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BATTERY CELL FOR A TRACTION BATTERY, BATTERY CELL STACK FOR AN ELECTRIC VEHICLE, ELECTRIC VEHICLE, AND METHODS FOR MANUFACTURING A BATTERY CELL AND A BATTERY CELL STACK

Abstract

The disclosure relates to battery cells and stacks for a traction battery of an electric vehicle. A corresponding battery cell for a traction battery of an electric vehicle can comprise a battery cell body having at least a first side and a second side, wherein the second side is arranged adjacent to the first side, a degassing valve arranged on the first side of the battery cell body, and a cover element covering at least a portion of the degassing valve and extending onto the second side.

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Background/Summary

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of and priority to pending EP patent application Ser. No. 24/158,383.0, filed Feb. 19, 2024, and entitled “BATTERY CELL FOR A TRACTION BATTERY, BATTERY CELL STACK FOR AN ELECTRIC VEHICLE, ELECTRIC VEHICLE, AND METHODS FOR MANUFACTURING A BATTERY CELL AND A BATTERY CELL STACK,” the entirety of which is hereby incorporated by reference herein.

TECHNICAL FIELD

[0002] The present disclosure relates to electric vehicle batteries and, more particularly, to battery cells and stacks for a traction battery of an electric vehicle.

BACKGROUND

[0003] Battery electric vehicles or hybrid electric vehicles may comprise, in a battery system, a plurality of battery cells arranged in one or more battery cell stacks. The battery cell system is configured to provide electric energy for driving the vehicle. The battery system may alternatively be called a battery pack or traction battery pack.

SUMMARY

[0004] Battery systems need to be operated in a safe manner. To this end, battery cells can be equipped with a degassing valve that allows hot gases to leave the battery cell, for instance, in case of a thermal event occurring within the battery cell. It is an object of the present disclosure to improve battery cells and battery systems comprising such battery cells. A corresponding improvement, in particular, relates to the resistance of a battery system against thermal events.

[0005] The problem is at least partially solved or alleviated by the subject matter of the independent claims of the present disclosure, wherein further examples are incorporated in the dependent claims.

[0006] The present disclosures relates to a battery cell for a traction battery of an electric vehicle.

[0007] The present disclosure also relates to a battery cell stack comprising such battery cell, to a battery system comprising such battery cell stack and to an electric vehicle comprising such battery cell stack and/or such battery system.

[0008] Still further, the present disclosure relates to a method for manufacturing a battery cell and to a method for manufacturing a battery cell stack.

[0009] According to a first aspect, there is provided a battery cell for a traction battery of an electric vehicle. The battery cell comprises a battery cell body having at least a first side and a second side, wherein the second side is arranged adjacent to the first side. A degassing valve is arranged on the first side of the battery cell body. Moreover, a cover element covers at least a portion of the degassing valve and extends onto the second side. The cover element protects the associated battery cell from effects of a thermal event occurring in another battery cell of the same battery system and/or the same cell stack. At the same time, the cover element does not hinder the functionality of the degassing valve which is covered by the cover element. Thus, in simplified words, if the battery cell having the cover element undergoes a thermal event, the degassing valve opens in order to allow hot gases to leave the battery cell. The cover element is eliminated, e.g., pushed back or deformed, by these hot gases. However, if a thermal event occurs in another battery cell, the cover element protects the associated battery cell and especially the degassing valve it covers from undesired influences of the hot gases produced by the other battery cell. The fact that the cover element extends onto the second side ensures reliable attachment of the cover element to the battery cell body. This is due to several effects. First, the portions of the cover element

extending onto the second side may be used for an attachment of any kind to the battery cell body. Thus, the cover element may be reliably and flexibly attached to the battery cell body. Second, the portion of the cover element extending onto the second side may be clamped between the battery cell comprising the cover element and a neighboring battery cell. This further enhances the attachment. Altogether, operational safety of the battery cell is enhanced.

