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Heat-Insulated Interface Arrangement and Exhaust Gas Aftertreatment Device

Abstract

A heat-insulated interface arrangement for an exhaust gas aftertreatment device. The heat-insulated interface arrangement includes a first electric interface, an inner sheath which ensheathes the first electric interface, and a heat-insulating sheath which ensheathes the inner sheath. The heat-insulating sheath has a ceramic material or is formed from a ceramic material.

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Background/Summary

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority under 35 U.S.C. § 119 from German Patent Application No. DE 10 2024 103 576.5, filed Feb. 8, 2024, the entire disclosure of which is herein expressly incorporated by reference.

BACKGROUND AND SUMMARY OF THE INVENTION

[0002] The invention relates to a heat-insulated interface arrangement for an exhaust gas aftertreatment device and to an exhaust gas aftertreatment device having such a heat-insulated interface arrangement.

[0003] It is known to equip motor vehicles, in particular commercial vehicles, in particular heavy goods vehicle, with an exhaust gas aftertreatment device in order to purify pollutants in combustion exhaust gases, in particular in order to convert polluting combustion exhaust gases into less harmful gases or to filter out particles. The purification of combustion exhaust gases can take place, for example, by mechanical, catalytic or chemical means. The exhaust gas aftertreatment device can have an electric exhaust gas heating device, in order to prepare combustion exhaust gases for more efficient purification, in particular to heat them. This is necessary in particular in order to be able to meet exhaust gas standards, for example the Euro 7 emissions standard. The electric exhaust gas heating device can have heating capacity of up to 12 kW, which requires a current of 200 to 240 A, given an on-board voltage of approx. 48 V. The electric interfaces used in this case can be heated up to a temperature of up to 350° C. Due to ADR requirements, which result from the European Agreement concerning the International Carriage of Dangerous Goods by Road, and TÜV (German technical inspection) regulations, it is especially necessary to cover electric interfaces, in particular to protect them, in particular to insulate them. Typically, the electric interfaces are insulated by means of a conduit insulation sheath consisting of silicone. Since silicones are only heat resistant up to a temperature of approx. 250° C., they can no longer be used with the exhaust gas heating devices required by the Euro 7 emissions standard.

[0004] The invention is based on the object of providing a heat-insulated interface arrangement for an exhaust gas aftertreatment device and an exhaust gas aftertreatment device having such a heat-insulated interface arrangement, wherein the mentioned disadvantages are reduced, and preferably do not occur.

[0005] The object is solved by providing the present technical teaching, in particular the teaching of the independent claims and of the preferred embodiments disclosed in the dependent claims and the description.

[0006] The object is in particular solved in that a heat-insulated interface arrangement is provided for an exhaust gas aftertreatment device according to a first aspect. The heat-insulated interface arrangement comprises a first electric interface, an inner sheath, which ensheathes the first electric interface, and a heat-insulating sheath which ensheathes the inner sheath. The heat-insulating sheath has a ceramic material or is formed from a ceramic material.

[0007] Advantageously, designing the heat-insulating sheath from ceramic according to the first aspect results in the first electric interface being particularly well thermally insulated, while simultaneously having a low installation space requirement. If the temperature of the first electric interface is approx. 350° C., for example, during the operation of the exhaust gas heating device—when the heat-insulated interface arrangement is used as intended in an exhaust gas aftertreatment device of the exhaust gas heating device—this can be less than 200° C. due to the heat insulation on an outer side of the heat-insulating sheath. Thus, it is advantageously possible to design the conduit insulation sheath out of silicone, without the silicone degrading during the operation of the exhaust gas heating device and without damaging insulation of the first electric interface. Furthermore, the ADR requirements and the TÜV regulations can be achieved so that such an exhaust gas heating device can be used for meeting exhaust gas standards, in particular the Euro 7 emissions standard.

