

FP:("BRUSA Elektronik")

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Machine translation

1. **2433830** METHOD AND CONTROL FOR PROVIDING ELECTRICAL ENERGY FROM A DRIVEN ALTERNATING CURRENT SYNCHRONOUS MACHINE EP - 28.03.2012

Int.Class [B60L 7/22](#) Appl.No 10181485 Applicant BRUSA ELEKTRONIK AG Inventor BREU MARTIN

Es wird ein Verfahren und eine Steuerung zum Bereitstellen elektrischer Energie aus einer angetriebene Drehstrom-Synchronmaschine [1] mit einem mehrphasigen Umrichter [2] angegeben, der obere Schalter [S1..S3] und untere Schalter [S4..S6] und wenigstens einen in oder an einem Zwischenkreis des Umrichters [2] angeordneten Zwischenkreis-Kondensator [C] umfasst. Durch einen aktiven Kurzschluss, bei dem alle oberen Schalter [S1..S3] oder alle unteren Schalter [S4..S6] geschlossen werden, wird bei einem abgeschleppten Kraftfahrzeug oder bei einem Fahrzeug, das fremd [hybrid oder am Rollenprüfstand] angetrieben wird oder ausrollt und/oder über keine einsatzfähige Zwischenkreisspannungsversorgung verfügt, ein sicherer Zustand herbeigeführt, bei dem hohe Spannungen [UC] im Zwischenkreis verhindert und Bremsmomente [M] reduziert werden.

2. **20130181567** HYBRID SYNCHRONOUS MOTORS AND CURRENT-ENERGIZED SYNCHRONOUS MOTORS SUITABLE FOR VEHICLE DRIVES US - 01.11.2012

Int.Class [H02K 1/27](#) Appl.No 13455173 Applicant Holzner Andreas Inventor Holzner Andreas

Laminated rotor [21] assemblies for rotating electric machines such as hybrid synchronous motors [HSM] of vehicle drives, the rotor plates [26] of which have one or several recesses [29] as a flux barrier or magnet pocket, which comprise radially innermost and outermost edge sections as rounded transition regions from and to edge sections lying therebetween. Each of the rounded transition regions may be shaped at least approximately respectively according to a part of a curve [35] of second order. Between adjacent recesses [29], a respective oblique cross-piece [52] is provided, the center line [54] of which lies obliquely to the pole axis [30].

3. **2573928** OVERCURRENT PROTECTION AND REVERSE CURRENT BLOCKING IN AN INDIRECT INVERTER FOR OPERATING AN ALTERNATING CURRENT MACHINE EP - 27.03.2013

Int.Class [H02M 7/5387](#) Appl.No 11182765 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY ARNO

Es wird ein Umrichter [1a..1 h] zur Ansteuerung einer Wechselstrommaschine [3] angegeben, welcher wenigstens einen Zwischenkreiskondensator [5], zumindest ein erstes Schaltelement [6a, 6b] in einer Zuleitung zum Zwischenkreis und ein strombegrenzendes Element [7, 11] parallel zum ersten Schaltelement [6a, 6b] umfasst. Zusätzlich weist der Umrichter [1 a..1 h] ein Sperrelement [8, 12] in Serie zum strombegrenzenden Element [7, 11] auf, welches dazu eingerichtet ist, einen Energiefluss von der Wechselstrommaschine [3] zu einer den Umrichter [1a..1h] versorgenden Spannungsquelle [2] zu verhindern.

4. **2591537** LAMINATED ROTOR FOR ROTATING ELECTRIC MACHINE EP - 15.05.2013

Int.Class [H02K 1/24](#) Appl.No 11743874 Applicant BRUSA ELEKTRONIK AG Inventor HOLZNER ANDREAS

Laminated rotor [1] assemblies for rotating electric machines, in particular for a hybrid synchronous motor [HSM] of vehicle drives, the rotor plates [6] of which have one or several recesses [9] as a flux barrier or magnet pocket, which comprise radially innermost and outermost edge sections as rounded transition regions from and to edge sections lying therebetween. According to the invention, each of the rounded transition regions is shaped at least approximately respectively according to a part of a curve [15] of second order. On the other hand, between the adjacent recesses [9] in each case an oblique cross-piece [32] is provided, the centre line [34] of which lies obliquely to the pole axis [10].

5. **2771891** INDUCTIVE COMPONENT AND USE EP - 03.09.2014

Int.Class [H01F 3/12](#) Appl.No 12794497 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

An inductive component [1a..1e] with at least two coils [2..4b] in a closed main magnetic circuit [5a..5j] for guiding a magnetic main flux Φ_H penetrating all coils [2..4b] is specified. The inductive component furthermore comprises a leakage field guide component [6a..8c] or a plurality of leakage field guide components [6a..8c], wherein a leakage field guide component [6a..8c] is arranged between two coils [2..4b] in each case, separated by two air gaps [E..J] from the main magnetic circuit and intended for guiding a magnetic leakage flux Φ_S different from the main flux Φ_H . The main magnetic circuit [5a..5j] and/or the leakage field guide components [6a..8c] consist of a magnetically isotropic material. Furthermore, the invention relates to a use of a choke [1a..1e] with a leakage field guide component [6a..8c] for guiding a leakage flux Φ_S arising in the choke [1a..1e] as a PFC [Power Factor Correction] choke.

6. **104025213** INDUCTIVE COMPONENT AND USE CN - 03.09.2014

Int.Class [H01F 3/12](#) Appl.No 201280064314.7 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

An inductive component [1a ...1e] with at least two coils [2...4b] in a closed main magnetic circuit [5a 5j] for guiding a magnetic main flux Φ_{iH} penetrating all coils [2 ...4b] is specified. The inductive component furthermore comprises a leakage field guide component [6a..8c] or a plurality of leakage field guide components [6a...8c], wherein a leakage field guide component [6a...8c] is arranged between two coils [2..4b] in each case, separated by two air gaps [E..J] from the main magnetic circuit and intended for guiding a magnetic leakage flux Φ_{iS} different from the main flux Φ_{iH} . The main magnetic circuit [5a..5j] and/or the leakage field guide components [6a..8c] consist of a magnetically isotropic material. Furthermore, the invention relates to a use of a choke [1a..1e] with a leakage field guide component [6a..8c] for guiding a leakage flux Φ_{iS} arising in the choke [1a..1e] as a PFC [Power Factor Correction] choke.

7. **20140286054** INDUCTIVE COMPONENT AND USE US - 25.09.2014

Int.Class [H01F 27/34](#) Appl.No 14353768 Applicant BRUSA Elektronik AG Inventor Krause Axel

An inductive component [1a . . . 1e] with at least two coils [2 . . . 4b] in a closed main magnetic circuit [5a . . . 5j] for guiding a magnetic main flux Φ_H penetrating all coils [2 . . . 4b] is specified. The inductive component furthermore comprises a leakage field guide component [6a . . . 8c] or a plurality of

leakage field guide components [6a . . . 8c], wherein a leakage field guide component [6a . . . 8c] is arranged between two coils [2 . . . 4b] in each case, separated by two air gaps [E . . . J] from the main magnetic circuit and intended for guiding a magnetic leakage flux Φ_S different from the main flux Φ_H . The main magnetic circuit [5a . . . 5j] and/or the leakage field guide components [6a . . . 8c] consist of a magnetically isotropic material. Furthermore, the invention relates to a use of a choke [1a . . . 1e] with leakage field guide component [6a . . . 8c] for guiding a leakage flux (Φ_S) arising in the choke [1a . . . 1e] as a PFC [Power Factor Correction] choke.

8. 3026682 SHIELDING MODULE OF A CONTACTLESS ENERGY TRANSMISSION SYSTEM HAVING IMPROVED MECHANICAL STABILITY

EP - 01.06.2016

Int.Class H01F 27/36 Appl.No 14195280 Applicant BRUSA ELEKTRONIK AG Inventor

Die Erfindung betrifft ein Abschirmmodul [1] für eine ringförmige Sendespule/Empfangsspule [7] eines kontaktlosen Energieübertragungssystems [14]. Das Abschirmmodul [1] umfasst eine magnetische Abschirmung [2] mit einer magnetischen Leitfähigkeit beziehungsweise Permeabilität $\mu_r \approx 4$, welche im Bereich eines horizontalen Abschnitts [A] erste Ausnehmungen [B] aufweist, durch welche Stützen [3] aus einem Material mit einer elektrischen Leitfähigkeit $\approx 10^{-4}$ S/m und einer magnetischen Leitfähigkeit beziehungsweise Permeabilität $\mu_r \approx 2$ hindurch ragen. Zudem wird ein Sender/Empfänger [6, 6a, 6b] mit einem solchen Abschirmmodul [1] und einer Sendespule/Empfangsspule [7] angegeben. Schliesslich betrifft die Erfindung auch ein Energieübertragungssystem [14] mit einem solchen Sender [6, 6a] sowie einer in einem Kraftfahrzeug [13] eingebauten Empfangsspule [6b].

9. WO/2020/002218 INDUCTIVE POWER TRANSMISSION WITH RESONANT CIRCUIT AND METHOD FOR OPERATING THE DEVICE

WO - 02.01.2020

Int.Class H02J 50/12 Appl.No PCT/EP2019/066650 Applicant BRUSA ELEKTRONIK AG Inventor HANSELMANN, Marc

The invention relates to an inductive power transmission with a resonant circuit [200, 200"], comprising a transmitting/receiving coil [L2] or a transmitting and receiving coil for transmitting and/or receiving electromagnetic energy, a coupling capacitor, a tuning capacitor [C4] and a switching device [S1], wherein the switching device [S1] is connected in series to the coupling capacitor and the tuning capacitor, and wherein, furthermore, the switching device [S1] is designed to activate and/or disconnect a signal generator [201', 202"] and to modify a quality factor or to modify the resonance frequency of the resonant circuit [200, 200"].

10. WO/2013/061220 INDUCTIVE COMPONENT AND USE

WO - 02.05.2013

Int.Class H01F 3/12 Appl.No PCT/IB2012/055722 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

An inductive component [1a..1e] with at least two coils [2..4b] in a closed main magnetic circuit [5a..5j] for guiding a magnetic main flux (Φ_H) penetrating all coils [2..4b] is specified. The inductive component furthermore comprises a leakage field guide component [6a..8c] or a plurality of leakage field guide components [6a..8c], wherein a leakage field guide component [6a..8c] is arranged between two coils [2..4b] in each case, separated by two air gaps [E..J] from the main magnetic circuit and intended for guiding a magnetic leakage flux Φ_S different from the main flux Φ_H . The main magnetic circuit [5a..5j] and/or the leakage field guide components [6a..8c] consist of a magnetically isotropic material. Furthermore, the invention relates to a use of a choke [1a..1e] with a leakage field guide component [6a..8c] for guiding a leakage flux (Φ_S) arising in the choke [1a..1e] as a PFC [Power Factor Correction] choke.