[0010] It is noted that the battery cell is according to the present disclosure may generally be of any shape. In an example, the battery cell is a prismatic battery cell, i.e., the battery cell has a generally cuboid-shape. In another example, the battery cell has a cylindrical shape. More generally speaking, the battery cell may have any shape, which may allow for an arrangement of several battery cells adjacent to one another in a battery cell stack.

[0011] According to an example, the battery cell body may further have a third side, wherein the second side and the third side are arranged adjacent to the first side at opposite edges of the first side. The cover element additionally extends onto the third side. In this configuration, the reliability of the attachment of the cover element to the battery cell body is further enhanced since the portion of the cover element extending onto the third side may be used for attaching the cover element to the battery cell body. Moreover, the portion of the cover element extending onto the third side may be clamped between the battery cell comprising the cover element and a neighboring battery cell. This further enhances the attachment.

[0012] In a situation in which the battery cell comprising the cover element is arranged between two further battery cells, a compression force may be applied on the battery cell comprising the cover element. Thus, the cover element may be compressed by the two neighboring battery cells, wherein one neighboring battery cell is arranged adjacent to the second side and one neighboring battery cell is arranged adjacent to the third side of the battery cell comprising the cover element.

[0013] It is noted that in case the cover element extends only onto one side of the battery cell, protection provided by the cover element against gases being discharged by another battery cell may be higher if these gases originate from a battery cell arranged on the same side on which the cover element extends onto the second side or third side of the battery cell. In such a situation, the gases may push the cover element onto the degassing valve.

[0014] According to an example, the cover element may be connected to at least one of the first side, the second side and the third side via an adhesive. Consequently, the cover element is reliably attached to the battery cell body. This applies to a situation in which the battery cell is used in an assembly process, e.g., when assembling a battery system or battery cell stack comprising the battery cell. According to an example, the adhesive may be configured to reliably attach the cover element to the battery cell body during assembly, but not above a temperature level common for thermal events or over a lifetime of the battery cell. This enhances the choice of suitable adhesives and facilitates the attachment of the cover element to the battery cell body. It is noted that during a thermal event of a neighboring battery cell, the cover element may be held in place due to the fact that at least a portion thereof extends onto the second side and/or the third side of the battery cell body and, therefore, is clamped by neighboring battery cells. The same applies during use of the battery cell without a thermal event, i.e., over the lifetime of the battery cell. In other words, the mechanical clamping force provided by a compressing the battery cell in the associated battery cell stack is used to hold the cover element in position throughout the life of the battery cell stack and throughout a duration of a thermal event. Since this compression is already used in the battery cell stack to ensure e.g., cell durability, this compression may be used to fulfil both tasks.

[0015] According to an example, the cover element may extend onto at least one of the second side and the third side for at least 3 mm and/or for at most 30 mm. In doing so, a minimum extension of 3 mm onto the second side and/or onto the third side may allow that a sufficient amount of the cover element is provided between neighboring battery cells so that the compression force may be applied on a sufficiently large area of the cover element. Moreover, this configuration allows to reliably attach the cover element to the battery cell body, e.g., using adhesive.