[0008] In the context of the present technical teaching—according to the first aspect and the second aspect—the term "ensheathe" is understood in particular to mean enclose, in particular encompass, in particular frame, in particular envelope, in particular wrap, in particular surround along a circumferential direction of an element to be ensheathed. In particular, the end faces of the ensheathed element are free from the sheath, in particular open. In particular, the end faces are not enveloped, in particular not wrapped. In particular, this is to be understood as in the case of a cable in which the cable sheathing ensheathes the wire. In particular, the inner sheath encloses the first electric interface, in particular encompasses this, in particular frames this, in particular envelopes this, in particular wraps around this. In particular, the heat-insulating sheath encloses the inner sheath, in particular encompasses this, in particular frames this, in particular envelopes this, in particular wraps around this.
[0009] In one embodiment, the first electric interface has a plug connector or is designed as a plug connector. In particular, the first electric interface has a plug socket or is designed as a plug socket. Alternatively, the first electric interface in particular has a plug or is designed as a plug.
[0010] In one embodiment, the first electric interface has a fixing region, in particular a thread, to which the inner sheath is fixed, in particular is screwed.
[0011] In one embodiment, the ceramic material has a glass ceramic or is designed as a glass ceramic. In particular, the heat-insulating sheath is designed as a single part made from glass ceramic.
[0012] According to a development of the invention, it is provided that the heat-insulating sheath is frictionally connected to the inner sheath, in particular by crimping, in particular by press-fitting. In particular, the glass ceramic is press-fitted onto the inner sheath. Advantageously, complex fixing of the heat-insulating sheath to the inner sheath can be omitted.
[0013] According to a development of the invention, it is provided that the heat-insulated interface arrangement comprises an outer sheath, which ensheathes the heat-insulating sheath.
[0014] In particular, the outer sheath encloses the heat-insulating sheath, in particular encompasses this, in particular frames this, in particular envelopes this, in particular wraps around this.
[0015] In one embodiment, the ceramic material is a magnesium oxide material. In particular, the magnesium oxide material is arranged in powder form between the outer sheath and the inner sheath, in particular it is pressed in.
[0016] In one embodiment, the inner sheath, the heat-insulating sheath and/or the outer sheath each have a central axis. In particular, at least two, in particular three, of the central axes are arranged concentric to each other. In one embodiment, the inner sheath, the heat-insulating sheath and/or the outer sheath has a profile shape which is selected from a group consisting of: a quadrilateral, a rectangle, a square, an ellipse and a circle. In particular, the inner sheath and the heat-insulating sheath have the same profile shape. In particular, the outer sheath also has this same profile shape.
[0017] In particular, the profile shape has a predetermined wall strength, so that, for example, an ellipse ring or a circular ring is formed. In particular, the profile shape is arranged transverse to the central axis. In particular, the profile shape is that shape which is notionally extruded along the central axis in order to form the inner sheath, the heat-insulating sheath and/or the outer sheath.
[0018] According to a development of the invention, it is provided that the outer sheath is frictionally connected to the heat-insulating sheath, in particular by crimping, in particular by press-fitting. Advantageously, complex fixing of the outer sheath to the heat-insulating sheath can thus be omitted.
[0019] According to a development of the invention, it is provided that the inner sheath and/or the outer sheath has a metallic material or is formed from a metallic material. In particular, the inner sheath can be produced particularly simply, and a thread can be formed on the inner sheath, with which the inner sheath is screwed onto the first electric interface. In particular, the outer sheath and an outer side of the outer sheath—for the application of a conduit insulation sheath—can be produced particularly simply.

[0020] The object is also solved by providing a heat-insulated interface arrangement for an exhaust gas aftertreatment device according to a second aspect. The heat-insulated interface arrangement comprises a first electric interface, a heat-insulating sheath, an outer sheath and an intermediate element. The heat-insulating sheath ensheathes the first electric interface. The heat-insulating sheath is formed by a gap between the first electric interface and the outer sheath ensheathing the heat-insulating sheath. The intermediate element is arranged on the first electric interface, in particular it is fixed thereon, in particular crimped, in particular press-fitted, in particular welded. The intermediate element is adjacent to the heat-insulating sheath and is ensheathed by the outer sheath. In particular, the outer sheath is fixed on the intermediate element, in particular crimped with the intermediate element, in particular press-fitted onto the intermediate element.

[0021] Advantageously, designing the heat-insulating sheath by a gap according to the second aspect results in the first interface being particularly well thermally insulated, while simultaneously having a relatively low installation space requirement. If the temperature of the first electric interface is approx. 350° C., for example, during the operation of the exhaust gas heating device—when the heat-insulated interface arrangement is used as intended in an exhaust gas aftertreatment device of the exhaust gas heating device—this can be less than 200° C. due to the heat insulation on an outer side of the outer sheath. Thus, it is advantageously possible to design the conduit insulation sheath out of silicone, without the silicon degrading during the operation of the exhaust gas heating device and without damaging insulation of the first electric interface. Furthermore, the ADR requirements and the TÜV regulations can be achieved so that such an exhaust gas heating device can be used to meet exhaust gas standards, in particular the Euro 7 emissions standard.