11. WO/2012/059831 CONVERTER-ENGINE CONNECTING MODULE

WO - 10.05.2012

Int.Class H02M 7/00 Appl.No PCT/IB2011/054215 Applicant BRUSA ELEKTRONIK AG Inventor BREU, Martin

The invention relates to a converter-engine connecting module [1] for electrically interfacing an electric or hybrid engine [13] with a converter [14], with engine-side contacts [2] and converter-side contacts [3]. The connecting module [1] is flat and exhibits conducting rails [4], whose first ends form the engine-side contacts [2], and whose other ends form the converter-side contacts [3], wherein the conductor rails [4] run in the plane of the connecting module [1], and are embedded into a matrix [5] made of an electrically nonconductive material.

12. WO/2012/004761 LAMINATED ROTOR FOR ROTATING ELECTRIC MACHINE

WO - 12.01.2012

Int.Class H02K 1/24 Appl.No PCT/IB2011/053024 Applicant BRUSA ELEKTRONIK AG Inventor HOLZNER, Andreas

Laminated rotor [1] assemblies for rotating electric machines, in particular for a hybrid synchronous motor [HSM] of vehicle drives, the rotor plates [6] of which have one or several recesses [9] as a flux barrier or magnet pocket, which comprise radially innermost and outermost edge sections as rounded transition regions from and to edge sections lying therebetween. According to the invention, each of the rounded transition regions is shaped at least approximately respectively according to a part of a curve [15] of second order. On the other hand, between the adjacent recesses [9] in each case an oblique cross-piece [32] is provided, the centre line [34] of which lies obliquely to the pole axis [10].

13. WO/2020/002228 VEHICLE MODULE OF AN INDUCTIVE VEHICLE CHARGING SYSTEM, AND METHOD FOR OPERATING SUCH A VEHICLE MODULE

WO - 02.01.2020

Int.Class B60L 53/12 Appl.No PCT/EP2019/066661 Applicant BRUSA ELEKTRONIK AG Inventor BÖHLER, Lukas

The invention relates to a vehicle module CPM [101] of an inductive vehicle charging system for charging a vehicle-side energy store. The vehicle charging system comprises the vehicle module CPM [101] and at least one base module GPM [102] which is arranged in a stationary manner. The vehicle module CPM [101] has the following: a state monitoring device [103], a secondary coil, a software managing device [104], and a CPM communication device [105]; wherein the state monitoring device [103] and the CPM communication device [105] is each connected to the software managing device [104]; the secondary coil is designed to receive energy inductively transmitted from the base module GPM [102]; the state monitoring device [103] is designed to ascertain the state Z(t) of the vehicle [120] in which the vehicle module CPM [11] is installed and/or of the vehicle module CPM [101] and transmit information I0 to the software managing device [104] in the event of a specified state ZStart; and the software managing device [104] is designed to transmit software SWCPM which is stored on the software managing device [104] and is designed for the base module GPM [102] to the base module GPM [12] by means of the CPM communication device [105] after obtaining the information I0.

14. 20200153297 ROTOR FOR A SYNCHRONOUS DRIVE MOTOR

US - 14.05.2020

Int.Class H02K 1/27 Appl.No 16677094 Applicant BRUSA Elektronik AG Inventor Tian Zhou

The invention relates to a rotor for a synchronous drive motor of an electrically driven motor vehicle having several rotor poles, wherein each rotor pole has at least three magnetic layers arranged radially one after the other with cavities, wherein an outermost magnetic layer includes at least one cavity filled with permanent magnetic material and each further magnetic layer includes at least two cavities filled with permanent magnetic material, furthermore each magnetic layer has an extension of a section of an ellipse, furthermore the central points of all ellipses lie within the smallest ellipse of the outer magnetic layer, wherein each cavity belonging to one of the at least three magnetic layers defines an interface in a radial plane, and each of these interfaces of a magnetic layer of the corresponding ellipse is divided into two partial interfaces, wherein bars made of the rotor material are formed in the second and every other magnetic layer between the cavities, and these bars, at the narrowest point, are at least twice as wide as the respective outer bars of the same magnetic layer.

15. **2507852** BATTERY HAVING TEMPERATURE REGULATION

EP - 10.10.2012

Int.Class H01M 2/10 Appl.No 10788402 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A battery [1a.. 1e] having a housing [2] and a plurality of galvanic cells [3] arranged in the housing [2] is provided. In addition, a fan [5a..5c] is arranged in the housing [2] to create a fluid flow circulating inside the housing [2]. According to the invention, a heat exchanger [6a..6e] having a forward flow [7] and a return flow [8] for a heat transfer medium, which lead out of the housing [2] is arranged in the flow path [A] of the fluid flow.

16. **20130115489** BATTERY HAVING TEMPERATURE REGULATION

US - 09.05.2013

Int.Class H01M 10/50 Appl.No 13511141 Applicant Krause Axel Inventor Krause Axel

A battery [1a . . . 1e] having a housing [2] and a plurality of galvanic cells [3] arranged in the housing [2] is provided. In addition, a fan [5a . . . 5c] is arranged in the housing [2] to create a fluid flow circulating inside the housing [2]. According to the invention, a heat exchanger [6a . . . 6e] having a forward flow [7] and a return flow [8] for a heat transfer medium, which lead out of the housing [2] is arranged in the flow path [A] of the fluid flow.

17. **102696130** BATTERY HAVING TEMPERATURE REGULATION

CN - 26.09.2012

Int.Class H01M 2/10 Appl.No 201080054962.5 Applicant Brusa Elektronik AG Inventor Krause Axel

A battery [1a.. 1e] having a housing [2] and a plurality of galvanic cells [3] arranged in the housing [2] is provided. In addition, a fan [5a..5c] is arranged in the housing [2] to create a fluid flow circulating inside the housing [2]. According to the invention, a heat exchanger [6a..6e] having a forward flow [7] and a return flow [8] for a heat transfer medium, which lead out of the housing [2] is arranged in the flow path [A] of the fluid flow.

18. **102014202719** INDUKTIVER DREHÜBERTRAGER FÜR EINEN ELEKTROMOTOR FÜR EIN KRAFTFAHRZEUG SOWIE ENTSPRECHENDES KOPPLERTEIL

DE - 20.08.2015

Int.Class H01F 38/18 Appl.No 102014202719 Applicant BMW AG Inventor Schinnerl Berthold

Die Erfindung betrifft einen induktiven Drehübertrager für eine elektrische Maschine für ein Fahrzeug, insbesondere für ein Kraftfahrzeug oder Nutzfahrzeug, wobei der Drehübertrager ein erstes, vorzugsweise feststehendes, Kopplerteil und ein in Bezug auf das erste, vorzugsweise feststehende, Kopplerteil drehbares zweites Kopplerteil aufweist und eingerichtet ist, eine Energieübertragung zwischen dem ersten Kopplerteil und dem zweiten Kopplerteil nach dem Transformatorprinzip auszuführen, wobei das zweite Kopplerteil ein Trägerelement und ein an dem Trägerelement innerhalb eines vorgegebenen Spiels bewegbar gelagertes Kernteil aufweist, wobei das Trägerelement zumindest zwei das vorgegebene Spiel begrenzende Auflagerabschnitte aufweist, die derart ausgebildet sind, dass die Auflagerabschnitte bei drehendem zweiten Kopplerteil jeweilige Auflagerkräfte auf das Kernteil aufbringen, die in Verbindung mit der durch das drehende zweite Kopplerteil hervorgerufenen auf das Kernteil wirkenden Zentrifugalkraft zumindest abschnittsweise zu einer Druckspannung in dem Kernteil führen. Weiterhin betrifft die Erfindung ein Fahrzeug mit einem solchen induktiven Drehübertrager. Ferner betrifft die Erfindung ein Kopplerteil für einen induktiven Drehübertrager für eine elektrische Maschine.

19. **20190036506** INTERFERENCE SUPPRESSOR FOR A DIRECT CURRENT CIRCUIT

US - 31.01.2019


Int.Class H03H 7/06 Appl.No 16048227 Applicant BRUSA Elektronik AG Inventor Axel KRAUSE

The invention relates to an interference suppressor for a direct current circuit, a vehicle component, a high-voltage intermediate circuit and a vehicle. The interference suppressor for a direct current circuit, which comprises two conductors, is characterized in that the interference suppressor comprises a first connection for connecting the interference suppressor to a first conductor of the direct current circuit; a second connection for connecting the interference suppressor to a second conductor of the direct current circuit; a sensor, wherein the sensor can be coupled in noncontact manner to the direct current circuit and is designed to detect the passing of a predetermined limit value of a superimposed alternating voltage in the first conductor of the direct current circuit; and is designed, by impressing a current in the first connection, to reduce the alternating voltage in the first conductor of the direct current circuit substantially to the predetermined limit value.

20. **102018115808** SPULENANORDNUNG

DE - 02.01.2020


Int.Class H01F 27/34 Appl.No 102018115808 Applicant BRUSA Elektronik AG Inventor Böhler Lukas

Die Erfindung betrifft eine Spulenordnung zur induktiven Energieübertragung umfassend eine elektrische Spule [101], insbesondere eine Flachspule, die auf einer Oberseite OS einer Platte [102] aus einem ferromagnetischen Material M_{fer} mit einer Sättigungsmagnetisierung M_{max} angeordnet ist, wobei ein elektrischer Leiter SL [103] der Spule [101] durch einen über eine Dicke d der Platte [102] durchgängigen Kanal [104] von der Oberseite OS im Wesentlichen senkrecht zu der Platte [102] durch die Platte [102] zur gegenüberliegenden Unterseite US der Platte [102] geführt ist, und wobei der Kanal [104] derart geometrisch dimensioniert ist, dass bei einem durch den Leiter SL [103] fließenden maximalen Strom I_{max} für eine Magnetisierung M im den Kanal [104] umgebenden Material M_{fer} der Platte [102] gilt: $M(I_{max}) < M_{max}$ und/oder dass bei einem durch den Leiter SL [103] fließenden maximalen Strom I_{max} für eine dabei erzeugte induktive Temperaturerhöhung ΔT des den Kanal [104] umgebenden Materials M_{fer} gilt: $\Delta T(I_{max}) < \Delta T_{max}$, wobei ΔT_{max} ein vorgegebener vom Material M_{fer} und einer Masse der Platte [102] abhängiger Grenzwert ist und/oder dass für eine in dem den Kanal [104] umgebenden Material M_{fer} der Platte [102] entstehende elektrische Verlustleistung $P_V(I_{max})$ gilt: $P_V(I_{max}) < P_{Vmax}$, wobei P_{Vmax} ein vorgegebener Grenzwert ist und/oder dass für einen magnetischen Widerstand R_m eines in einem den Kanal [104] umgebenden Bereich der Platte [102] sich ausbildenden magnetischen Kreises gilt: $R_m > R_{m,min}$, wobei $R_{m,min}$ ein vorgegebener Grenzwert ist. 

