt with at the original meeting in accordance with the notice calling the same.

21. Quorum and Voting. Subject to the articles, a majority of the number of directors constitutes a quorum at any meeting of directors and, notwithstanding any vacancy among the directors, a quorum of directors may exercise all the powers of the directors. Subject to subsections (3) and (4) of section 114 of the Act, directors shall not transact business at a meeting of directors unless a quorum is present and at least one-quarter of the directors present are resident Canadians. Questions arising at any meeting of directors shall be decided by a majority of votes. In the case of an equality of votes, the chairman of the meeting in addition to his original vote shall not have a second or casting vote.

22. Resolution in Lieu of Meeting. Subject to the articles or a unanimous shareholder agreement, a resolution in writing, signed by all the directors entitled to vote on that resolution at a meeting of directors or committee of directors, is as valid as if it had been passed at a meeting of directors or committee of directors. A resolution in writing dealing with all matters required by the Act or this by-law to be dealt with at a meeting of directors, and signed by all the directors entitled to vote at that meeting, satisfies all the requirements of the Act and this by-law relating to meetings of directors.

#### COMMITTEES OF DIRECTORS

23. General. The directors may from time to time appoint from their number a managing director, who must be a resident Canadian, or a committee of directors, at least half of whom shall be resident Canadians, and may delegate to the managing director or such committee any of the powers of the directors, except that no managing director or committee shall have the authority to:

- (a) submit to the shareholders any question or matter requiring the approval of the shareholders;
- (b) fill a vacancy among the directors or in the office of auditor;
- (c) appoint additional directors;
- (d) issue securities except in the manner and on the terms authorized by the directors;
- (e) declare dividends;
- (f) purchase, redeem or otherwise acquire shares issued by the Corporation, except in the manner and on the terms authorized by the directors;
- (g) pay a commission referred to in section 42 of the Act;
- (h) approve a management proxy circular;
- (i) approve any annual financial statements to be placed before the shareholders of the Corporation; or
- (j) adopt, amend or repeal by-laws of the Corporation.

Notwithstanding the foregoing and subject to the articles or any unanimous shareholder agreement, the directors may, by resolution, delegate to a director, managing director or committee of directors the power to:

- (a) borrow money on the credit of the Corporation;
- (b) issue, reissue, sell or pledge debt obligations of the Corporation;
- (c) subject to section 45 of the Act, give a guarantee on behalf of the Corporation to secure performance of an obligation of any person; and
- (d) mortgage, hypothecate, pledge or otherwise create a security interest in all or any property of the Corporation, owned or subsequently acquired, to secure any obligation of the Corporation.

24. Audit Committee. Subject to subsection (3) of section 171 of the Act, if any of the issued shares of the Corporation, or securities of the Corporation which may or might be exchanged for or converted into shares of the Corporation, were part of a distribution to the public and the Corporation has more than fifteen shareholders, the directors shall elect annually from among their number an audit committee to be composed of not fewer than three directors, a majority of whom are not officers or employees of the Corporation or any of its affiliates.

Each member of the audit committee shall serve during the pleasure of the board of directors and, in any event, only so long as he shall be a director. The directors may fill vacancies in the audit committee by election from among their number.

The audit committee shall have power to fix its quorum at not less than a majority of its members and to determine its own rules of procedure subject to any regulations imposed by the board of directors from time to time and to the following paragraph.

The auditor of the Corporation is entitled to receive notice of every meeting of the audit committee and, at the expense of the Corporation, to attend and be heard thereat, and, if so requested by a member of the audit committee, shall attend every meeting of the committee held during the term of office of the auditor. The auditor of the Corporation or any member of the audit committee may call a meeting of the committee.

The audit committee shall review the financial statements of the Corporation prior to approval thereof by the board and shall have such other powers and duties as may from time to time by resolution be assigned to it by the board.

#### REMUNERATION OF DIRECTORS, OFFICERS AND EMPLOYEES

25. Subject to the articles or any unanimous shareholder agreement, the directors of the Corporation may fix the remuneration of the directors, officers and employees of the Corporation. Any remuneration paid to a director of the Corporation shall be in addition to the salary paid to such director in his capacity as an officer or employee of the Corporation. The directors may also by resolution award special remuneration to any director in undertaking any special services on the Corporation's behalf other than the routine work ordinarily required of a director of the Corporation. The confirmation of any such resolution by the shareholders shall not be required. The directors, officers and employees shall also be entitled to be paid their travelling and other expenses properly incurred by them in connection with the affairs of the Corporation.

The aggregate remuneration paid to the directors and the aggregate remuneration paid to the five highest paid officers and employees, other than directors, shall be disclosed to the shareholders at every annual meeting.

#### SUBMISSION OF CONTRACTS OR TRANSACTIONS TO SHAREHOLDERS FOR APPROVAL

26. The directors in their discretion may submit any contract, act or transaction for approval, ratification or confirmation at any annual meeting of the shareholders or at any special meeting of the shareholders called for the purpose of considering the same and any contract, act or transaction that shall be approved, ratified or confirmed by resolution passed by a majority of the votes cast at any such meeting (unless any different or additional requirement is imposed by the Act or by the Corporation's articles or any other by-law) shall be as valid and as binding upon the Corporation and upon all the shareholders as though it had been approved, ratified and/or confirmed by every shareholder of the Corporation.