[0022] In one embodiment, the first electric interface has a plug connector or is designed as a plug connector. In particular, the first electric interface has a plug socket or is designed as a plug socket. Alternatively, the first electric interface in particular has a plug or is designed as a plug.

[0023] In one embodiment, the intermediate element is welded to the first electric interface by an energy beam, in particular a laser beam. In particular, the outer sheath is welded to the intermediate element by an energy beam, in particular a laser beam.

[0024] According to a development of the invention, it is provided that the intermediate element is designed in a ring shape. In particular, the intermediate element is designed as a single part. Advantageously, the intermediate element can be particularly simply press-fitted onto the first electric interface.

[0025] Alternatively, it is provided that the intermediate element has at least two intermediate sub-elements, in particular four intermediate sub-elements. Advantageously, the intermediate sub-elements result in comparatively low heat conduction.

[0026] The object is also solved by providing an exhaust gas aftertreatment device for a motor vehicle, in particular for a commercial vehicle. The exhaust gas aftertreatment device has an exhaust gas aftertreatment housing, an electrical feedthrough and a heat-insulated interface arrangement according to the invention, according to the first or second aspect, or a heat-insulated interface arrangement according to one of more of the above-described embodiments, according to the first or second aspect. The exhaust gas aftertreatment housing has a wall, in particular an outer wall. The exhaust gas aftertreatment housing is designed and set up in such a way that an exhaust gas can flow through the exhaust gas aftertreatment housing and in particular can be guided through an exhaust gas tailpipe into the surroundings. The electrical feedthrough is set up to pass a first electrical conduit of the exhaust gas aftertreatment device through the wall, in particular outer wall, of the exhaust gas aftertreatment housing. The heat-insulated interface arrangement is arranged outside the exhaust gas aftertreatment housing on the first electrical conduit and is connected to the first electrical conduit in an electrically conductive manner. In connection with the exhaust gas aftertreatment device, the advantages arise in particular which were already explained in connection with the heat-insulated interface arrangement.

[0027] According to a development of the invention, it is provided that the exhaust gas

aftertreatment device comprises a second electrical conduit. The second electrical conduit has a second electric interface and a conduit insulation sheath, in particular an electrical conduit insulation sheath. In particular, the conduit insulation sheath has a silicone or is formed from a silicone. The second electric interface is connected to the first electric interface, in particular electrically connected, in particular it is plugged into the first electric interface. The conduit insulation sheath rests against an outer side of the heat-insulating sheath and/or the outer sheath, in particular in a fluid-sealing manner, and is set up to cover, in particular to protect, in particular to seal, in particular to insulate an electrical connection between the first electric interface and the second electric interface. Advantageously, silicone is a known and proven material for sealing and insulating electrical connections and thus is easily available.
[0028] In one embodiment, the second electric interface has a plug connector or is designed as a plug connector. If the first electric interface has a plug socket or is designed as a plug socket, the second electric interface has in particular a plug or is designed as a plug. If the first electric interface has a plug or is designed as a plug, the second electric interface has in particular a plug socket or is designed as a plug socket.
[0029] According to a development of the invention, it is provided that the exhaust gas aftertreatment device has an electric exhaust gas heating device. The electric exhaust gas heating device is arranged inside the exhaust gas aftertreatment housing. The electric exhaust gas heating device is electrically connected to the first electric interface via the first electrical conduit, in particular so that the exhaust gas heating device can be supplied with electrical energy via the first electric interface.
[0030] In one embodiment, the electric exhaust gas heating device has a heating capacity of 8 kW to 12 kW, which in particular requires a current of 200 to 240 A.
[0031] In one embodiment, the electric exhaust gas heating device is set up to be heated to a temperature of 500° C. to 800° C.
[0032] The invention is explained in more detail in the following using the drawings.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0033] FIG. **1** shows a schematic representation of a first exemplary embodiment of a heat-insulated interface arrangement according to the first aspect;
[0034] FIG. **2** shows a schematic representation of a second exemplary embodiment of a heat-insulated interface arrangement according to the first aspect;
[0035] FIG. **3** shows a schematic representation of a first exemplary embodiment of a heat-insulated interface arrangement according to the second aspect;
[0036] FIG. **4** shows a schematic representation of a second exemplary embodiment of a heat-insulated interface arrangement according to the second aspect; and
[0037] FIG. **5** shows a schematic representation of an exhaust gas aftertreatment device having a heat-insulated interface arrangement according to FIG. **2**.
DETAILED DESCRIPTION OF THE DRAWINGS
[0038] FIG. **1** shows a schematic representation of a first exemplary embodiment of a heat-insulated interface arrangement **1** according to the first aspect.
[0039] The heat-insulated interface arrangement **1** is shown on the left side in a side view and on the right side in a plan view.
[0040] The heat-insulated interface arrangement **1** comprises a first electric interface **3.1**, an inner sheath **5**, which ensheathes the first electric interface **3.1**, and a heat-insulating sheath **7** which ensheathes the inner sheath **5**. The heat-insulating sheath **7** has a ceramic material or is formed from a ceramic material.