21. **102019123554** WANDLERVORRICHTUNG

DE - 05.03.2020

Int.Class H02M 3/335 Appl.No 102019123554 Applicant BRUSA Elektronik AG Inventor Leibl Michael

Es wird eine Wandlervorrichtung [200] angegeben, aufweisend eine Primäreinrichtung mit einem Netzanschluss und eine Sekundäreinrichtung mit einem Ausgangsanschluss, wobei an dem Netzanschluss eine Versorgungsspannung beispielsweise eine AC-Spannung oder eine DC-Spannung angeschlossen werden kann und an dem Ausgangsanschluss eine Last angeschlossen werden kann, wobei die Primäreinrichtung und die Sekundäreinrichtung über einen Transformator [Tr4] gekoppelt sind, wobei der Transformator eine erste und eine zweite Primär-Teilspule und eine Sekundärspule aufweist und die Primäreinrichtung einen Primär-Resonanzkreis aufweist und die Sekundäreinrichtung einen Sekundär-Resonanzkreis sowie einen Sekundär-Boostkreis aufweist, welcher mittels einer Schalterbaugruppe oder einer Schalteinrichtung aktivierbar ist und die Sekundäreinrichtung einen asymmetrischen Aufbau aufweist. 

22. **WO/2011/067697** BATTERY HAVING TEMPERATURE REGULATION

WO - 09.06.2011

Int.Class H01M 2/10 Appl.No PCT/IB2010/055367 Applicant BRUSA Elektronik AG Inventor Krause, Axel

A battery [1a.. 1e] having a housing [2] and a plurality of galvanic cells [3] arranged in the housing [2] is provided. In addition, a fan [5a..5c] is arranged in the housing [2] to create a fluid flow circulating inside the housing [2]. According to the invention, a heat exchanger [6a..6e] having a forward flow [7] and a return flow [8] for a heat transfer medium, which lead out of the housing [2] is arranged in the flow path [A] of the fluid flow.

23. WO/2012/029024 ELECTRICAL CIRCUIT FOR CHARGING A BATTERY

WO - 08.03.2012


Int.Class H02J 7/02 **Appl.No** PCT/IB2011/053793 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

The invention relates to an electrical circuit [1] for charging at least one battery [8], having a charging device [3] which comprises an input [2] for connecting to an AC voltage source and two battery-side output poles [4a, 4b] for providing a charging current, and having two connection poles [6a, 6b] for connecting to a battery [8], wherein a filter formed from a capacitor [C1] and an inductor [L] is provided between the output poles [4a, 4b] of the charging device [3] and the connection poles [6a, 6b] for a battery [8]. To reduce the load on the battery and to extend the service life thereof, the capacitor [C1] is connected in parallel with the charging device output poles [4a, 4b] and the inductor [L] is connected between a battery connection pole [6a] and the equivalent pole of the capacitor [C1]. Furthermore, a resonance capacitor [C2] is connected in parallel with the inductor [L].

24. 102018128989 ELEKTROMOTOR MIT VERBESSERTER KÜHLUNG

DE - 20.05.2020

Int.Class H02K 9/22 **Appl.No** 102018128989 **Applicant** BRUSA Elektronik AG **Inventor** Oeschger Daniel

Die Erfindung betrifft einen Elektromotor, bei dem zumindest an einem Endbereich einer Rotorachse [101] des Rotors ein Scheibenelement [102] fixiert ist, dessen Scheibenebene senkrecht zur Rotorachse [101] angeordnet ist, wobei das Scheibenelement [102] auf seiner vom Rotor wegweisenden Seite eine Anzahl N um die Rotorachse [101] zentrierte ringförmige Erhebungen [103], die jeweils einen Ringradius r_n aufweisen, aufweist, wobei die ringförmigen Erhebungen [103] jeweils entweder als geschlossener Kreisring KR_n mit einer Erhebungshöhe h_{KR_n} oder als eine Anzahl M um die Rotorachse zentriert und voneinander beabstandet angeordnete Kreisringsegmente $KRS_{n,m}$ mit einer Erhebungshöhe $h_{KRS_{n,m}}$ ausgeführt sind, und wobei die kreisringförmigen Erhebungen [103] KR_n , $KRS_{n,m}$ jeweils zumindest teilweise in zugeordnete ringförmige Ausnehmungen AN [104] einer Wärmesenke [105] berührungsfrei eingreifen, wobei die Ausnehmungen AN [104] eine Ausnehmungstiefe T_{AN} aufweisen. 

25. 2426793 ABRASIVE RING BRUSH SYSTEM FOR CURRENT CONTROLLED SYNCHRONOUS MOTOR ROTOR

EP - 07.03.2012

Int.Class H01R 39/10 **Appl.No** 10174941 **Applicant** BRUSA ELEKTRONIK AG **Inventor** HOLZNER ANDREAS

Die Erfindung betrifft ein Schleifring-Bürsten-System [2] für Übertragung von elektrischen Signalen bzw. Erregerstrom auf einen Rotor [4] von elektrischen Rotationsmaschinen, insbesondere stromerregten Synchronmotoren [1], mit am Rotor [4] befestigten Schleifringen [18, 19] und im drehfesten Teil ortsfest angeordneten Bürsten [15]. Jede der Bürsten [15] steht mit je einem der Schleifringe [18, 19] in einer signal- bzw. strom übertragenden Gleit-Reibverbindung. Das Wesen der Erfindung liegt darin, dass die Schleifringe [18, 19] mindestens mit einer zusätzlichen Leiterplatte [17] und mindestens einer isolierenden Umhüllung [20] zu einer integrierten Schleifringeinheit [14] vereinigt sind, in welcher die Schleifringe [18, 19] koaxial und voneinander mit einem radialen, elektrisch isolierenden Abstand [A] angeordnet sind. Die Schleifringe [18, 19] mit je einem der Bürsten [15] zusammenwirken, die in axialer Richtung des Rotors [4] orientiert ist. Die integrierte Schleifringeinheit [14] ist stirnseitig am Rotor [4] mitdrehstarr befestigt.

26. 2451049 ROTOR WITH LAMINATION STACK FOR AN ELECTRIC MACHINE, IN PARTICULAR FOR A SYNCHRONOUS MACHINES

EP - 09.05.2012

Int.Class H02K 1/27 **Appl.No** 10189891 **Applicant** BRUSA ELEKTRONIK AG **Inventor** MATHOY ARNO

Die Erfindung betrifft einen Rotor [3] mit einem Rotorblechpaket [4] für eine Synchronmaschine [1]. Das Rotorblechpaket [4] ist auf einer Rotorwelle [5] drehfest verdrehstarr befestigt und besteht aus einzelnen Blechen [9]. Jedes der Bleche [9] weist eine Rotationsachse [8] und Orientieröffnungen [11], insbesondere zur Aufnahme von Blech-Orientierelementen [10], auf. Das Wesen der Erfindung liegt darin, dass - wie an sich bekannt und zur Verminderung von Rastmomenten der Elektromaschine [1] das Rotorblechpaket [4] aus mindestens zwei Rotorteilpaketen [13 1 -13 6] besteht, wobei jedes Rotorteilpaket [13] mindestens zwei Bleche [9] mit den im zusammengebauten Zustand des Rotorblechpakets [4] koaxial angeordneten Orientieröffnungen [11 1 -11 n] aufweist. Die Orientieröffnungen [11 1 -11 n] der benachbarten Rotorteilpakete [13 1 -13 n] sind im Rotorblechpaket [4] zueinander winkelfersetzt bzw. verdreht ausgebildet, so dass im zusammengebauten Zustand bei fluchtenden Orientieröffnungen [11 1 -11 n] die Pole benachbarter Rotorteilpakete um die Rotationsachse [8] relativ zueinander verdreht sind.

27. 3065152 PRIMARY SECTION OF AN INDUCTIVE CHARGER

EP - 07.09.2016

Int.Class H01F 38/14 **Appl.No** 15158106 **Applicant** BRUSA ELEKTRONIK AG **Inventor**

Ein Übertragungselement eines Primärteils oder einer Sendeeinheit für ein System zur kontaktlosen Energieübertragung umfasst ein Gehäuse [1] mit einer durch zumindest einige Auflagepunkte definierten Bodenfläche [B], eine der Bodenfläche [B] gegenüberliegenden Deckfläche [6], und diese beide Flächen [B, 6] verbindenden Seitenflächen [7]. Im Gehäuse [1] befinden sich zumindest eine Primärspule [2] und eine Elektronik [3] für deren Versorgung und/oder Steuerung der oder jeder Primärspule [2]. Zumindest die Elektronik [3] ist in einem Abteil [4] des Gehäuses [1] untergebracht, welches zumindest eine Seitenfläche [4a/4b] mit zumindest einer Reihe von Kühlkaminen [8] aufweist, die von der Deckfläche [6] im Wesentlichen bis zumindest in die Höhe der Unterseite [U] des Abteils [4] reichen.

28. WO/2020/002226 SYSTEM FOR DETERMINING A RELATIVE POSITION AND/OR A RELATIVE DISTANCE OF A TRANSMITTER WITH RESPECT TO A RECEIVER, AND INDUCTIVE VEHICLE CHARGING SYSTEM HAVING SUCH A SYSTEM

WO - 02.01.2020


Int.Class G01S 5/00 **Appl.No** PCT/EP2019/066659 **Applicant** BRUSA ELEKTRONIK AG **Inventor** BÖHLER, Lukas

The invention relates to a system for determining a relative position and/or a relative distance of a transmitter S1 [101] with respect to a receiver E2 [102], comprising: the transmitter S1 for wirelessly emitting signals at the time t_i , the receiver E2 for receiving the signal at the time $t_i + \Delta t$ as a signal, wherein the receiver E2 is designed and configured to determine the following: a signal level P of the received signal and/or a signal-to-noise ratio SNR of the received signal, a direction of incidence E of the received signal and, on the basis of P and E, the relative position POS of the transmitter S1 with respect to the receiver E2 and/or the relative distance D between the transmitter S1 and the receiver E2, and a transmitter S2 [103] which is connected to the receiver E2 and is intended to wirelessly transmit the determined signal level P and/or the determined signal-to-noise ratio SNR and/or the relative position POS and/or the distance D to a receiver E1 [104] which is connected to the transmitter S1 [101].