[0016] According to an example, in a direction perpendicular to the direction in which the cover element extends onto the second side, a width of the cover element may at least equal a maximum width of the degassing valve in this direction. This means that the width of the cover element equals the maximum width of the degassing valve or the width of the cover element is larger than the maximum width of the degassing valve. Consequently, the degassing valve is reliably covered while still comparatively little material is necessary for the cover element.
[0017] According to an example, the cover element may comprise at least one of fiberglass, mica material, and/or silicon rubber. All of these materials are heat-resistant to an extent that allows to reliably protect the covered degassing valve from the effects that hot gases resulting from a thermal event in another battery cell may have.
[0018] According to an example, the cover element may have a thickness in a range from 0.05 mm to 1.0 mm. This thickness is sufficient to generate the desired protection effect. At the same time this thickness is small enough to be able to clamp a portion of the cover element between neighboring battery cells without negatively affecting these, e.g., by generating force peaks in zone where the cover element contacts the battery cell body.
[0019] According to an example, the cover element may be strip-shaped. Hence, application of the cover element is facilitated since strip-shaped cover element may be easily and reliably handled during a manufacturing process. At the same time, a strip-shape is a comparatively simple form that allows for efficient production of cover elements.
[0020] It is noted that using a cover element, e.g., in the form of a thin layer of material, for example a fiberglass (like fiberglass tape), mica material, and/or silicon rubber, directly covering the battery cell's degassing valve provides a reliable way of protecting the battery cell's degassing valves from gases resulting from a thermal event in a neighboring battery cell. Such thin layer may act as a relatively inexpensive and simple shield against hot, pressurized gases that are known to melt aluminum-made degassing valves of battery cells and that have the potential to cause a propagation of the thermal event in other battery cells initially not affected by the thermal event.
[0021] According to an example, a mechanical connection interface may be arranged on the first side. The mechanical connection interface may be configured to structurally connect the battery cell with a structural element of the vehicle. This means that the battery cell may be used as a structural component of the vehicle. Thus, the battery cell may support loads occurring during operation of the vehicle. Such a structural connection may offer the possibility to achieve an additional mechanical stability of the vehicle provided by the battery cell. Remaining structural components of the vehicle may be adapted to this effect such that overall, a weight of the vehicle may be reduced while keeping an overall mechanical stability.
[0022] According to a second aspect, there is provided a battery cell stack for an electric vehicle. The battery cell stack comprises a plurality of battery cells arranged adjacent to one another along an arrangement direction. At least one battery cell among the plurality of battery cells is a battery cell according to the first aspect. A portion of the cover element extending onto the second side of the battery cell according to the first aspect contacts a neighboring battery cell. Additionally, or alternatively, a portion of the cover element extending onto the third side of the battery cell according to the first aspect contacts a neighboring battery cell. In other words, the portion of the cover element extending onto the second side and/or the portion of the cover element extending onto the third side may be clamped between the battery cell comprising the cover element and an adjacent battery cell. Thus, the above-outlined advantages for a single battery cell may thus be applied and hold true for the battery cell stack.
[0023] According to an example, the battery cells of the battery cell stack may be compressed along the arrangement direction. Thus, a compression force is applied on the portions of the cover element contacting the neighboring battery cell, i.e., on the portion of the cover element extending onto the second side and/or the portion of the cover element extending onto the third side.
[0024] According to a third aspect, there is provided a battery system for an electric vehicle,

comprising a battery cell stack according to the second aspect. Thus, at least some of the battery cells of the battery system are protected from effects of a thermal event occurring in another battery cell of the same battery system and/or the same cell stack. This protection is provided by the cover element. At the same time, the cover element does not hinder the functionality of the degassing valve which is covered by the cover element. Thus, in simplified words, if the battery cell having the cover element undergoes a thermal event, the degassing valve opens in order to allow hot gases to leave the battery cell. The cover element is eliminated, e.g., pushed back or deformed, by these hot gases. However, if a thermal event occurs in another battery cell, the cover element protects the associated battery cell and especially the degassing valve it covers from undesired influences of the hot gases produced by the other battery cell. The fact that the cover element extends onto the second side ensures reliable attachment of the cover element to the battery cell body. Thus, the battery system fulfils particularly high standards in respect of safety and reliability.

[0025] According to a fourth aspect, there is provided an electric vehicle comprising a battery cell stack according to the second aspect and/or a battery system according to the third system. Due to the fact that the battery cell stack and/or the battery system fulfils particularly high standards in respect of safety and reliability, the same applies to the electric vehicle.