#### CONFLICT OF INTEREST

27. A director or officer of the Corporation who is a party to a material contract or proposed material contract with the Corporation, or is a director or an officer of or has a material interest

in any person who is a party to a material contract or proposed material contract with the Corporation shall disclose the nature and extent of his interest at the time and in the manner provided in the Act. Except as provided in the Act, no such director of the Corporation shall vote on any resolution to approve such contract. If a material contract is made between the Corporation and one or more of its directors or officers, or between the Corporation and another person of which a director or officer of the Corporation is a director or officer or in which he has a material interest, (i) the contract is neither void nor voidable by reason only of that relationship, or by reason only that a director with an interest in the contract is present at or is counted to determine the presence of a quorum at a meeting of directors or committee of directors that authorized the contract, and (ii) a director or officer or former director or officer of the Corporation to whom a profit accrues as a result of the making of the contract is not liable to account to the Corporation for that profit by reason only of holding office as a director or officer, if the director or officer disclosed his interest in accordance with the provisions of the Act and the contract was approved by the directors or the shareholders and it was reasonable and fair to the Corporation at the time it was approved. This paragraph is subject to any unanimous shareholder agreement.

#### FOR THE PROTECTION OF DIRECTORS AND OFFICERS

28. No director or officer for the time being of the Corporation shall be liable to the Corporation for the acts, receipts, neglects or defaults of any other director or officer or employee or for joining in any receipt or act for conformity or for any loss, damage or expense happening to the Corporation through the insufficiency or deficiency of title to any property acquired by the Corporation or for or on behalf of the Corporation or for the insufficiency or deficiency of any security in or upon which any of the monies of or belonging to the Corporation shall be placed out or invested or for any loss or damage arising from the bankruptcy, insolvency or tortious act of any person, firm or corporation including any person, firm or corporation with whom or which any monies, securities or effects shall be lodged or deposited or for any loss, conversion, misapplication or misappropriation of or any damage resulting from any dealings with any monies, securities or other assets belonging to the Corporation or for any other loss, damage or misfortune whatever which may happen in the execution of the duties of his respective office of trust or in relation thereto, unless the same shall happen by or through his failure to exercise the powers and to discharge the duties of his office honestly, in good faith with a view to the best interests of the Corporation, and in connection therewith to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances, provided that nothing herein contained shall relieve a director or officer from the duty to act in accordance with the Act or relieve him from liability under the Act. The directors for the time being of the Corporation shall not be under any duty or responsibility in respect of any contract, act or transaction whether or not made, done or entered into in the name or on behalf of the Corporation, except such as shall have been submitted to and authorized or approved by the directors. If any director or officer of the Corporation shall be employed by or shall perform services for the Corporation otherwise than as a director or officer or shall be a member of a firm or a shareholder, director or officer of a body corporate which is employed by or performs services for the Corporation, the fact of his being a shareholder, director or officer of the Corporation or body corporate or member of the firm shall not disentitle such director or officer or such firm or body corporate, as the case may be, from receiving proper remuneration for such services.

## INDEMNITIES TO DIRECTORS AND OTHERS

29. (1) Subject to section 124 of the Act, except in respect of an action by or on behalf of the Corporation or body corporate to procure a judgment in its favour, the Corporation shall indemnify a director or officer of the Corporation, a former director or officer of the Corporation or a person who acts or acted at the Corporation's request as a director or officer of a body corporate of which the Corporation is or was a shareholder or creditor, and his heirs and legal representatives, against all costs, charges and expenses, including an amount paid to settle an action or satisfy a judgment, reasonably incurred by him in respect of any civil, criminal or administrative action or proceeding to which he is made a party by reason of being or having been a director or officer of the Corporation or body corporate, if:

- (a) he acted honestly and in good faith with a view to the best interests of the Corporation; and
- (b) in the case of a criminal or administrative action or proceeding that is enforced by a monetary penalty, he had reasonable grounds for believing that his conduct was lawful.

(2) The Corporation shall, subject to the approval of a Court (as defined in the Act), indemnify a person referred to in subparagraph 29(1) hereof in respect of an action by or on behalf of the Corporation or a body corporate to procure a judgment in its favour, to which he is made a party by reason of being or having been a director or an officer of the Corporation or body corporate, against all costs, charges and expenses reasonably incurred by him in connection with such action if he fulfills the conditions set out in subparagraph 29(1)(a) and (b) hereof.

(3) Notwithstanding anything in this paragraph 29, a person referred to in subparagraph 29(1) shall be entitled to indemnity from the Corporation in respect of all costs, charges and expenses reasonably incurred by him in connection with the defence of any civil, criminal or administrative action or proceeding to which he is made a party by reason of being or having been a director or officer of the Corporation or body corporate, if the person seeking indemnity:

- (a) was substantially successful on the merits of his defence of the action or proceeding; and
- (b) fulfills the conditions set out in subparagraph 29(1)(a) and (b) hereof.