29. 102018122552 INDUKTIVES BAUELEMENT UND VERFAHREN ZUM HERSTELLEN DES INDUKTIVEN BAUELEMENTS

DE - 19.03.2020


Int.Class H01F 27/28 **Appl.No** 102018122552 **Applicant** Brusa Elektronik AG **Inventor** Hanselmann Marc

Die Erfindung betrifft ein induktives Bauelement, insbesondere Spule, Drossel oder Transformator, sowie ein Verfahren zur Herstellung eines ebensolchen induktiven Bauelements. Das induktive Bauelement weist auf: eine Anzahl N von U-förmigen elektrisch leitenden Spulensegmenten SS_n [101], mit $n = 1, \dots, N$ und $N > 1$, einen Spulenkern [102], wobei die Spulensegmente SS_n [101] am Spulenkern [102] derart angeordnet sind, dass sich ein Abschnitt des Spulenkerns jeweils innerhalb der U-förmigen Spulensegmente SS_n [101] befindet und die Öffnungen der U-förmigen Spulensegmente SS_n [101] in dieselbe Richtung zeigen, und die Enden benachbarter U-förmiger Spulensegmente SS_n über jeweils ein elektrisch leitendes Verbindungselement VE_m [103] derart elektrisch verbunden sind, dass jeweils ein Ende eines Spulensegments SS_n [101] über ein Verbindungselement VE_m [103] mit einem gegenüberliegenden Ende eines benachbarten U-förmigen Spulensegments SS_n [101] verbunden ist, so dass sich insgesamt eine elektrisch leitende Spulenwicklung um den Spulenkern [102] ergibt, mit $m = 1, \dots, N-1$. 

30. 102019117517 MODUL ZUR INDUKTIVEN ENERGIEÜBERTRAGUNG

DE - 02.01.2020

Int.Class [H02J 50/10](#) Appl.No 102019117517 Applicant BRUSA Elektronik AG Inventor Hamilton Martin

Die Erfindung betrifft ein Modul zur induktiven Energieübertragung umfassend: eine Hauptspule HS [101], die vollständig von einer elektrischen Isolierung IS1 [102] umgeben ist, wobei durch die Isolierung IS1 [102] nur zwei Anschlüsse A1_{HS} [103] und A2_{HS} [104] von/zu der Hauptspule HS [101] geführt sind, eine elektrische Baugruppe mit zwei Hochspannungsteilen HT1 [105] und HT2 [106] und zumindest einem Niederspannungsteil NT [107], wobei jedes der Hochspannungsteile HT1 [105] und HT2 [106] unmittelbar und vollständig von einer jeweiligen separaten elektrischen Isolierung IS2_{HT1} [108] / IS2_{HT2} [109] umgeben ist, wobei durch die Isolierung IS2_{HT1} [108] ein Anschluss A1_{HT} [110] zum einseitigen Anschluss der Hauptspule HS [101] und elektrische Zuleitungen [111] vom Niederspannungsteil NT [107] zum Hochspannungsteil HT1 [105] geführt sind und wobei durch die Isolierung IS2_{HT2} [109] ein Anschluss A2_{HT} [112] zum gegenseitigen Anschluss der Hauptspule HS [101] und elektrische Zuleitungen [113] vom Niederspannungsteil NT [107] zum Hochspannungsteil HT2 [106] geführt sind, und der Anschluss A1_{HS} [103] mit dem Anschluss A1_{HT} [110] und der Anschluss A2_{HS} [104] mit dem Anschluss A2_{HT} [112] nur derart elektrisch verbindbar sind oder verbunden sind, dass die elektrisch miteinander verbundenen Anschlüsse A1_{HS}-A1_{HT} jeweils unmittelbar und vollständig von einer elektrischen Isolierung IS3_{A1} [114] umgeben sind, die mit der Isolierung IS1 [102] und IS2_{HT1} [108] unmittelbar in Kontakt steht und die elektrisch miteinander verbundenen Anschlüsse A2_{HS}-A2_{HT} jeweils unmittelbar und vollständig von einer elektrischen Isolierung IS3_{A2} [115] umgeben sind, die mit der Isolierung IS1 [102] und IS2_{HT2} [109] unmittelbar in Kontakt steht. 

31. [2391522](#) DC/DC CONVERTER AND AC/DC CONVERTER

EP - 07.12.2011

Int.Class [B60L 11/18](#) Appl.No 10703704 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

The invention relates to a DC/DC converter [1] comprising n two-pole inverters [2a, 2b] connected in parallel or in series, n transformers [T a, T b], and n two-pole rectifiers [3a, 3b] connected in parallel or in series. One inverter [2a, 2b] and one rectifier [3a, 3b] is connected to each transformer [T a, T b]. The inverters [2a, 2b, 2a', 2b'] are connected in turn to a controller, which is provided to control the inverters [2a, 2b, 2a', 2b'] in a frequency-synchronous manner with phase-shifting by 180°/n. According to the invention, leakage inductances [L S1, L S2] of the transformers [T a, T b, T a', T b'] each form an oscillating circuit with capacitances [C 1, C 2] of the inverters [2a, 2b, 2a', 2b'] and/or capacitances [C 3, C 4] of the rectifiers [3a, 3b, 3a', 3b'], wherein the resonance frequency of the oscillating circuit is substantially twice as large as a clock frequency of the control signal. The invention further relates to an AC/DC converter [6] that comprises a DC/DC converter [1] according to the invention having an AC/DC stage [5] connected on the input side.

32. [2524423](#) CONTROL DEVICE AND METHOD FOR CONTROLLING A SEPARATELY EXCITED ROTOR WINDING OF A SYNCHRONOUS MACHINE

EP - 21.11.2012

Int.Class [H02P 9/12](#) Appl.No 11704669 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A control device for a separately excited rotor winding [LR] of a synchronous machine is described, which comprises a voltage source [2] connected to the rotor winding [LR] and intended for transmitting electrical energy [E] from a power supply [4] to the rotor winding [LR], in such a way that said rotor winding is caused to rotate by a rotating field on the stator side. According to the invention, the control device furthermore comprises a consumer [3] connected to the rotor winding [LR] and intended for transmitting electrical energy [E] from the rotor winding [LR] to the power supply [4]. Furthermore, a method for controlling a separately excited rotor winding [LR] of a synchronous machine is described.

33. [20120268082](#) CONTROL DEVICE AND METHOD FOR CONTROLLING A SEPARATELY EXCITED ROTOR WINDING OF A SYNCHRONOUS MACHINE

US - 25.10.2012

Int.Class [H02P 9/30](#) Appl.No 13514055 Applicant Krause Axel Inventor Krause Axel

A control device for a separately excited rotor winding [L_R] of a synchronous machine is described, which comprises a voltage source [2] connected to the rotor winding [L_R] and intended for transmitting electrical energy [E] from a power supply [4] to the rotor winding [L_R], in such a way that said rotor winding is caused to rotate by a rotating field on the stator side. According to the invention, the control device furthermore comprises a consumer [3] connected to the rotor winding [L_R] and intended for transmitting electrical energy [E] from the rotor winding [L_R] to the power supply [4]. Furthermore, a method for controlling a separately excited rotor winding [L_R] of a synchronous machine is described.

34. [20130106211](#)

US - 02.05.2013

Int.Class [H02K 3/51](#) Appl.No 13703773 Applicant Holzner Andreas Inventor Holzner Andreas

35. [2594009](#) ROTOR FOR ELECTRICAL MACHINE, IN PARTICULAR FOR A SYNCHRONOUS MOTOR

EP - 22.05.2013

Int.Class [H02K 3/52](#) Appl.No 11748744 Applicant BRUSA ELEKTRONIK AG Inventor HOLZNER ANDREAS

The present invention relates to a rotor [R] of an electrical machine, in particular a synchronous motor of electric vehicle drives, which rotor [R] comprises a rotor shaft [8], a sheet stack [3], windings, and a restraining system [2] with support elements. The support elements of the restraining system include support rings [7] which protect winding heads [4] projecting from the sheet stack [3] in the axial direction against, preferably radial, stresses. In the invention the elements of the restraining system [2] protecting the winding heads [4] from stresses also include axially inner end caps [6] which are configured on the one hand as support means for the finished winding heads [4] in the operating state and on the other hand as guide and support means during the winding of the pole windings of the rotor [R] about the axial edge of the sheet stack [3]. The axially outer support rings [7] cooperate with the axially inner end caps [6] in such a manner that the support rings [7] can absorb the centrifugal forces acting on the end caps [6] of the winding heads [4].

36. [102018121246](#) ADAPTERVORRICHTUNG ZUM BIDIREKTIONALEN BETRIEB

DE - 05.03.2020

Int.Class [H02M 7/217](#) Appl.No 102018121246 Applicant BRUSA Elektronik AG Inventor Leibl Michael

Es wird eine Adaptervorrichtung zum bidirektionalen Netzbetrieb vorgeschlagen 

37. [WO/2015/181660](#) DRIVE-CIRCUIT AND FUEL-CELL-COMPRESSOR ENERGY-SUPPLYING AND CONTROL UNIT

WO - 03.12.2015

Int.Class [B60L 1/00](#) Appl.No PCT/IB2015/053310 Applicant BRUSA ELEKTRONIK AG Inventor MATT, Philipp

The invention relates to an energy-supplying and control unit [1] for supplying a drive circuit, in particular a traction drive circuit, and a fuel cell compressor via separate interfaces [6, 7], comprising: a DC/DC converter [10] having a fuel-cell input interface [11], an inverter [20], a drive-circuit interface [7] for connecting to a drive circuit [36], and a compressor-motor interface [6] for connecting to a compressor motor [3] of a fuel cell compressor, wherein the output [12] of the DC/DC converter [10] is connected to the input [21] of the inverter [20] and to the drive-circuit interface [7], and wherein the output [22] of the inverter [20] is connected to the compressor-motor interface [6], and wherein the DC/DC converter [10] and the inverter [20] are housed in a common housing [9].

38. [WO/2011/086513](#) CONTROL DEVICE AND METHOD FOR CONTROLLING A SEPARATELY EXCITED ROTOR WINDING OF A SYNCHRONOUS MACHINE

WO - 21.07.2011

Int.Class [H02P 9/12](#) Appl.No PCT/IB2011/050147 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

A control device for a separately excited rotor winding (LR) of a synchronous machine is described, which comprises a voltage source (2) connected to the rotor winding (LR) and intended for transmitting electrical energy (E) from a power supply (4) to the rotor winding (LR), in such a way that said rotor winding is caused to rotate by a rotating field on the stator side. According to the invention, the control device furthermore comprises a consumer (3) connected to the rotor winding (LR) and intended for transmitting electrical energy (E) from the rotor winding (LR) to the power supply (4). Furthermore, a method for controlling a separately excited rotor winding (LR) of a synchronous machine is described.