[0026] According to an example, the battery cell stack and/or the battery system may be a structural component of the vehicle. This means that the battery cell stack and/or the battery system may be used as a structural component of the vehicle. Thus, the battery cell stack and/or the battery system may support loads occurring during operation of the vehicle. This offers the possibility to achieve an additional mechanical stability of the vehicle provided by the battery cell stack and/or the battery system. Remaining structural components of the vehicle may be adapted to this effect such that overall, a weight of the vehicle may be reduced while keeping an overall mechanical stability.

[0027] According to a fifth aspect, there is provided a method for manufacturing a battery cell, wherein the battery cell comprises a battery cell body having at least a first side and a second side, wherein the second side is arranged adjacent to the first side, and a degassing valve arranged on the first side of the battery cell body. The method comprises providing the battery cell body and arranging a cover element on the cell body such that the cover element covers at least a portion of the degassing valve and extends onto the second side. Thus, using this method, a battery cell may be manufactured which is protected from effects of a thermal event occurring in another battery cell of the same battery system and/or the same cell stack.

[0028] According to a sixth aspect, there is provided a method for manufacturing a battery cell stack comprising a plurality of battery cells arranged adjacent to one another along an arrangement direction, the method comprising providing a plurality of battery cells, wherein at least one battery cell according to the first aspect is amongst the plurality of battery cells; and arranging the plurality of battery cells adjacent to one another along the arrangement direction such that a portion of the cover element extending onto the second side of the battery cell according to any of the first aspect contacts a neighboring battery cell and/or such that a portion of the cover element extending onto the third side of the battery cell according to the first aspect contacts a neighboring battery cell. Thus, using this method, a battery cell stack may be manufactured which comprises battery cells that are protected from effects of a thermal event occurring in another battery cell of the same battery system and/or the same cell stack.

[0029] It should be noted that the above examples may be combined with each other irrespective of the aspect involved.

[0030] These and other aspects of the present disclosure will become apparent from and elucidated with reference to the examples described hereinafter.

Description

BRIEF DESCRIPTION OF DRAWINGS

[0031] Examples of the disclosure will be described in the following with reference to the following drawings.

[0032] FIG. **1** shows an electric vehicle according to the present disclosure comprising a battery system according to the present disclosure having a battery cell stack according to the present disclosure and a plurality of battery cells according to the present disclosure.

[0033] FIG. **2** shows a portion of two battery cell stacks of the vehicle of FIG. **1**, wherein cover elements are not shown.

[0034] FIG. **3** shows another example of a battery cell stack.

[0035] FIG. **4** shows a further example of a battery cell stack, wherein cover elements are only shown for some battery cells.

[0036] FIG. **5** shows an example of a battery cell, wherein the cover element is not yet attached to a battery cell body.

[0037] FIG. **6** shows an example of a battery cell, wherein the cover element is partially attached to the battery cell body.

[0038] FIG. **7** shows an example of the battery cell, wherein the cover element is fully attached to the battery cell body.

[0039] FIG. **8** shows the cover element of the battery cell of FIGS. **5** to **7** in a separate representation.

DETAILED DESCRIPTION

[0040] The Figures are merely schematic representations and serve only to illustrate examples of the disclosure. Identical or equivalent elements are in principle provided with the same reference signs.

[0041] FIG. **1** shows an electric vehicle **100**.

[0042] The electric vehicle **100** comprises a battery system **110** which in the present example is a traction battery. Moreover, the battery cell system **110** is a structural component of the vehicle **100**.

[0043] The battery system **110** comprises a plurality of battery cell stacks **120** which are arranged in a battery housing. In the schematic representation of FIG. **1**, only one of the battery cell stacks **120** is visible.

[0044] Each battery cell stack **120** comprises a plurality of battery cells **130**. For reasons of better visibility, only some of the battery cells **130** are provided with a reference sign in FIG. **1**.

[0045] In FIG. **2**, two battery cell stacks **120** of the battery system **110** are shown in more detail. Also, the individual battery cells **130** are shown in more detail. For reasons of better visibility, bus bars **150** for connecting individual battery cells **130** are illustratively shown for only some of the battery cells **130** in one battery cell stack **120**. FIGS. **3** and **4** show further examples of battery cell stacks **120**.