[0041] In this exemplary embodiment, the first electric interface **3.1** has a fixing region **9**, in particular a thread, to which the inner sheath **5** is fixed, in particular is screwed.
[0042] In this exemplary embodiment, the ceramic material has a glass ceramic or is designed as a glass ceramic. In particular, the heat-insulating sheath **7** is designed as a single part made from glass ceramic.
[0043] In this exemplary embodiment, it is provided that the heat-insulating sheath **7** is frictionally connected to the inner sheath **5**, in particular by crimping, in particular by press-fitting. In particular, the glass ceramic is press-fitted onto the inner sheath **5**.
[0044] In this exemplary embodiment, the inner sheath **5** and the heat-insulating sheath **7** each have a central axis **11**. In particular, the two central axes **11** are arranged concentrically to each other. The inner sheath **5** and the heat-insulating sheath **7** have a profile shape in the shape of a circle. In particular, the inner sheath **5** and the heat-insulating sheath **7** have the same profile shape.
[0045] In particular, the profile shape has a predetermined wall strength—shown by way of example for the heat-insulating sheath **7** by means of a dimension **15**—so that a circular ring **13** is formed. In particular, the profile shape is arranged transverse to the central axis **11**. In particular, the profile shape is that shape which is notionally extruded along the central axis **11**—shown by the arrow **17**—in order to form the inner sheath **5** and the heat-insulating sheath **7**.
[0046] In this exemplary embodiment, it is provided that the inner sheath **5** has a metallic material or is formed from a metallic material.
[0047] FIG. **2** shows a schematic representation of a second exemplary embodiment of a heat-insulated interface arrangement **1** according to the first aspect.
[0048] In this case, identical and functionally identical elements are provided with the same reference numerals in all the figures, so that reference is made to the previous description in each case.
[0049] The heat-insulated interface arrangement **1** is similarly shown on the left side in a side view and on the right side in a plan view.
[0050] In this exemplary embodiment, it is provided that the heat-insulated interface arrangement **1** comprises an outer sheath **19**, which ensheathes the heat-insulating sheath **7**. In particular, the outer sheath **19** encloses the heat-insulating sheath **7**, in particular encompasses this, in particular surrounds this, in particular envelopes this.
[0051] In this exemplary embodiment, the ceramic material is a magnesium oxide material. In particular, the magnesium oxide material is arranged in powder form between the outer sheath **19** and the inner sheath **5**, in particular it is pressed in.
[0052] In this exemplary embodiment, the inner sheath **5**, the heat-insulating sheath **7** and the outer sheath **19** each have a central axis **11**. In particular, the three central axes **11** are arranged concentrically to each other. The inner sheath **5**, the heat-insulating sheath **7** and the outer sheath **19** similarly have the profile shape of a circle.
[0053] In this exemplary embodiment, it is provided that the outer sheath **19** is frictionally connected to the heat-insulating sheath **7**, in particular by crimping, in particular by press-fitting.
[0054] In this exemplary embodiment, it is provided that the inner sheath **5** and/or the outer sheath **19** has a metallic material or is formed from a metallic material.
[0055] FIG. **3** shows a schematic representation of a first exemplary embodiment of a heat-insulated interface arrangement **1** according to the second aspect.
[0056] The heat-insulated interface arrangement **1** is similarly shown on the left side in a side view and on the right side in a plan view.
[0057] The heat-insulated interface arrangement **1** comprises a first electric interface **3.1**, a heat-insulating sheath **7**, an outer sheath **19** and an intermediate element **21**. The heat-insulating sheath **7** ensheathes the first electric interface **3.1**. The heat-insulating sheath **7** is formed by a gap **23** between the first electric interface **3.1** and the outer sheath **19** ensheathing the heat-insulating sheath **7**. The intermediate element **21** is arranged on the first electric interface **3.1**, in particular

fixed thereon, in particular crimped, in particular press-fitted, in particular welded. The intermediate element **21** is adjacent to the heat-insulating sheath **7** and is ensheathed by the outer sheath **19**. In particular, the outer sheath **19** is fixed on the intermediate element **21**, in particular crimped with the intermediate element **21**, in particular press-fitted onto the intermediate element **21**.