39. **WO/2010/086823** DC/DC CONVERTER AND AC/DC CONVERTER

WO - 05.08.2010

Int.Class H02M 3/335 Appl.No PCT/IB2010/050401 Applicant Brusa Elektronik AG Inventor KRAUSE, Axel

The invention relates to a DC/DC converter (1) comprising n two-pole inverters (2a, 2b) connected in parallel or in series, n transformers (T a, T b), and n two-pole rectifiers (3a, 3b) connected in parallel or in series. One inverter (2a, 2b) and one rectifier (3a, 3b) is connected to each transformer (T a, T b). The inverters (2a, 2b, 2a', 2b') are connected in turn to a controller, which is provided to control the inverters (2a, 2b, 2a', 2b') in a frequency-synchronous manner with phase-shifting by 180°/n. According to the invention, leakage inductances (L S1, L S2) of the transformers (T a, T b, T a', T b') each form an oscillating circuit with capacitances (C 1, C 2) of the inverters (2a, 2b, 2a', 2b') and/or capacitances (C 3, C 4) of the rectifiers (3a, 3b, 3a', 3b'), wherein the resonance frequency of the oscillating circuit is substantially twice as large as a clock frequency of the control signal. The invention further relates to an AC/DC converter (6) that comprises a DC/DC converter (1) according to the invention having an AC/DC stage (5) connected on the input side.

40. **WO/2012/007920** ROTOR FOR ELECTRICAL MACHINE, IN PARTICULAR FOR A SYNCHRONOUS MOTOR

WO - 19.01.2012

Int.Class H02K 3/52 Appl.No PCT/IB2011/053152 Applicant BRUSA ELEKTRONIK AG Inventor HOLZNER, Andreas

The present invention relates to a rotor (R) of an electrical machine, in particular a synchronous motor of electric vehicle drives, which rotor (R) comprises a rotor shaft (8), a sheet stack (3), windings, and a restraining system (2) with support elements. The support elements of the restraining system include support rings (7) which protect winding heads (4) projecting from the sheet stack (3) in the axial direction against, preferably radial, stresses. In the invention the elements of the restraining system (2) protecting the winding heads (4) from stresses also include axially inner end caps (6) which are configured on the one hand as support means for the finished winding heads (4) in the operating state and on the other hand as guide and support means during the winding of the pole windings of the rotor (R) about the axial edge of the sheet stack (3). The axially outer support rings (7) cooperate with the axially inner end caps (6) in such a manner that the support rings (7) can absorb the centrifugal forces acting on the end caps (6) of the winding heads (4).

41. **WO/2020/002237** VEHICLE CHARGING SYSTEM FOR CHARGING AN ENERGY STORE ARRANGED IN A VEHICLE

WO - 02.01.2020

Int.Class H02J 7/02 Appl.No PCT/EP2019/066672 Applicant BRUSA ELEKTRONIK AG Inventor BÖHLER, Lukas

The invention relates to a vehicle charging system for charging an energy store arranged in a vehicle F and to a method for operating such a vehicle charging system. A vehicle charging system according to the invention comprises a first transmission unit GPM (101), which has a primary coil (103) with a coil axis SPAP and is arranged outside of the vehicle in a stationary manner in particular, and a second transmission unit CPM (102), which has a secondary coil (104) with a coil axis SPAS and is arranged in the vehicle F, wherein energy is transmitted by means of an inductive energy transmission from the primary coil (103) to the secondary coil (104) in order to charge the energy store. The vehicle charging system is characterized in that the second transmission unit CPM (102) has a signal generator SG (105) for generating signals SIGSG, said signal generator coupling the signals SIGSG into the secondary coil (104) in order to transmit said signals by means of the secondary coil, and the first transmission unit GPM (101) has an evaluation unit (106) and at least one first auxiliary coil (107a) with a coil axis SPAH1 and a second auxiliary coil (107b) with a coil axis SPAH2, said evaluation unit (106) being designed to ascertain a magnetic coupling k_{mag} and/or the relative position ΔPOS between the first transmission unit GPM (101) and the second transmission unit CPM (102) on the basis of the signals SIGSG received by the primary coil (103) and the auxiliary coils (107a,b).

42. **WO/2020/043689** ADAPTER DEVICE FOR BIDIRECTIONAL OPERATION

WO - 05.03.2020

Int.Class H02M 7/72 Appl.No PCT/EP2019/072766 Applicant BRUSA ELEKTRONIK AG Inventor LEIBL, Michael

An adapter device for bidirectional grid operation is proposed.

43. **WO/2020/002227** INDUCTIVE CHARGING OF VEHICLES WITH SECONDARY-SIDE VOLTAGE MEASUREMENT AND FEEDBACK FROM THE SECONDARY SIDE TO THE PRIMARY SIDE

WO - 02.01.2020

Int.Class B60L 53/12 Appl.No PCT/EP2019/066660 Applicant BRUSA ELEKTRONIK AG Inventor ERLER, Martin

The invention relates to a secondary-side circuit device comprising a secondary coil (L2) for transmitting and/or receiving magnetic energy of a magnetic field (106) and for converting the magnetic energy into electrical energy, an energy transmission unit (405) for transmitting the electrical energy, a secondary-side detection unit (409, 407) and a clamper circuit unit (301), wherein: the magnetic field (106) is generated by a primary coil (L1) of a primary circuit device (105'); the energy transmission unit (405) has an inlet for connecting the secondary coil (L2); the energy transmission unit (405) has an outlet for providing the electrical energy as voltage and/or current; the secondary-side detection unit (409, 407) is connected to the inlet and/or the outlet of the energy transmission unit, in order to detect an overvoltage at the inlet and/or the outlet of the energy transmission unit; and, when the overvoltage is detected at the inlet (403) and/or the outlet (404) of the energy transmission unit (405), the secondary-side detection unit (409, 407) is designed to influence the magnetic field (106) in the secondary coil (L2) by means of the clamper circuit unit (301) such that a current jump and/or a voltage jump is brought about in the primary coil (L1).

44. **2291859** COOLING SYSTEM, IN PARTICULAR FOR ELECTRONIC STRUCTURAL UNITS

EP - 09.03.2011

Int.Class H01L 23/473 Appl.No 09766272 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

The invention relates to a cooling system (1), in particular for cooling an electronic structural unit (2) or assembly, which cooling system is provided with a housing (3) and, therein, with a cooling channel (6) for a coolant. The electronic structural unit (2) rests over a large area against a heat-conducting cooler wall (7) of the housing (3). An apparatus (11) for guiding the coolant onto the cooler wall is provided in the cooling channel (6). The coolant-guiding apparatus (11) has indentations (12) in the cooler wall (7) which are formed transversely to the cooling channel (6) and are open from the cooling channel. An insert element (13) having an inner longitudinal channel (14) for the coolant is inserted into each indentation (12), an outer longitudinal channel (15) which is connected to the inner longitudinal channel (14) being formed between the indentation (12) and the associated insert element (13). That end of the insert element (13) which engages the cooling channel (6) is provided with an inclined entry surface (19) and an inlet opening (20) to the inner longitudinal channel (14).

45. **20100220501** DC/DC CONVERTER AND AC/DC CONVERTER

US - 02.09.2010

Int.Class H02M 3/335 Appl.No 12782001 Applicant BRUSA Elektronik AG Inventor Krause Axel

A DC/DC converter (1) having a plurality n of two-pole inverters (2a, 2b) connected in parallel or in series, n transformers (T_a, T_b) and n two-pole rectifiers (3a, 3b) connected in parallel or in series is described. One inverter (2a, 2b) each and one rectifier (3a, 3b) each are connected to a transformer (T_a, T_b). The inverters (2a, 2b, 2a', 2b') are in turn connected to a control which is provided for frequency-synchronous actuation of the inverters (2a, 2b, 2a', 2b') with a 180°/n phase shift. According to the invention, leakage inductances (L_{S1}, L_{S2}) of the transformers (T_a, T_b, T_a', T_b'), together with capacitors (C₁, C₂) of the inverters (2a, 2b, 2a', 2b') and/or capacitors (C₃, C₄) of the rectifiers (3a, 3b, 3a', 3b'), form in each case a resonating circuit whose resonant frequency is

substantially twice as great as a clock frequency of the control signal. Furthermore, an AC/DC converter [6] is described which has a DC/DC converter [1] according to the invention with an AC/DC stage [5] connected on the input side.

46. 2495786 STACKABLE HOLDER FOR A RECHARGEABLE BATTERY CELL, MODULAR SYSTEM AND RECHARGEABLE BATTERY EP - 05.09.2012

Int.Class H01M 2/10 Appl.No 11156857 Applicant BRUSA ELEKTRONIK AG Inventor BRUSA JOSEF

Es wird ein stapelbares Halteteil [2a..2c, 2g] für eine spannungserzeugende Zelle [3] eines Akkumulators [1a..1c] angegeben, welches eine Grundwand [5a..5k] sowie wenigstens auf einer Seite der Grundwand [5a..5k] aus dieser herausragende Rahmenwände [6a..6c, 6g] umfasst, wobei die Grundwand [5a..5k] und die Rahmenwände [6a..6c, 6g] dazu eingerichtet sind, die Zelle [3] an mehreren Seiten zu umschliessen. Die Grundwand [5a..5k] und/oder die Rahmenwände [6a..6c, 6g] ist/sind dabei für einen punkt- und/oder linienförmigen Kontakt mit der genannten Zelle [3] vorbereitet und die Grundwand [5a..5k] und die Rahmenwände [6a..6c, 6g] sind einstückig ausgeführt. Weiterhin wird ein modulares System sowie ein Akkumulator [1a..1c] mit wenigstens zwei Halteteilen [2a..2c, 2g] angegeben.

47. 102067304 COOLING SYSTEM, IN PARTICULAR FOR ELECTRONIC STRUCTURAL UNITS CN - 18.05.2011

Int.Class H01L 23/473 Appl.No 200980122414.9 Applicant Brusa Elektronik AG Inventor Krause Axel

The invention relates to a cooling system [1], in particular for cooling an electronic structural unit [2] or assembly, which cooling system is provided with a housing [3] and, therein, with a cooling channel [6] for a coolant. The electronic structural unit [2] rests over a large area against a heat-conducting cooler wall [7] of the housing [3]. An apparatus [11] for guiding the coolant onto the cooler wall is provided in the cooling channel [6]. The coolant-guiding apparatus [11] has indentations [12] in the cooler wall [7] which are formed transversely to the cooling channel [6] and are open from the cooling channel. An insert element [13] having an inner longitudinal channel [14] for the coolant is inserted into each indentation [12], an outer longitudinal channel [15] which is connected to the inner longitudinal channel [14] being formed between the indentation [12] and the associated insert element [13]. That end of the insert element [13] which engages the cooling channel [6] is provided with an inclined entry surface [19] and an inlet opening [20] to the inner longitudinal channel [14].