[0046] Each of the battery cell stacks **120** comprises a plurality of battery cells **130** which are arranged adjacent to one another along an arrangement direction. In other words, the battery cells **130** conjointly forming a battery cell stack **120** are arranged side-by-side along the arrangement direction.

[0047] In the present example, all battery cells **130** are prismatic battery cells, i.e., the battery cells **130** are cuboid-shaped.

[0048] Moreover, the battery cells **130** conjointly forming a battery cell stack **120** are compressed along the arrangement direction when arranged in the housing of the battery system **110**.

[0049] Each of the battery cells **130** has a battery cell body. Due to the cuboid shape, the battery cell body has a total of six sides.

[0050] A first side **510** is defined as the side of the battery cell body on which the electric terminals are provided.

[0051] A second side **520** is arranged adjacent to the first side **510**, i.e., the first side and the second

side share an edge of the battery cell body.
[0052] A third side **530** is also arranged adjacent to the first side **510**. Thus, also the first side **510** and the third side **530** share an edge of the battery cell body.
[0053] Moreover, the second side **520** and the third side **530** are arranged at opposite edges of the first side **510**.
[0054] The battery cell **130** also comprises a degassing valve **140** arranged on the first side **510** of the battery cell body **130**.
[0055] In the present example, the degassing valve **140** is arranged between the electric terminals.
[0056] Further, the battery cell **130** comprises a cover element **300**.
[0057] In the present example, the cover element **300** is a strip-shaped part comprising fiberglass. Thus, the cover element **300** may be described as a fiberglass tape.
[0058] The cover element **300** has a length L, a width W and a thickness T (cf. FIG. **8**).
[0059] The cover element **300** is placed on the battery cell body such that it covers the degassing valve **140** and extends onto the second side **520** and the third side **530**.
[0060] The width W of the cover element **300** equals a maximum width of the degassing valve **140**, wherein the width of the degassing valve **140** is measured in the same direction as the width W of the cover element **300**.
[0061] In the example shown in the Figures, the cover element **300** extends onto the second side **520** for approximately 25 mm. Moreover, the cover element **300** extends onto the third side **530** for approximately 25 mm.
[0062] The thickness T of the cover element is 0.5 mm.
[0063] Thus, the cover element **300** may comprise three sections **310**, **320** and **330**. Section **310** may be described as a middle section **310**. Sections **320** and **330** may be described as end sections. The end sections are arranged on opposite sides of the middle section. The middle section has a length L**1**, the first end section has a length L**2** and the second end section has a length L**3**.
[0064] In a mounted state of the battery cell **130**, the middle section **310** contacts the first side **510**, the end section **320** contacts the second side **520** and the end section **330** contacts the third side **530**. Moreover, the cover element **300** is connected to the battery cell body, i.e., to the first side **510**, to the second side **520** and to the third side **530** via an adhesive.
[0065] Thus, in each of the battery cells **130**, the degassing valve **140** is individually protected, i.e., individually covered by a cover element **300**. Additionally, the cover elements **300** may extend from the side comprising the degassing valve **140**, i.e., the first side **510**, onto the second side **520** and the third side **530**. Thus, in an assembled state of the battery cell stack **120**, the sections **320** and **330** of the cover element **300** are mechanically clamped between battery cell bodies of neighboring battery cells.
[0066] Thus, in a case in which one of the battery cells **130** undergoes a thermal event which causes the associated degassing valve **140** to open and let hot gasses flow out of the battery cell body of the battery cell **130**, the cover element **300** of this battery cell **130** is deformed or eliminated such that the hot gases may leave the battery cell body. However, for the remaining battery cells **130**, the cover elements **300** protect the associated degassing valves **140** from the hot gasses. This especially means that the degassing valves are protected from the thermal influence of the hot gases, i.e., from heat. Consequently, the degassing valves **140** of the remaining battery cells **130** may remain closed such that the thermal event does not affect the remaining battery cells **130**.
[0067] FIGS. **5** to **7** illustrate a method for manufacturing a battery cell **130**.
[0068] The method comprises providing the battery cell body, and arranging the cover element **300** on the battery cell body such that the cover element **300** covers the degassing valve **140** and extends onto the second side **520** and onto the third side **530** as has been explained above.
[0069] In the present example, the cover element **300** is folded over the battery cell body and is attached thereto using adhesive.
[0070] A method for manufacturing a battery cell stack **120** comprises providing a plurality of such