## OFFICERS

30. Appointment of Officers. Subject to the articles or any unanimous shareholder agreement, the directors annually or as often as may be required may appoint from among themselves a Chairman of the Board and shall appoint a President and a Secretary and if deemed advisable may appoint one or more Vice-Presidents, a Treasurer and one or more Assistant Secretaries and/or one or more Assistant Treasurers. None of such officers except the Chairman of the Board need be a director of the Corporation although a director may be appointed to any office of the Corporation. Two or more offices of the Corporation may be held by the same person. In case and whenever the same person holds the offices of Secretary and Treasurer he may but need not be known as the Secretary-Treasurer. The directors may from time to time

appoint such other officers, employees and agents as they shall deem necessary who shall have such authority and shall perform such functions and duties as may from time to time be prescribed by resolution of the directors. The directors may from time to time and subject to the provisions of the Act, vary, add to or limit the duties and powers of any officer, employee or agent.

31. Removal of Officers and Vacation of Office. Subject to the articles or any unanimous shareholder agreement, all officers, employees and agents, in the absence of agreement to the contrary, shall be subject to removal by resolution of the directors at any time, with or without cause.

An officer of the Corporation ceases to hold office when he dies, resigns or is removed from office. A resignation of an officer becomes effective at the time a written resignation is sent to the Corporation, or at the time specified in the resignation, whichever is later.

32. Vacancies. If the office of President, Vice-President, Secretary, Assistant Secretary, Treasurer, Assistant Treasurer, or any other office created by the directors pursuant to paragraph 30 hereof shall be or become vacant by reason of death, resignation or in any other manner whatsoever, the directors shall, in the case of the President and Secretary, and may, in the case of any other officers, appoint an individual to fill such vacancy.

33. Chairman of the Board. The Chairman of the Board (if any) shall, if present, preside as chairman at all meetings of the board and of shareholders. He shall sign such contracts, documents or instruments in writing as require his signature and shall have such other powers and shall perform such other duties as may from time to time be assigned to him by resolution of the directors.

34. President. The President shall be the chief executive officer of the Corporation (except as may otherwise be specified by the board of directors) and shall, subject to the direction of the board of directors, exercise general supervision and control over the business and affairs of the Corporation. In the absence of the Chairman of the Board (if any), and if the President is also a director of the Corporation, the President shall, when present, preside as chairman at all meetings of directors and shareholders. He shall sign such contracts, documents or instruments in writing as require his signature and shall have such other powers and shall perform such other duties as may from time to time be assigned to him by resolution of the directors or as are incident to his office.

35. Vice-President. The Vice-President or, if more than one, the Vice-Presidents in order of seniority, shall be vested with all the powers and shall perform all the duties of the President in the absence or inability or refusal to act of the President, provided, however, that a Vice-President who is not a director shall not preside as chairman at any meeting of directors or shareholders. The Vice-President or, if more than one, the Vice-Presidents shall sign such contracts, documents or instruments in writing as require his or their signatures and shall have such other powers and shall perform such other duties as may from time to time be assigned to him or them by resolution of the directors.

36. Secretary. The Secretary shall give or cause to be given notices for all meetings of directors, any committee of directors and shareholders when directed to do so and shall, subject

to the provisions of the Act, maintain the records referred to in subsections (1), (3) and (5) of section 21 of the Act. He shall sign such contracts, documents or instruments in writing as require his signature and shall have such other powers and shall perform such other duties as may from time to time be assigned to him by resolution of the directors or as are incident to his office.

37. Treasurer. Subject to the provisions of any resolution of the directors, the Treasurer shall have the care and custody of all the funds and securities of the Corporation and shall deposit the same in the name of the Corporation in such bank or banks or with such other depository or depositaries as the directors may by resolution direct. He shall prepare and maintain adequate accounting records. He shall sign such contracts, documents or instruments in writing as require his signature and shall have such other powers and shall perform such other duties as may from time to time be assigned to him by resolution of the directors or as are incident to his office. He may be required to give such bond for the faithful performance of his duties as the directors in their uncontrolled discretion may require and no director shall be liable for failure to require any such bond or for the insufficiency of any such bond or for any loss by reason of the failure of the Corporation to receive any indemnity thereby provided.

38. Assistant Secretary and Assistant Treasurer. The Assistant Secretary or, if more than one, the Assistant Secretaries in order of seniority, and the Assistant Treasurer or, if more than one, the Assistant Treasurers in order of seniority, shall be vested with all the powers and shall perform all the duties of the Secretary and Treasurer, respectively, in the absence or inability or refusal to act of the Secretary or Treasurer as the case may be. The Assistant Secretary or, if more than one, the Assistant Secretaries and the Assistant Treasurer or, if more than one, the Assistant Treasurers shall sign such contracts, documents or instruments in writing as require his or their signatures respectively and shall have such other powers and shall perform such other duties as may from time to time be assigned to him or them by resolution of the directors.

39. Managing Director. The directors may from time to time appoint from their number a Managing Director who must be a resident Canadian and may delegate to the Managing Director any of the powers of the directors subject to the limits on authority provided by subsection (3) of section 115 of the Act. The Managing Director shall conform to all lawful orders given to him by the directors and shall at all reasonable times give to the directors or any of them all information they may require regarding the affairs of the Corporation. Any agent or employee appointed by the Managing Director shall be subject to discharge by the directors.