48. 2801498 ASSEMBLY AND METHOD FOR INDUCTIVELY CHARGING MOBILE DEVICES EP - 12.11.2014

Int.Class B60L 11/18 Appl.No 13166872 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Die Primärseite [P] einer Anordnung zum induktiven Laden eines elektrisch betriebenen Gerätes [F] weist eine Primärspule mit zumindest zwei Wicklungen [1, 2, 2a, 2b] auf. Jede zweite Wicklung [2, 2a, 2b] weist eine geringere Windungszahl auf als die erste Wicklung [1] und ist radial ausserhalb der ersten Wicklung [1] angeordnet. Der Windungssinn der zweiten Wicklungen [2, 2a, 2b] der Primärspule [P] ist entgegengesetzt zum Windungssinn der ersten Wicklung [1].

49. 2991194 ROTOR FOR A CURRENT EXCITED SYNCHRONOUS MACHINE EP - 02.03.2016

Int.Class H02K 1/24 Appl.No 14182227 Applicant BRUSA ELEKTRONIK AG Inventor ILLIANO ENZO

A rotor [3] for an electrical machine is described, in particular for a current excited synchronous machine, in particular a motor [1]. Rotor windings [7] are provided on at least two rotor poles [4], where radial magnetic flux barriers in the form of slots [13] extending radially along the center planes of the poles [4] are provided. Said barriers can be composed by any material, including liquids or gases, in particular air, which has a lower magnetic permeability μ than the rotor poles [4]. The radially inner end portion [13a] of the slots [13] is widening up in the direction towards the center axis of the rotor [3].

50. 2994342 ARRANGEMENT AND METHOD FOR INDUCTIVE CHARGING OF MOBILE DEVICES EP - 16.03.2016

Int.Class B60L 11/18 Appl.No 14727069 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

The invention relates to an arrangement for inductive charging of an electrically operated device [F], wherein the primary side [P] has a primary coil [1] and at least one additional coil [2, 2a, 2b]. Each second coil [2, 2a, 2b] has a lower number of windings than the primary coil [1] and is arranged radially outside of the primary coil [1]. The magnetic dipole moment of the second coils [2, 2a, 2b] is oriented opposite to the dipole moment of the primary coil [1].

51. WO/2014/181268 ARRANGEMENT AND METHOD FOR INDUCTIVE CHARGING OF MOBILE DEVICES WO - 13.11.2014

Int.Class B60L 11/18 Appl.No PCT/IB2014/061265 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

The invention relates to an arrangement for inductive charging of an electrically operated device [F], wherein the primary side [P] has a primary coil [1] and at least one additional coil [2, 2a, 2b]. Each second coil [2, 2a, 2b] has a lower number of windings than the primary coil [1] and is arranged radially outside of the primary coil [1]. The magnetic dipole moment of the second coils [2, 2a, 2b] is oriented opposite to the dipole moment of the primary coil [1].

52. WO/2009/153735 COOLING SYSTEM, IN PARTICULAR FOR ELECTRONIC STRUCTURAL UNITS WO - 23.12.2009

Int.Class H01L 23/473 Appl.No PCT/IB2009/052559 Applicant BRUSA Elektronik AG Inventor Krause, Axel

The invention relates to a cooling system [1], in particular for cooling an electronic structural unit [2] or assembly, which cooling system is provided with a housing [3] and, therein, with a cooling channel [6] for a coolant. The electronic structural unit [2] rests over a large area against a heat-conducting cooler wall [7] of the housing [3]. An apparatus [11] for guiding the coolant onto the cooler wall is provided in the cooling channel [6]. The coolant-guiding apparatus [11] has indentations [12] in the cooler wall [7] which are formed transversely to the cooling channel [6] and are open from the cooling channel. An insert element [13] having an inner longitudinal channel [14] for the coolant is inserted into each indentation [12], an outer longitudinal channel [15] which is connected to the inner longitudinal channel [14] being formed between the indentation [12] and the associated insert element [13]. That end of the insert element [13] which engages the cooling channel [6] is provided with an inclined entry surface [19] and an inlet opening [20] to the inner longitudinal channel [14].

53. WO/2020/048966 CONVERTER DEVICE WO - 12.03.2020

Int.Class H02M 3/335 Appl.No PCT/EP2019/073445 Applicant BRUSA ELEKTRONIK AG Inventor

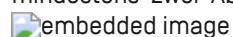
The invention relates to a converter device [200, 800], comprising: a network connection for connecting at least one phase [a, b, c]; a positive resonance group [C4, C5, C6]; a negative resonance group [C7, C8, C9]; a first positive diode group [D5, D6, D7]; a second positive diode group [D1, D2, D3]; a first negative diode group [D9, D10, D11]; a second negative diode group [D13, D14, D15]; at least one transformer [201, 801a, 801b] having at least one first primary-side winding [202, 802] and a second primary-side winding [203, 803]; and a switch unit [IGBT1, IGBT2, IGBT3, IGBT4]; wherein the first positive diode group [D5, D6, D7] is designed to transfer a positive phase signal in the at least one phase [a, b, c] to the positive resonance group [C4, C5, C6] and to block a negative phase signal; wherein the first negative diode group [D9, D10, D11] is designed to transfer a negative phase signal in the at least one phase [a, b, c] to the negative resonance group [C7, C8, C9] and to block a positive phase signal; wherein the switch unit [IGBT1, IGBT2, IGBT3, IGBT4] is designed to connect the first winding [202, 802] to the positive resonance group [C4, C5, C6] and the second winding [203, 803] to the negative resonance group [C7, C8, C9] in a first switch state in such a way that the positive resonance group [C4, C5, C6] is charged via the first primary-side winding [202, 802] and the first positive diode group [D5, D6, D7] and the negative resonance group [C7, C8, C9] is discharged via the second primary-side winding [203, 803] and the second

negative diode group [D13, D14, D15]; and wherein the switch unit [IGBT1, IGBT2, IGBT3, IGBT4] is designed to connect the first winding [202, 802] with the positive resonance group [C4, C5, C6] and the second winding [203,803] with the negative resonance group [C7, C8, C9] in a second switch state in such a way that the positive resonance group [C4, C5, C6] is discharged via the first primary-side winding [202, 802] and the second positive diode group [D1, D2, D3] and the negative resonance group [C7, C8, C9] is charged via the second primary-side winding [203, 803] and the first negative diode group [D9, D10, D11].

54. 102018125379 VORRICHTUNG ZUR POSITIONSBESTIMMUNG EINES RELATIV ZU EINEM FAHRZEUG BEWEGBAREN GEGENSTANDES UND EIN DAMIT AUSGESTATTETES FAHRZEUG DE - 16.04.2020

Int.Class G01S 5/02 Appl.No 102018125379 Applicant BRUSA Elektronik AG Inventor Böhler Lukas

Die Erfindung betrifft eine Vorrichtung zur Positionsbestimmung eines relativ zu einem Fahrzeug [10] bewegbaren Gegenstandes [14, 22, 26, 30, 32, 38] wobei mindestens eine fahrzeugseitige Kommunikationseinheit [16] außen am Fahrzeug [10] angeordnet ist, die mit mindestens einer gegenstandsseitigen Kommunikationseinheit [18] über Funkwellen kommuniziert, und wobei die mindestens eine fahrzeugseitige Kommunikationseinheit [16] mit einer Datenverarbeitungseinheit gekoppelt ist, die ausgebildet ist, aus den Kommunikationssignalen die Position des Gegenstandes [14, 22, 26, 30, 32, 38] relativ zu einem fahrzeugfesten Koordinatensystem zu bestimmen. Erfindungsgemäß sind die Kommunikationseinheiten [16, 18] als Abstandsmess-Kommunikationseinheiten ausgebildet, um den Abstand zwischen sich durch Ermittlung der Time-of-Flight [TOF] zu bestimmen, und die Datenverarbeitungseinheit ist ausgebildet, aus mittels der Kommunikation zwischen mindestens drei Kommunikationseinheiten [16, 18] ermittelten mindestens zwei Abstandswerten mittels Trilateration die Position des Gegenstandes [14, 22, 26, 30, 32, 38] im Koordinatensystem zu bestimmen.

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55. WO/2020/002223 PRIMARY MEASURING DEVICE FOR MEASURING A CURRENT EFFECTIVE POWER WO - 02.01.2020

Int.Class G01R 21/00 Appl.No PCT/EP2019/066655 Applicant BRUSA ELEKTRONIK AG Inventor BÖHLER, Lukas

A primary measuring device [301p] for measuring a current effective power [P, P1] in a primary circuit [202] of an energy transmission system [100] is described, having an evaluation device [1101] and a calibration device [1102], wherein the evaluation device [1101] has a measuring connection for measuring a current [Imess], a voltage [Umess] and a measured phase shift [φmess] between the current [Imess] and the voltage [Umess] in the primary circuit [202], wherein the evaluation device [1101] and the calibration device [1102] are connected to one another, wherein the evaluation device [1101] is also configured to carry out a power measurement by evaluating the measured current [Imess] and the measured voltage [Umess], wherein the calibration device [1102] is configured to correct the measured current [Imess] and/or the measured voltage [Umess] by means of the cos[φ] value of the measured phase shift [φmess] between the measured current [Imess] and the measured voltage [Umess] and/or by means of a holding time [Tcal], wherein the evaluation device [1101] is configured to calculate a power value with the corrected value [Ikorr] of the measured current and/or the corrected value [Ukorr] of the measured voltage, and wherein the calibration device [1102] is configured to make available the calculated power value as a current effective power [Pkorr].

56. WO/2020/078873 DEVICE FOR DETERMINING THE POSITION OF AN OBJECT THAT CAN BE MOVED RELATIVE TO A VEHICLE AND VEHICLE EQUIPPED THEREWITH WO - 23.04.2020

Int.Class G01S 5/14 Appl.No PCT/EP2019/077726 Applicant BRUSA ELEKTRONIK AG Inventor BÖHLER, Lukas

The invention relates to a device for determining the position of an object [14, 26, 30, 32, 38], which can be moved relative to a vehicle [10], wherein at least one vehicle-side communication unit [16] is arranged on the outside of the vehicle and communicates with at least one object-side communication unit [18] via radio waves, and wherein the at least one vehicle-side communication unit is coupled to a data processing unit which is designed to determine the position of the object relative to a coordinate system fixed to the vehicle based on the communication signals. The communication units are designed as distance measuring communication units in order to determine the distance between them by determining the time-of-flight [TOF], and the data processing unit is designed to determine the position of the object in the coordinate system based on at least two distance values determined by means of the communication between at least three communication units by means of trilateration. According to the invention, the communication units are designed to exchange with one another vehicle-specific metadata, in particular acceleration, speed or driving trajectory data, or object-specific metadata, such as location information of stationary objects.