battery cells **130**. Subsequently, the battery cells **130** are arranged adjacent to one another along an arrangement direction. This leads to the fact that each first end section **320** of one of the cover elements **300** contacts a neighboring battery cell **130**. The same is true for each second end section **330** of one of the cover elements **300**. Thus, each second end section **330** of the cover element **300** contacts a neighboring battery cell **130**.

[0071] As used herein, the phrase “at least one,” in reference to a list of one or more entities should be understood to mean at least one entity selected from any one or more of the entities in the list of entities, but not necessarily including at least one of each and every entity specifically listed within the list of entities and not excluding any combinations of entities in the list of entities. This definition also allows that entities may optionally be present other than the entities specifically identified within the list of entities to which the phrase “at least one” refers, whether related or unrelated to those entities specifically identified. Thus, as a non-limiting example, “at least one of A and B” (or, equivalently, “at least one of A or B,” or, equivalently “at least one of A and/or B”) may refer, in one example, to at least one, optionally including more than one, A, with no B present (and optionally including entities other than B); in another example, to at least one, optionally including more than one, B, with no A present (and optionally including entities other than A); in yet another example, to at least one, optionally including more than one, A, and at least one, optionally including more than one, B (and optionally including other entities). In other words, the phrases “at least one,” “one or more,” and “and/or” are open-ended expressions that are both conjunctive and disjunctive in operation. For example, each of the expressions “at least one of A, B, and C,” “at least one of A, B, or C,” “one or more of A, B, and C,” “one or more of A, B, or C,” and “A, B, and/or C” may mean A alone, B alone, C alone, A and B together, A and C together, B and C together, A, B, and C together, and optionally any of the above in combination with at least one other entity.

[0072] Other variations to the disclosed examples can be understood and effected by those skilled in the art in practicing the claimed disclosure, from the study of the drawings, the disclosure, and the appended claims. In the claims the word “comprising” does not exclude other elements or steps and the indefinite article “a” or “an” does not exclude a plurality. A single processor or other unit may fulfill the functions of several items or steps recited in the claims. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. A computer program may be stored/distributed on a suitable medium such as an optical storage medium or a solid-state medium supplied together with or as part of other hardware, but may also be distributed in other forms, such as via the Internet or other wired or wireless telecommunication systems. Any reference signs in the claims should not be construed as limiting the scope of the claims.

LIST OF REFERENCE SIGNS

[0073] **100** vehicle [0074] **110** battery system [0075] **120** battery cell stack [0076] **130** battery cell [0077] **140** degassing valve [0078] **150** bus bar [0079] **300** cover element [0080] **510** first side of battery cell [0081] **520** second side of battery cell [0082] **530** third side of battery cell [0083] **310** middle section of cover element [0084] **320** end section of cover element [0085] **330** end section of cover element [0086] L length of cover element [0087] L**1** length of middle section [0088] L**2** length of end section [0089] L**3** length of end section [0090] W width of cover element [0091] T thickness of cover element

Claims

1. A battery cell for a traction battery of an electric vehicle, comprising: a battery cell body having at least a first side and a second side, wherein the second side is arranged adjacent to the first side; a degassing valve arranged on the first side of the battery cell body; and a cover element covering at least a portion of the degassing valve and extending onto the second side.