40. Duties of Officers may be Delegated. In case of the absence or inability or refusal to act of any officer of the Corporation or for any other reason that the directors may deem sufficient, the directors may delegate all or any of the powers of such officer to any other officer or to any director for the time being.

#### SHAREHOLDERS' MEETINGS

41. Annual Meeting. Subject to the articles, sections 131 and 132 of the Act, the annual meeting of shareholders shall be held at the registered office of the Corporation or at a place elsewhere within Alberta or outside of Alberta determined by the directors on such day in each year and at such time as the directors may determine.

42. Special Meetings. The directors of the Corporation may at any time call a special meeting of shareholders to be held on such day and at such time and, subject to the articles and section 131 of the Act, at such place within Alberta or outside of Alberta as the directors may determine.

43. Meeting on Requisition of Shareholders. The holders of not less than five percent (5%) of the issued shares of the Corporation that carry the right to vote at a meeting sought to be held may requisition the directors to call a meeting of shareholders for the purposes stated in the requisition. The requisition shall state the business to be transacted at the meeting and shall be sent to each director and to the registered office of the Corporation. Subject to subsection (3) of section 142 of the Act, upon receipt of the requisition, the directors shall call a meeting of shareholders to transact the business stated in the requisition. If the directors do not within twenty-one days after receiving the requisition call a meeting, any shareholder who signed the requisition may call the meeting.

44. Notice. A notice in writing of a meeting of shareholders stating the day, hour and place of meeting and if special business is to be transacted thereat, stating (i) the nature of that business in sufficient detail to permit the shareholder to form a reasoned judgment on that business and (ii) the text of any special resolution to be submitted to the meeting, shall be sent to each shareholder entitled to vote at the meeting, who on the record date for notice is registered on the records of the Corporation or its transfer agent as a shareholder, to each director of the Corporation and to the auditor of the Corporation not less than 21 days and not more than 50 days (exclusive of the day of mailing and of the day for which notice is given) before the date of the meeting; provided that a meeting of shareholders may be held for any purpose on any day and at any time and, subject to section 131 of the Act, at any place without notice if all the shareholders and all other persons entitled to attend such meeting are present in person or represented by proxy at the meeting (except where a shareholder or other person attends the meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called) or if all the shareholders and all other persons entitled to attend such meeting and not present in person nor represented by proxy thereat waive notice of the meeting.

A director of the Corporation is entitled to receive notice of and to attend and be heard at every meeting of shareholders of the Corporation.

The auditor of the Corporation is entitled to receive notice of every meeting of shareholders of the Corporation and, at the expense of the Corporation, to attend and be heard at every meeting on matters relating to his duties as auditor.

45. Waiver of Notice. Notice of any meeting of shareholders or the time for the giving of any such notice or any irregularity in any meeting or in the notice thereof may be waived by any shareholder, the duly appointed proxy of any shareholder, any director or the auditor of the Corporation in writing or by telecopy, telegram, cable or telex addressed to the Corporation or in any other manner, and any such waiver may be validly given either before or after the meeting to which such waiver relates. Attendance of a shareholder or any other person entitled to attend a meeting of shareholders is a waiver of notice of such meeting, except when he attends a meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called.



46. Omission of Notice. The accidental omission to give notice of any meeting of shareholders to or the non-receipt of any notice by any person shall not invalidate any resolution passed or any proceeding taken at any such meeting.

47. Record Dates. The directors may fix in advance a date as the record date for the determination of shareholders (i) entitled to receive payment of a dividend, (ii) entitled to participate in a liquidation distribution or (iii) for any other purpose except the right to receive notice of or to vote at a meeting of shareholders, but such record date shall not precede by more than 50 days the particular action to be taken.

The directors may also fix in advance a date as the record date for the determination of shareholders entitled to receive notice of a meeting of shareholders, but such record date shall not precede by more than 50 days or by less than 21 days the date on which the meeting is to be held.

If no record date is fixed,

- (a) the record date for the determination of shareholders entitled to receive notice of a meeting of shareholders shall be
  - (i) at the close of business on the last business day preceding the day on which the notice is sent; or
  - (ii) if no notice is sent, the day on which the meeting is held; and
- (b) the record date for the determination of shareholders for any purpose other than to establish a shareholder's right to receive notice of a meeting or to vote shall be at the close of business on the day on which the directors pass the resolution relating to that purpose.

48. Chairman of the Meeting. In the absence of the Chairman of the Board (if any), the President and any Vice-President who is a director, the shareholders present entitled to vote shall elect another director as chairman of the meeting and if no director is present or if all the directors present decline to take the chair then the shareholders present shall elect one of their number to be chairman.