[0058] In this exemplary embodiment, it is provided that the intermediate element **21** is designed in a ring shape. In particular, the intermediate element **21** is designed as a single part.

[0059] FIG. **4** shows a schematic representation of a second exemplary embodiment of a heat-insulated interface arrangement **1** according to the second aspect.

[0060] In this exemplary embodiment, in comparison to the exemplary embodiment in FIG. **3**, it is alternatively provided that the intermediate element **21** has four intermediate sub-elements **25**.

[0061] FIG. **5** shows a schematic representation of an exhaust gas aftertreatment device **6** having a heat-insulated interface arrangement **1** according to the second exemplary embodiment of the second aspect from FIG. **2**.

[0062] The exhaust gas aftertreatment device **6** also has an exhaust gas aftertreatment housing **4** and an electrical feedthrough **27**. The exhaust gas aftertreatment housing **4** has a wall **2**, in particular an outer wall. The exhaust gas aftertreatment housing **4** is designed and set up in such a way that an exhaust gas—shown by the arrow **29**—can flow through the exhaust gas aftertreatment housing **4** and in particular can be guided through an exhaust gas tailpipe (not shown) into the surroundings. The electrical feedthrough **27** is set up to pass a first electrical conduit **31.1** of the exhaust gas aftertreatment device **6** through the wall **2**, in particular outer wall, of the exhaust gas aftertreatment housing **4**. The heat-insulated interface arrangement **1** is arranged outside the exhaust gas aftertreatment housing **4** on the first electrical conduit **31.1** and is connected to the first electrical conduit **31.1** in an electrically conductive manner.

[0063] In this exemplary embodiment, it is provided that the exhaust gas aftertreatment device **6** comprises a second electrical conduit **31.2**. The second electrical conduit **31.2** has a second electric interface **3.2** and a conduit insulation sheath **33**, shown only very simplified, in particular an electrical conduit insulation sheath **33**. In particular, the conduit insulation sheath **33** has a silicone or is formed from a silicone. The second electric interface **3.2** is connected to the first electric interface **3.1**, in particular electrically connected, in particular is plugged into the first electric interface **3.1**. The conduit insulation sheath **33** rests against an outer side **35** of the outer sheath **19**, in particular in a fluid-sealing manner, and is set up to cover, in particular to protect, in particular to seal, in particular to insulate an electrical connection between the first electric interface **3.1** and the second electric interface **3.2**.

[0064] In this exemplary embodiment, it is provided that the exhaust gas aftertreatment device **6** has an electric exhaust gas heating device **37**. The electric exhaust gas heating device **37** is arranged inside the exhaust gas aftertreatment housing **4**. The electric exhaust gas heating device **37** is electrically connected to the first electric interface **3.1** via the first electrical conduit **31.1**, in particular so that the exhaust gas heating device **37** can be supplied with electrical energy via the first electric interface **3.1**.

[0065] The foregoing disclosure has been set forth merely to illustrate the invention and is not intended to be limiting. Since modifications of the disclosed embodiments incorporating the spirit and substance of the invention may occur to persons skilled in the art, the invention should be construed to include everything within the scope of the appended claims and equivalents thereof.

Claims

1. A heat-insulated interface arrangement (**1**) for an exhaust gas aftertreatment device (**6**), comprising: a first electric interface (**3.1**); an inner sheath (**5**) which ensheathes the first electric interface (**3.1**); and a heat-insulating sheath (**7**) which ensheathes the inner sheath (**5**), wherein the