2. The battery cell according to claim 1, wherein the battery cell body further has a third side, wherein the second side and the third side are arranged adjacent to the first side at opposite edges of the first side, and wherein the cover element additionally extends onto the third side.
3. The battery cell according to claim 1, wherein the cover element is connected to at least one of the first side, the second side, and the third side via an adhesive.
4. The battery cell according to claim 1, wherein the cover element extends onto at least one of the second side or the third side for at least 3 mm or for at most 30 mm.
5. The battery cell according to claim 1, wherein in a direction perpendicular to the direction in which the cover element extends onto the second side, a width of the cover element at least equals a maximum width of the degassing valve in this direction.
6. The battery cell according to claim 1, wherein the cover element comprises at least one of fiberglass, mica material, or silicon rubber.
7. The battery cell according to claim 1, wherein the cover element has a thickness in a range of 0.05 mm to 1.0 mm.
8. The battery cell according to claim 1, wherein the cover element is strip-shaped.
9. The battery cell according to claim 1, wherein a mechanical connection interface is arranged on the first side, and wherein the mechanical connection interface is configured to structurally connect the battery cell with a structural element of the electric vehicle.
10. A battery cell stack for an electric vehicle, comprising: a plurality of battery cells arranged adjacent to one another along an arrangement direction, wherein at least one battery cell among the plurality of battery cells comprises a battery cell body having at least a first side and a second side, wherein the second side is arranged adjacent to the first side, a degassing valve arranged on the first side of the battery cell body, and a cover element covering at least a portion of the degassing valve and extending onto the second side, wherein a portion of the cover element extending onto the second side of the at least one battery cell contacts a neighboring battery cell, or wherein a portion of the cover element extending onto the third side of the at least one battery cell contacts the neighboring battery cell.
11. The battery cell stack according to claim 10, wherein the plurality of battery cells is compressed along a direction extending in parallel to the arrangement direction, and wherein the portion of the cover element contacting the neighboring battery cell is subject to a compression force.
12. The battery cell stack according to claim 10, wherein the battery cell stack is a structural component of the electric vehicle.
13. The battery cell stack according to claim 10, wherein the battery cell body further has a third side, wherein the second side and the third side are arranged adjacent to the first side at opposite edges of the first side, and wherein the cover element additionally extends onto the third side.
14. The battery cell stack according to claim 10, wherein the cover element is connected to at least one of the first side, the second side, and the third side via an adhesive.
15. The battery cell stack according to claim 10, wherein the cover element extends onto at least one of the second side or the third side for at least 3 mm or for at most 30 mm.
16. The battery cell stack according to claim 10, wherein in a direction perpendicular to the direction in which the cover element extends onto the second side, a width of the cover element at least equals a maximum width of the degassing valve in this direction.
17. The battery cell stack according to claim 10, wherein the cover element comprises at least one of fiberglass, mica material, or silicon rubber.
18. The battery cell stack according to claim 10, wherein the cover element has a thickness in a range of 0.05 mm to 1.0 mm.
19. A method for manufacturing a battery cell stack comprising a plurality of battery cells arranged adjacent to one another along an arrangement direction, the method comprising: providing a plurality of battery cells, comprising at least one battery cell, wherein the at least one battery cell comprises a battery cell body having at least a first side and a second side, wherein the second side

is arranged adjacent to the first side, a degassing valve arranged on the first side of the battery cell body, and a cover element covering at least a portion of the degassing valve and extending onto the second side; and arranging the plurality of battery cells adjacent to one another along the arrangement direction such that a portion of the cover element extending onto the second side of the at least one battery cell contacts a neighboring battery cell or such that a portion of the cover element extending onto the third side of the at least one battery cell contacts the neighboring battery cell.

20. The method of claim 19, further comprising: providing the battery cell body, and arranging the cover element on the battery cell body such that the cover element covers at least the portion of the degassing valve and extends onto the second side.