49. Votes. Votes at meetings of shareholders may be given either personally or by proxy. Every question submitted to any meeting of shareholders shall be decided on a show of hands except when a ballot is required by the chairman of the meeting or is demanded by a shareholder or proxyholder entitled to vote at the meeting. A shareholder or proxyholder may demand a ballot either before or on the declaration of the result of any vote by show of hands. At every meeting at which he is entitled to vote, every shareholder present in person and every proxyholder shall have one (1) vote on a show of hands. Upon a ballot at which he is entitled to vote every shareholder present in person or by proxy shall (subject to the provisions, if any, of the articles) have one (1) vote for every share registered in his name. In the case of an equality of votes the chairman of the meeting shall not, either on a show of hands or on a ballot, have a second or casting vote in addition to the vote or votes to which he may be entitled as a shareholder or proxyholder.

At any meeting, unless a ballot is demanded by a shareholder or proxyholder entitled to vote at the meeting a declaration by the chairman of the meeting that a resolution has been carried unanimously or by a particular majority or lost or not carried by a particular majority shall be conclusive evidence of the fact without proof of the number or proportion of votes recorded in favour of or against the resolution.

If at any meeting a ballot is demanded on the election of a chairman or on the question of adjournment or termination, the ballot shall be taken forthwith without adjournment. If a ballot is demanded on any other question or as to the election of directors, the ballot shall be taken in such manner and either at once or later at the meeting or after adjournment as the chairman of the meeting directs. The result of a ballot shall be deemed to be the resolution of the meeting at which the ballot was demanded. A demand for a ballot may be withdrawn.

50. Right to Vote. Subject to section 137 of the Act or unless the articles otherwise provide, each share of the Corporation entitles the holder of it to one vote at a meeting of shareholders.

Where a body corporate or association is a shareholder of the Corporation, any individual authorized by a resolution of the directors or governing body of the body corporate or association to represent it at meetings of shareholders of the Corporation is the person entitled to vote at all such meetings of shareholders in respect of the shares held by such body corporate or association.

Where a person holds shares as a personal representative, such person or his proxy is the person entitled to vote at all meetings of shareholders in respect of the shares so held by him.

Where a person mortgages, pledges or hypothecates his shares, such person or his proxy is the person entitled to vote at all meetings of shareholders in respect of such shares so long as such person remains the registered owner of such shares unless, in the instrument creating the mortgage, pledge or hypothec, he has expressly empowered the person holding the mortgage, pledge or hypothec to vote in respect of such shares, in which case, subject to the articles, such holder or his proxy is the person entitled to vote in respect of the shares.

Where two or more persons hold shares jointly, one of those holders present at a meeting of shareholders may in the absence of the others vote the shares, but if two or more of those persons who are present, in person or by proxy, vote, they shall vote as one on the shares jointly held by them.

51. Proxies. Every shareholder, including a shareholder that is a body corporate, entitled to vote at a meeting of shareholders may by means of a proxy appoint a proxyholder and one or more alternate proxyholders, who are not required to be shareholders, to attend and act at the meeting in the manner and to the extent authorized by the proxy and with the authority conferred by the proxy.

An instrument appointing a proxyholder shall be in written or printed form and shall be executed by the shareholder or by his attorney authorized in writing and is valid only at the meeting in respect of which it is given or any adjournment of that meeting.

An instrument appointing a proxyholder may be in the following form or in any other form which complies with the requirements of the Act:

The undersigned shareholder of \_\_\_\_\_ hereby appoints \_\_\_\_\_ of \_\_\_\_\_, whom failing, \_\_\_\_\_ of \_\_\_\_\_ as the nominee of the undersigned to attend and act for and on behalf of the undersigned at the meeting of the shareholders of the said Corporation to be held on the \_\_\_ day of \_\_\_\_\_, 20\_\_ and at any adjournment thereof in the same manner, to the same extent and with the same power as if the undersigned were personally present at the said meeting or such adjournment thereof.

Dated the \_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Signature of Shareholder

The directors may specify in a notice calling a meeting of shareholders a time not exceeding forty-eight (48) hours, excluding Saturdays, Sundays and holidays, preceding the meeting or an adjournment of the meeting before which time proxies to be used at the meeting must be deposited with the Corporation or its agent.

The chairman of the meeting of shareholders may in his discretion accept any written communication (including without limitation any telecopy, telegram, cable or telex) as to the authority of anyone claiming to vote on behalf of and to represent a shareholder notwithstanding that no instrument of proxy conferring such authority has been deposited with the Corporation, and any votes given in accordance with such written communication accepted by the chairman of the meeting shall be valid and shall be counted.

52. Telephone Participation. A shareholder or any other person entitled to attend a meeting of shareholders may participate in the meeting by means of telephone or other communication facilities that permit all persons participating in the meeting to hear each other and a person participating in such a meeting by those means is deemed for the purposes of the Act and this by-law to be present at the meeting.

53. Adjournment. The chairman of the meeting may with the consent of the meeting adjourn any meeting of shareholders from time to time to a fixed time and place and if the meeting is adjourned by one or more adjournments for an aggregate of less than thirty (30) days it is not necessary to give notice of the adjourned meeting other than by announcement at the time of an adjournment. If a meeting of shareholders is adjourned by one or more adjournments for an aggregate of thirty (30) days or more, notice of the adjourned meeting shall be given as for an original meeting but, unless the meeting is adjourned by one or more adjournments for an aggregate of more than ninety (90) days, subsection (1) of section 149 of the Act does not apply.