57. 2965941 PRIMARY SECTION FOR AN INDUCTIVE CHARGER EP - 13.01.2016

Int.Class B60L 11/18 Appl.No 14176348 Applicant BRUSA ELEKTRONIK AG Inventor OESCHGER DANIEL

Die Erfindung betrifft ein Primärteil eines Ladegeräts, insbesondere zur induktiven Übertragung von Energie von einer Primärspule [2] des Primärteils [1] zu einer Sekundärspule eines zumindest teilweise elektrisch betriebenen Fahrzeugs. Hierbei ist die Primärspule [2] mit einer Ladeelektronik [3] verbunden und an einer Oberseite [7] des Primärteils [1] angeordnet. Ein Ladevorgang bei induktiver Übertragung von Energie von einer Primärspule [2] zur Sekundärspule soll mittels der Erfindung verbessert werden und die Sicherheit beim Ladevorgang soll erhöht werden. Erfindungsgemäss ist das Primärteil [1] mit mindestens einem, den Primärteil [1] von unten nach oben durchsetzenden Kamin [11] versehen ist, in den mindestens ein Kanal [10] mündet, dessen Eintrittsöffnung [8] im bodennahen Bereich einer Seitenfläche der Bodenplatte [18] des Primärteils [1] gelegen ist und der zumindest in einem Teilabschnitt bis zur Mündung in den mindestens einen Kamin [11] ansteigt.

58. WO/2020/002233 DEVICES FOR THE CONTACTLESS INDUCTIVE CHARGING OF AN ELECTRICAL ENERGY STORE WO - 02.01.2020

Int.Class H01F 38/14 Appl.No PCT/EP2019/066666 Applicant BRUSA ELEKTRONIK AG Inventor BÖHLER, Lukas

The invention relates to a module [100] for contactless inductive energy transfer, comprising a coil [110] with a magnetic core [120] for emitting or receiving electrical energy using inductive coupling, and a wireless communication device [130], the magnetic core [120] having a hole [140] forming a communication channel for signals from the communication device [130].

59. 2589136 VOLTAGE CONVERTER EP - 08.05.2013

Int.Class H02M 3/28 Appl.No 11738318 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A voltage converter [1 a..1 g], in particular a resonant converter for converting an input alternating or direct voltage [UE] into an output direct voltage [UA]. On the secondary side, a first secondary capacitor [CS1] is switched between the secondary partial windings [WS1, WS2] of a transformer [TR1]. Furthermore, on the secondary side, a first secondary full-bridge rectifier [GS1] is provided for providing the output direct voltage [UA], the inputs of which are connected to a secondary partial winding [WS1, WS2] each of the transformer [TR1], resulting, at the input of the first secondary full-bridge rectifier [GS1], in a series connection including the secondary partial windings [WS1, WS2] and the first secondary capacitor [CS1]. Finally the voltage converter [1a..1f] comprises a second secondary full-bridge rectifier [GS2] switched in parallel with the first secondary full-bridge rectifier [GS1] for providing the output direct voltage [UA], wherein the first secondary capacitor [CS1] is switched to the input of the second secondary full-bridge rectifier [GS2].

60. 20130107581 VOLTAGE CONVERTER US - 02.05.2013

Int.Class H02M 3/335 Appl.No 13700800 Applicant Krause Axel Inventor Krause Axel

A voltage converter [1a . . . 1g], in particular a resonant converter for converting an input AC or DC voltage [UE] into an output DC voltage [UA]. On the secondary side, a first secondary capacitor [CS1] is arranged between the secondary partial windings [WS1, WS2] of a transformer [TR1]; furthermore, a first

secondary full-bridge rectifier [GS1] provides the output direct voltage [U_A], the inputs of which are connected to a secondary partial winding [WS1, WS2] each of the transformer [TR1], resulting, at the input of the first secondary full-bridge rectifier [GS1], in a series connection including the secondary partial windings [WS1, WS2] and the first secondary capacitor [CS1]. Finally, the voltage converter [1a . . . 1f] includes a second secondary full-bridge rectifier [GS2] connected in parallel with the first secondary full-bridge rectifier [GS1] for providing the output direct voltage [U_A], wherein the first secondary capacitor [CS1] is connected to the input of the second secondary full-bridge rectifier [GS2].

61. [2533327](#) GALVANIC CELL CONNECTION LUG, CALVANIC CELL, BATTERY AND PROCESS FOR MANUFACTURING THE CONNETCION LUG EP - 12.12.2012

Int.Class [H01M 2/30](#) Appl.No 11004717 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

The present invention relates to a galvanic cell connection lug [2] characterized in that it comprises a body made of aluminium or aluminium alloys and an electro-conductive metal coating on the surface of the body. Also disclosed is a galvanic cell [1] comprising said connection lug [2], a battery comprising at least one of said galvanic cells [1], as well as a process for manufacturing the said connection lug [2] characterized in that it comprises the following steps: a) degreasing; b) alkaline etching; c) acid etching; d) fluoride etching; g) repeating steps b) and c) at least once; h) zincate coating; i) electroplating a metal coating.

62. [20150289404](#) FASTENING SYSTEMS FOR POWER MODULES US - 08.10.2015

Int.Class [H05K 7/00](#) Appl.No 14676858 Applicant BRUSA Elektronik AG Inventor Martin Berkmann

Fastening systems for power modules including molded body [2] with flat surface [2a] bearing on supporting structure, and a plurality of protruding contact pins [3]. A pressing element [5] presses a power module [1] on a side opposite the supporting structure. A connecting element [11] fastens the pressing element [5] on the supporting structure and imparts a force pressing towards the supporting structure. Sections [9, 10] formed on the pressing element [5] have outer edge regions [10] acting elastically on edge regions of the power module [1] in the fastened position. These edge regions are loaded with a pressing force towards the supporting structure. Such power modules [1] are useable with such fastening systems, as are the pressing elements [5].

63. [112015001994](#) FORMLITZE, DEREN VERWENDUNG, SOWIE VERFAHREN ZUR HERSTELLUNG EINES STATORS FÜR EINE ELEKTRISCHE MASCHINE DE - 26.01.2017

Int.Class [H02K 3/34](#) Appl.No 112015001994 Applicant Brusa Elektronik AG Inventor Stöck Martin

64. [112015002394](#) LNDUKTIVE LADEVORRICHTUNG UND STEUERUNG BEZIEHUNGSWEISE BETRIEBSVERFAHREN HIERFÜR DE - 23.02.2017

Int.Class [H02J 50/12](#) Appl.No 112015002394 Applicant BRUSA Elektronik AG Inventor Oehry Peter


65. [20200006985](#) MODULE FOR INDUCTIVE ENERGY TRANSFER US - 02.01.2020

Int.Class [H02J 50/12](#) Appl.No 16453485 Applicant BRUSA Elektronik AG Inventor Martin Hamilton

A module for inductive energy transfer including: a main coil HS completely enclosed by electrical insulation IS1, wherein only two connections, A1_{HS} and A2_{HS}, are routed from/to the main coil HS by insulation IS1; an electrical assembly with two high-voltage parts, HT1 and HT2, and at least one low-voltage part NT, wherein each of the high-voltage parts, HT1 and HT2, is directly and completely enclosed by respective separate electrical insulation, IS2_{HT1}/IS2_{HT2}, wherein connection A1_{HT} is routed to the one-sided connection of the main coil HS, and electrical supply lines are routed from the low-voltage part NT to the high-voltage part HT1 by insulation IS2_{HT1}, and wherein connection A2_{HT} is routed to a reciprocal connection of the main coil HS, and the electrical supply lines are routed from the low-voltage part NT to the high-voltage part HT2 by insulation IS2_{HT2}, and connection A1_{HS} to connection A1_{HT} and connection A2_{HS} to connection A2_{HT} are only electrically connectable or connected such that connections A1_{HS}-A1_{HT} electrically connected to one another are each directly and completely enclosed by electrical insulation IS3_{A1}, which is in direct contact with insulation IS1 and IS2_{HT1}, and connections A2_{HS}-A2_{HT} electrically connected to one another are each directly and completely enclosed by electrical insulation IS3_{A2}, which is in direct contact with insulation IS1 and IS2_{HT2}.

66. [102019117510](#) FILTER FÜR EIN INDUKTIVES ÜBERTRAGUNGSSYSTEM UND VERFAHREN ZUM EINSTELLEN EINER FILTERCHARAKTERISTIK EINES FILTERS DE - 02.01.2020

Int.Class [H02J 50/12](#) Appl.No 102019117510 Applicant BRUSA Elektronik AG Inventor Krause Axel

Es wird ein Filter [200'] für ein induktives Übertragungssystem [100'] mit einem variablen Kopplungsfaktor [k] angegeben, aufweisend einen Eingangsanschluss [206] zum Anschließen einer Stromquelle, einen Ausgangsanschluss [207] zum Anschließen eines Resonanzkreises [202] des induktiven Übertragungssystems [100'] und eine Filtercharakteristik-Einstelleinrichtung [300], wobei die Filtercharakteristik-Einstelleinrichtung [300] in dem Filter integriert ist, und wobei die Filtercharakteristik-Einstelleinrichtung [300] eingerichtet ist, eine Filtercharakteristik des Filters [200'] so einzustellen, dass über das induktive Übertragungssystem [100'] eine vorgebbare Leistung übertragbar ist. 

67. [WO/2012/001627](#) VOLTAGE CONVERTER WO - 05.01.2012

Int.Class [H02M 1/12](#) Appl.No PCT/IB2011/052841 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

A voltage converter [1 a..1 g], in particular a resonant converter for converting an input alternating or direct voltage [UE] into an output direct voltage [UA]. On the secondary side, a first secondary capacitor [CS1] is switched between the secondary partial windings [WS1, WS2] of a transformer [TR1]. Furthermore, on the secondary side, a first secondary full-bridge rectifier [GS1] is provided for providing the output direct voltage [UA], the inputs of which are connected to a secondary partial winding [WS1, WS2] each of the transformer [TR1], resulting, at the input of the first secondary full-bridge rectifier [GS1], in a series connection including the secondary partial windings [WS1, WS2] and the first secondary capacitor [CS1]. Finally the voltage converter [1a..1f] comprises a second secondary full-bridge rectifier [GS2] switched in parallel with the first secondary full-bridge rectifier [GS1] for providing the output direct voltage [UA], wherein the first secondary capacitor [CS1] is switched to the input of the second secondary full-bridge rectifier [GS2].

68. [WO/2015/162586](#) COMPRESSED STRAND, USE THEREOF AND METHOD FOR PRODUCING A STATOR FOR AN ELECTRIC MACHINE WO - 29.10.2015

Int.Class [H02K 3/14](#) Appl.No PCT/IB2015/052978 Applicant BRUSA ELEKTRONIK AG Inventor STÖCK, Martin

The invention relates to a compressed strand [1] for use in the stator of an electric machine, in particular a rotating field machine such as a motor or generator, in particular for an electric or hybrid vehicle, comprising a plurality of individual wires [1e] which extend in parallel and are preferably twisted. At least some of the individual wires [1e] of the compressed strand [1] are mechanically interconnected on at least one point along the longitudinal extension thereof.