heat-insulating sheath (**7**) has a ceramic material or is formed from a ceramic material.
2. The heat-insulated interface arrangement (**1**) according to claim 1, wherein the heat-insulating sheath (**7**) is frictionally connected to the inner sheath (**5**).
3. The heat-insulated interface arrangement (**1**) according to claim 1 further comprising an outer sheath (**19**) which ensheathes the heat-insulating sheath (**7**).
4. The heat-insulated interface arrangement (**1**) according to claim 3, wherein the outer sheath (**19**) is frictionally connected to the heat-insulating sheath (**7**).
5. The heat-insulated interface arrangement (**1**) according to claim 1, wherein the inner sheath (**5**) and/or an outer sheath (**19**) which ensheathes the heat-insulating sheath (**7**) has a metallic material or is formed from a metallic material.
6. A heat-insulated interface arrangement (**1**) for an exhaust gas aftertreatment device (**6**), comprising: a first electric interface (**3.1**); a heat-insulating sheath (**7**) which ensheathes the first electric interface (**3.1**), wherein the heat-insulating sheath (**7**) is formed by a gap (**23**) between the first electric interface (**3.1**) and an outer sheath (**19**) ensheathing the heat-insulating sheath (**7**); and an intermediate element (**21**) which is disposed on the first electric interface (**3.1**), wherein the intermediate element (**21**) is adjacent to the heat-insulating sheath (**7**) and is ensheathed by the outer sheath (**19**).
7. The heat-insulated interface arrangement (**1**) according to claim 6, wherein: the intermediate element (**21**) is ring shaped; or the intermediate element (**21**) has at least two intermediate sub-elements (**25**).
8. An exhaust gas aftertreatment device (**6**), comprising: an exhaust gas aftertreatment housing (**4**) which has a wall (**2**), wherein an exhaust gas is flowable through the exhaust gas aftertreatment housing (**4**); a first electrical conduit (**31.1**); an electrical feedthrough (**27**) which passes the first electrical conduit (**31.1**) through the wall (**2**) of the exhaust gas aftertreatment housing (**4**); and a heat-insulated interface arrangement (**1**), wherein the heat-insulated interface arrangement (**1**) is disposed outside the exhaust gas aftertreatment housing (**4**) on the first electrical conduit (**31.1**) and is connected to the first electrical conduit (**31.1**) in an electrically conductive manner.
9. The exhaust gas aftertreatment device (**6**) according to claim 8, wherein the heat-insulated interface arrangement (**1**) comprises: a first electric interface (**3.1**); an inner sheath (**5**) which ensheathes the first electric interface (**3.1**); and a heat-insulating sheath (**7**) which ensheathes the inner sheath (**5**), wherein the heat-insulating sheath (**7**) has a ceramic material or is formed from a ceramic material.
10. The exhaust gas aftertreatment device (**6**) according to claim 8, wherein the heat-insulated interface arrangement (**1**) comprises: a first electric interface (**3.1**); a heat-insulating sheath (**7**) which ensheathes the first electric interface (**3.1**), wherein the heat-insulating sheath (**7**) is formed by a gap (**23**) between the first electric interface (**3.1**) and an outer sheath (**19**) ensheathing the heat-insulating sheath (**7**); and an intermediate element (**21**) which is disposed on the first electric interface (**3.1**), wherein the intermediate element (**21**) is adjacent to the heat-insulating sheath (**7**) and is ensheathed by the outer sheath (**19**).
11. The exhaust gas aftertreatment device (**6**) according to claim 9 further comprising a second electrical conduit (**31.2**) which has a second electric interface (**3.2**) and a conduit insulation sheath (**33**); wherein the second electric interface (**3.2**) is connected to the first electric interface (**3.1**); wherein the conduit insulation sheath (**33**) rests against an outer side (**35**) of the heat-insulating sheath (**7**) and/or an outer sheath (**19**) which ensheathes the heat-insulating sheath (**7**) and is configured to cover an electrical connection between the first electric interface (**3.1**) and the second electric interface (**3.2**).
12. The exhaust gas aftertreatment device (**6**) according to claim 9 further comprising an electric exhaust gas heating device (**37**) which is disposed inside the exhaust gas aftertreatment housing (**4**); wherein the electric exhaust gas heating device (**37**) is electrically connected to the first electric interface (**3.1**) via the first electrical conduit (**31.1**).

13. The exhaust gas aftertreatment device (**6**) according to claim 10 further comprising a second electrical conduit (**31.2**) which has a second electric interface (**3.2**) and a conduit insulation sheath (**33**); wherein the second electric interface (**3.2**) is connected to the first electric interface (**3.1**); wherein the conduit insulation sheath (**33**) rests against an outer side (**35**) of the heat-insulating sheath (**7**) and/or an outer sheath (**19**) which ensheathes the heat-insulating sheath (**7**) and is configured to cover an electrical connection between the first electric interface (**3.1**) and the second electric interface (**3.2**).

14. The exhaust gas aftertreatment device (**6**) according to claim 10 further comprising an electric exhaust gas heating device (**37**) which is disposed inside the exhaust gas aftertreatment housing (**4**); wherein the electric exhaust gas heating device (**37**) is electrically connected to the first electric interface (**3.1**) via the first electrical conduit (**31.1**).