Any adjourned meeting shall be duly constituted if held in accordance with the terms of the adjournment and a quorum is present thereat. The persons who formed a quorum at the original meeting are not required to form the quorum at the adjourned meeting. If there is no quorum present at the adjourned meeting, the original meeting shall be deemed to have terminated forthwith after its adjournment. Any business may be brought before or dealt with at the adjourned meeting which might have been brought before or dealt with at the original meeting in accordance with the notice calling the same.

54. Quorum. Two (2) persons present and each holding or representing by proxy at least one (1) issued share of the Corporation shall be a quorum at any meeting of shareholders for the election of a chairman of the meeting and for the adjournment of the meeting to a fixed time and place but not for the transaction of any other business; for all other purposes two (2) persons present and holding or representing by proxy one-twentieth of the shares entitled to vote at the meeting shall be a quorum. If a quorum is present at the opening of a meeting of shareholders, the shareholders present may proceed with the business of the meeting, notwithstanding that a quorum is not present throughout the meeting.

Notwithstanding the foregoing, if the Corporation has only one shareholder, or one shareholder holding a majority of the shares entitled to vote at the meeting, that shareholder present in person or by proxy constitutes a meeting and a quorum for such meeting.

55. Resolution in Lieu of Meeting. A resolution in writing signed by all the shareholders entitled to vote on that resolution is as valid as if it had been passed at a meeting of the shareholders. A resolution in writing dealing with all matters required by the Act or this by-law to be dealt with at a meeting of shareholders, and signed by all the shareholders entitled to vote at that meeting, satisfies all the requirements of this Act or the by-law relating to meetings of shareholders.

#### SHARES AND TRANSFERS

56. Issuance. Subject to the articles, any unanimous shareholder agreement and to section 30 of the Act, shares in the Corporation may be issued at the times and to the persons and for the consideration that the directors determine; provided that a share shall not be issued until the consideration for the share is fully paid in money or in property or past service that is not less in value than the fair equivalent of the money that the Corporation would have received if the share had been issued for money.

57. Security Certificates. A security holder is entitled at his option to a security certificate that complies with the Act or a non-transferable written acknowledgment of his right to obtain a security certificate from the Corporation in respect of the securities of the Corporation held by him. Security certificates shall (subject to compliance with section 48 of the Act) be in such form as the directors may from time to time by resolution approve and such certificates shall be signed by at least one director or officer of the Corporation or by or on behalf of a registrar, transfer agent or branch transfer agent of the Corporation, or by a trustee who certifies it in accordance with a trust indenture. Any signatures required on a security certificate may be printed or otherwise mechanically reproduced on it. If a security certificate contains a printed or mechanically reproduced signature of a person, the Corporation may issue the security

certificate, notwithstanding that the person has ceased to be a director or an officer of the Corporation, and the security certificate is as valid as if he were a director or an officer at the date of its issue.

58. Agent. The directors may from time to time by resolution appoint or remove (i) one or more trust companies registered under the Trust Companies Act as its agent or agents to maintain a central securities register or registers or (ii) an agent or agents to maintain a branch securities register or registers for the Corporation.

59. Dealings with Registered Holder. Subject to the Act, the Corporation may treat the registered owner of a security as the person exclusively entitled to vote, to receive notices, to receive any interest, dividend or other payments in respect of the security, and otherwise to exercise all the rights and powers of an owner of the security.

60. Surrender of Security Certificates. Subject to the Act, no transfer of a security issued by the Corporation shall be registered unless or until the security certificate representing the security to be transferred has been presented for registration or, if no security certificate has been issued by the Corporation in respect of such security, unless or until a duly executed transfer in respect thereof has been presented for registration.

61. Defaced, Destroyed, Stolen or Lost Security Certificates. In case of the defacement, destruction, theft or loss of a security certificate, the fact of such defacement, destruction, theft or loss shall be reported by the owner to the Corporation or to an agent of the Corporation (if any), on behalf of the Corporation, with a statement verified by oath or statutory declaration as to the defacement, destruction, theft or loss and the circumstances concerning the same and with a request for the issuance of a new security certificate to replace the one so defaced, destroyed, stolen or lost. Upon the giving to the Corporation (or if there be an agent, hereinafter in this paragraph referred to as the "Corporation's agent", then to the Corporation and the Corporation's agent) of a bond of a surety company (or other security approved by the directors) in such form as is approved by the directors or by the Chairman of the Board (if any), the President, a Vice-President, the Secretary or the Treasurer of the Corporation, indemnifying the Corporation (and the Corporation's agent if any) against all loss, damage or expense, which the Corporation and/or the Corporation's agent may suffer or be liable for by reason of the issuance of a new security certificate to such owner, and provided the Corporation or the Corporation's agent does not have notice that the security has been acquired by a bona fide purchaser and before a purchaser described in section 67 of the Act has received a new, reissued or re-registered security, a new security certificate may be issued in replacement of the one defaced, destroyed, stolen or lost, if such issuance is ordered and authorized by any one of the Chairman of the Board (if any), the President, a Vice-President, the Secretary or the Treasurer of the Corporation or by resolution of the directors.

62. Enforcement of Lien for Indebtedness. Subject to subsection (8) of section 48 of the Act, if the articles of the Corporation provide that the Corporation has a lien on the shares registered in the name of a shareholder or his legal representative for a debt of that shareholder to the Corporation, the directors of the Corporation may sell any such shares in such manner as they think fit until the debt has been paid in full. No sale shall be made until such time as the debt ought to be paid and until a demand and notice in writing stating the amount due and demanding payment and giving notice of intention to sell in default shall have been served on the holder or

his legal representative of the shares subject to the lien and default shall have been made in payment of such debt for seven days after service of such notice. Upon any such sale, the proceeds shall be applied, firstly, in payment of all costs of such sale, and, secondly, in satisfaction of such debt and the residue (if any) shall be paid to such shareholder or his legal representative or as he shall direct. Upon any such sale, the directors may enter or cause to be entered the purchaser's name in the securities register of the Corporation as holder of the shares, and the purchaser shall not be bound to see to the regularity or validity of, or be affected by, any irregularity or invalidity in the proceedings, or be bound to see to the application of the purchase money, and after his name or the name of his legal representative has been entered in the securities register, the regularity and validity of the sale shall not be impeached by any person.

### DIVIDENDS

63. The directors may from time to time by resolution declare and the Corporation may pay dividends on its issued shares, subject to the provisions (if any) of the Corporation's articles.

The directors shall not declare and the Corporation shall not pay a dividend if there are reasonable grounds for believing that:

- (a) the Corporation is, or would be after the payment be, unable to pay its liabilities as they become due; or
- (b) the realizable value of the Corporation's assets would thereby be less than the aggregate of its liabilities and stated capital of all classes.

The Corporation may pay a dividend by issuing fully paid shares of the Corporation and, subject to section 43 of the Act, the Corporation may pay a dividend in money or property.

64. In case several persons are registered as the joint holders of any securities of the Corporation, any one of such persons may give effectual receipts for all dividends and payments on account of dividends, principal, interest and/or redemption payments in respect of such securities.

### VOTING SECURITIES IN OTHER BODIES CORPORATE

65. All securities of any other body corporate carrying voting rights held from time to time by the Corporation may be voted at all meetings of shareholders, bondholders, debenture holders or holders of such securities, as the case may be, of such other body corporate and in such manner and by such person or persons as the directors of the Corporation shall from time to time determine and authorize by resolution. The duly authorized signing officers of the Corporation may also from time to time execute and deliver for and on behalf of the Corporation proxies and arrange for the issuance of voting certificates or other evidence of the right to vote in such names as they may determine without the necessity of a resolution or other action by the directors.

NOTICES, ETC.

66. Service. Any notice or document required by the Act, the articles or the by-laws to be sent to any shareholder or director of the Corporation may be delivered personally to or sent by mail addressed to:

- (a) the shareholder at his latest address as shown in the records of the Corporation or its transfer agent; and
- (b) the director at his latest address as shown in the records of the Corporation or in the last notice filed under section 106 or 113 of the Act.

Such notice or document shall be deemed to have been sent on the day of personal delivery or mailing. With respect to every notice or document sent by mail it shall be sufficient to prove that the envelope or wrapper containing the notice or document was properly addressed and put into a post office or into a post office letter box.

67. Failure to Locate Shareholder. If the Corporation sends a notice or document to a shareholder and the notice or document is returned on three consecutive occasions because the shareholder cannot be found, the Corporation is not required to send any further notices or documents to the shareholder until he informs the Corporation in writing of his new address.

68. Shares Registered in More than one Name. All notices or documents shall, with respect to any shares in the capital of the Corporation registered in more than one name, be sent to whichever of such persons is named first in the records of the Corporation and any notice or document so sent shall be deemed to have been duly sent to all the holders of such shares.

69. Persons Becoming Entitled by Operation of Law. Every person who by operation of law, transfer or by any other means whatsoever shall become entitled to any shares in the capital of the Corporation shall be bound by every notice or document in respect of such shares which prior to his name and address being entered on the records of the Corporation in respect of such shares shall have been duly sent to the person or persons from whom he derives his title to such shares.

70. Deceased Shareholder. Any notice or document sent to any shareholder in accordance with paragraph 66 hereof shall, notwithstanding that such shareholder be then deceased and whether or not the Corporation has notice of his decease, be deemed to have been duly sent in respect of the shares held by such shareholder (whether held solely or with other persons) until some other person be entered in his stead in the records of the Corporation as the holder or one of the holders thereof and shall be deemed to have been duly sent to his heirs, executors, administrators and legal representatives and all persons (if any) interested with him in such shares.

71. Signatures upon Notices. The signature of any director or officer of the Corporation upon any notice may be written, stamped, typewritten or printed or partly written, stamped, typewritten or printed.

72. Computation of Time. All computations of time required to be made pursuant to the articles or by-laws of the Corporation shall be made (i) in accordance with the provisions of the

Interpretation Act, to the extent such provisions are applicable, and (ii) in any other case, in accordance with the customary meaning ascribed to the words requiring such computation of time.

73. Proof of Service. A certificate of any officer of the Corporation in office at the time of the making of the certificate or of an agent of the Corporation as to facts in relation to the sending of any notice or document to any shareholder, director, officer or auditor or publication of any notice or document shall be conclusive evidence thereof and shall be binding on every shareholder, director, officer or auditor of the Corporation, as the case may be.

#### CUSTODY OF SECURITIES

74. All securities (including without limitation warrants) owned by the Corporation may be lodged (in the name of the Corporation) with a chartered bank or a trust company or in a safety deposit box or, if so authorized by resolution of the directors, with such other depositaries or in such other manner as may be determined from time to time by the directors.

All securities (including without limitation warrants) belonging to the Corporation may be issued and held in the name of a nominee or nominees of the Corporation (and if issued or held in the names of more than one nominee shall be held in the names of the nominees jointly with right of survivorship) and shall be endorsed in blank with endorsement guaranteed in order to enable transfer thereof to be completed and registration thereof to be effected.

#### EXECUTION OF CONTRACTS, ETC.

75. Contracts, documents or instruments in writing requiring the signature of the Corporation may be signed by the President alone or any person or persons authorized by resolution of the directors and all contracts, documents or instruments in writing so signed shall be binding upon the Corporation without any further authorization or formality. The directors are authorized from time to time by resolution to appoint any person or persons on behalf of the Corporation either to sign contracts, documents or instruments in writing generally or to sign specific contracts, documents or instruments in writing.

The corporate seal of the Corporation may, when required, be affixed by the President to contracts, documents or instruments in writing signed by him as aforesaid or by the person or persons appointed as aforesaid by resolution of the directors.

The term "contracts, documents or instruments in writing" as used in this by-law shall include deeds, mortgages, hypothecs, charges, cheques, drafts, orders for the payment of money, notes, acceptances, bills of exchange, conveyances, transfers and assignments of property, real or personal, immovable or movable, agreements, releases, receipts and discharges for the payment of money or other obligations, conveyances, transfers and assignments of securities and all paper writings.

The signature or signatures of the President or any person or persons appointed as aforesaid by resolution of the directors may, if specifically authorized by resolution of the

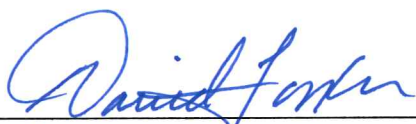


directors, be printed, engraved, lithographed or otherwise mechanically reproduced upon all contracts, documents or instruments in writing or bonds, debentures or other securities of the Corporation executed or issued by or on behalf of the Corporation and all contracts, documents or instruments in writing or securities of the Corporation on which the signature or signatures of any of the foregoing persons shall be so reproduced, by authorization by resolution of the directors, shall be deemed to have been manually signed by such persons whose signature or signatures is or are so reproduced and shall be as valid to all intents and purposes as if they had been signed manually and notwithstanding that the persons whose signature or signatures is or are so reproduced may have ceased to hold office at the date of the delivery or issue of such contracts, documents or instruments in writing or securities of the Corporation.

FISCAL PERIOD

76. The fiscal period of the Corporation shall terminate on such day in each year as the board of directors may from time to time by resolution determine.

ENACTED the 15 day of April, 2009.



• David Tonken



• GREG MATTHEWS



**TOTAL ENERGY SERVICES INC.  
BY-LAW NO. 2**

(formerly By-Law No. 1 of Biomerge  
as ratified by the shareholders of  
Total at an Annual and Special Meeting  
held on May 17, 2010)

# BIOMERGE INDUSTRIES LTD.

## BY-LAW NO. 2

A by-law respecting the borrowing of money, the giving of guarantees and the giving of security by Biomerge Industries Ltd. (hereinafter called the "Corporation").

IT IS HEREBY ENACTED as a by-law of the Corporation as follows:


The directors of the Corporation may from time to time:

- (a) borrow money on the credit of the Corporation;
- (b) issue, reissue, sell or pledge debt obligations of the Corporation, including without limitation, bonds, debentures, notes or other evidences of indebtedness or guarantee of the Corporation, whether secured or unsecured;
- (c) give a guarantee on behalf of the Corporation to secure performance of an obligation of any individual, partnership, association, body corporate, trustee, executor, administrator or legal representative;
- (d) mortgage, hypothecate, pledge or otherwise create an interest in or charge on all or any property of the Corporation, owned or subsequently acquired, to secure payment of a debt or performance of any other obligation of the Corporation;
- (e) delegate to one or more directors, a committee of directors or one or more officers of the Corporation as may be designated by the directors, all or any of the powers conferred by the foregoing clauses of this by-law to such extent and in such manner as the directors shall determine at the time of each such delegation.

In the event any provision of any other by-law of the Corporation now in force is inconsistent with or in conflict with any provision of this by-law, the provisions of this by-law shall prevail to the extent necessary to remove the inconsistency or conflict.

This by-law shall remain in force and be binding upon the Corporation as regards any party acting on the faith thereof until a copy, certified by the Secretary of the Corporation, of a by-law repealing or replacing this by-law shall have been received by such party and duly acknowledged in writing.

ENACTED the 15 day of April, 2009.

  
\_\_\_\_\_  
• David Tonken

  
\_\_\_\_\_  
• GREG MATTHEWS