69. [WO/2020/002224](#) SIGNAL MATCHING APPARATUS IN A SYSTEM FOR INDUCTIVE POWER TRANSMISSION WO - 02.01.2020Int.Class [H02J 50/12](#) Appl.No PCT/EP2019/066657 Applicant BRUSA ELEKTRONIK AG Inventor BÖHLER, Lukas

A signal matching apparatus [400] for an evaluation circuit [402] for evaluating an electromagnetic signal for operation in an inductive power transmission system is described, having a signal transmission device [420], wherein the signal transmission device has an antenna connection [403] for connecting a receiving antenna [302ax], an evaluation connection [404] for connecting the evaluation circuit [302] for the electromagnetic signal, wherein the antenna connection [403] is configured to receive the electromagnetic signal, wherein the signal transmission device [420] is configured to leave the phase of the electromagnetic signal substantially unchanged and wherein the signal transmission device [420] is configured to match the amplitude of the electromagnetic signal to a characteristic prescribable by the evaluation circuit, wherein the evaluation connection is configured to provide the electromagnetic signal to the evaluation circuit [402].

70. [20190229616](#) HIGH POWER CHARGE PUMP WITH INDUCTIVE ELEMENTS US - 25.07.2019Int.Class [H02M 1/10](#) Appl.No 16331054 Applicant Brusa Elektronik AG Inventor Enzo Illiano

A high power unidirectional or bidirectional charge pump with inductive elements for high power DC-DC converter applications. Inductive elements resonating with storage capacitors allow zero current switching processes. Storage elements in the form of capacitors instead of conventional inductors allow a cheap and lightweight construction. The output voltage cannot be actively regulated and corresponds to a fraction of the input voltage. However, several voltage ratios can be easily obtained between output and input, such as 0.25, 0.33, 0.5, 0.75, 1.25, 1.33, 1.5, 2, 3, and 4.

71. [3510696](#) HIGH POWER CHARGE PUMP WITH INDUCTIVE ELEMENTS EP - 17.07.2019Int.Class [H02M 3/158](#) Appl.No 17767748 Applicant BRUSA ELEKTRONIK AG Inventor ILLIANO ENZO

A high power uni- or bidirectional charge pump with inductive elements [3] for high power DC-DC converter applications. Inductive elements [3] resonating with storage capacitors [2] allow zero current switching processes. Storage elements in the form of capacitors instead of conventional inductors allow a cheap and lightweight construction. The output voltage cannot be actively regulated and corresponds to a fraction of the input voltage. However, several voltage ratios between output [11] and input [1], such as 0.25, 0.33, 0.5, 0.75, 1,25 1.33, 1.5, 2, 3, 4 can be easily obtained.

72. [WO/2018/046370](#) HIGH POWER CHARGE PUMP WITH INDUCTIVE ELEMENTS WO - 15.03.2018Int.Class [H02M 3/158](#) Appl.No PCT/EP2017/071770 Applicant BRUSA ELEKTRONIK AG Inventor ILLIANO, Enzo

A high power uni- or bidirectional charge pump with inductive elements [3] for high power DC-DC converter applications. Inductive elements [3] resonating with storage capacitors [2] allow zero current switching processes. Storage elements in the form of capacitors instead of conventional inductors allow a cheap and lightweight construction. The output voltage cannot be actively regulated and corresponds to a fraction of the input voltage. However, several voltage ratios between output [11] and input [1], such as 0.25, 0.33, 0.5, 0.75, 1,25 1.33, 1.5, 2, 3, 4 can be easily obtained.

73. [102016217040](#) HOCHLEISTUNGS-LADUNGSPUMPE MIT INDUKTIVEN ELEMENTEN DE - 08.03.2018Int.Class [H02M 3/07](#) Appl.No 102016217040 Applicant Brusa Elektronik AG Inventor Illiano Enzo

Eine uni- oder bidirektionale Hochleistungs-Ladungspumpe mit induktiven Elementen [3] für Hochleistungs-DC-DC-Wandler Anwendungen. Induktive Elemente [3], die mit Speicherkondensatoren [2] in Resonanz gehen ermöglichen Null-Strom-Schalt-Prozesse. Speicherelemente in der Form von Kondensatoren statt herkömmlichen Induktoren ermöglichen eine billige und leichtgewichtige Konstruktion. Die Ausgangsspannung kann nicht aktiv geregelt werden und entspricht einem Anteil der Eingangsspannung. Jedoch, können mehrere Spannungsverhältnisse zwischen Ausgang [11] und Eingang [1] leicht erhalten werden, wie z. B. 0,25, 0,33, 0,5, 0,75, 1,25 1,33, 1,5, 2, 3, 4.

74. [WO/2015/177657](#) INDUCTIVE CHARGING DEVICE AND CONTROL SYSTEM, AND A METHOD FOR OPERATING SAME WO - 26.11.2015Int.Class [H02J 5/00](#) Appl.No PCT/IB2015/052331 Applicant BRUSA ELEKTRONIK AG Inventor OEHR, Peter

The invention relates to a method for operating an inductive charging device [1] comprising two inductors [11, 12] and two switching stages [8, 9] connected thereto. In order to achieve a stationary operational state, said switching stages [8, 9] are each controlled with a periodic signal of the same frequency, and the switching phase shift is reduced/increased proceeding from a starting value until it reaches a predefined value or until a perceptible output current [IA] is obtained. The switching frequency is then reduced/increased so as to reach a desired phase shift between output current [IA] and output voltage[UA] or output power. Once transient processes have subsided, the switching phase shift is reduced/increased further until the output power reaches a predefinable target value. The invention also relates to a control system [27] for carrying out said method, and to an inductive charging device [1] comprising such a control system [27].

75. [110036559](#) HIGH POWER CHARGE PUMP WITH INDUCTIVE ELEMENTS CN - 19.07.2019Int.Class [H02M 3/158](#) Appl.No 201780053599.7 Applicant BRUSA ELEKTRONIK AG Inventor ILLIANO ENZO

Provided is a high power uni/bi-directional charge pump with inductive elements [3] for high power DC-DC converter applications. Inductive elements [3] resonating with storage capacitors [2] allow zero current switching processes. Storage elements in the form of capacitors instead of conventional inductors allow a cheap and lightweight construction. The output voltage cannot be actively regulated and corresponds to a fraction of the input voltage. However, several voltage ratios between output [11] and input [1], such as 0.25, 0.33, 0.5, 0.75, 1, 25 1.33, 1.5, 2, 3, 4 can be easily obtained.

76. [2391521](#) CONVERTER FOR SINGLE-PHASE AND THREE-PHASE OPERATION, D.C. VOLTAGE SUPPLY AND BATTERY CHARGER EP - 07.12.2011Int.Class [H02M 5/458](#) Appl.No 10703689 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A Converter [1a.1c] for single-phase and three-phase Operation which comprises a three-phase rectifier to which three coils [La, Lb, Lc] are connected on the mains side is described. A first coil [La] is provided on the mains side with a switch [S] which connects the first coil [La] to the mains during three-phase Operation and connects it via a capacitor [C] either to the lower end [FP] of the rectifier or on the mains side to another coil [Lb, Lc] during single-phase Operation. In addition, a d.c. voltage supply and a battery charger [5a.5c] which comprise the Converter [1a.1c] according to the invention are described.

77. [2378646](#) METHOD AND DEVICE FOR MAGNETISING PERMANENTLY EXCITED SYNCHRONOUS MACHINES AND ROTOR FOR SUCH SYNCHRONOUS MACHINES EP - 19.10.2011Int.Class [H02K 15/03](#) Appl.No 10160091 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY ARNO

Die Erfindung betrifft ein Verfahren und eine Einrichtung zur Magnetisierung einer permanent-erregten Synchronmaschine [1], insbesondere eines permanent-erregten Hybrid-Synchronmotors. Im Rotor [5] sind eingebettete Permanentmagnete [13A,13B,13C] angeordnet, welche durch die Anwendung von Spulen [17] einer Magnetisierungseinrichtung [18] magnetisiert werden. Zur Vereinfachung der Montierung und Verkürzung der Magnetisierungstaktzeiten werden die Permanentmagnete [13A,13B,13C] in ihrem unmagnetisierten Zustand in den vormontierten Rotor [5] eingelegt, und danach deren Magnetisierung während des Produktionsverfahrens der Synchronmaschine [1] mittels der, mindestens grobenteils ins Innere des zu magnetisierenden Rotors [5] angeordneten Spulen [17] der Magnetisierungseinrichtung [18] In-situ durchgeführt wird. Der Rotor [5] ist so ausgestaltet, dass im Rotorkern [6] Hohlräume [15A,15B,15C] zur Aufnahme der magnetisierenden Spulen [17] vorgesehen sind.

78. 20110261591 CONVERTER FOR SINGLE-PHASE AND THREE-PHASE OPERATION, D.C. VOLTAGE SUPPLY AND BATTERY CHARGER US - 27.10.2011

Int.Class H02M 7/219 Appl.No 13131874 Applicant Krause Axel Inventor Krause Axel

A Converter [1a.1c] for single-phase and three-phase Operation which comprises a three-phase rectifier to which three coils (L_a, L_b, L_c) are connected on the mains side is described. A first coil (L_a) is provided on the mains side with a switch (S) which connects the first coil (L_a) to the mains during three-phase Operation and connects it via a capacitor (C) either to the lower end (FP) of the rectifier or on the mains side to another coil (L_b, L_c) during single-phase Operation. In addition, a d.c. voltage supply and a battery charger [5a.5c] which comprise the Converter [1a.1c] according to the invention are described.

79. 2478615 PERMANENT MAGNET EXCITED SYNCHRONOUS MACHINE WITH EMBEDDED MAGNETS EP - 25.07.2012

Int.Class H02K 1/27 Appl.No 10742295 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY ARNO

The invention relates to a permanent magnet excited synchronous machine [1] with embedded magnets, which is particularly suitable for range extender generator. It consists of a stator [2] and rotor [3] being provided with exciter magnets [7]. The rotor [3] has at least two rotor poles [4], each is provided with one exciter magnet [7]. In order to increase the magnetic torque limit of the synchronous machine [1] - in each rotor pole [4] at least one, preferably several selective magnetic flux barriers, preferably as substantially radial slots [8] being parallel with the main pole flux is/are provided in the area of the pole shoe.

80. 20120175989 PERMANENT MAGNET EXCITED SYNCHRONOUS MACHINE WITH EMBEDDED MAGNETS US - 12.07.2012

Int.Class H02K 21/12 Appl.No 13390632 Applicant Verena Mathoy Inventor Arno Mathoy

A permanent magnet excited synchronous machine [1] with embedded magnets, which is particularly suitable for range extender generator. It includes stator [2] and rotor [3] being provided with exciter magnets [7]. The rotor [3] has at least two rotor poles [4], each is provided with one exciter magnet [7]. In order to increase the magnetic torque limit of the synchronous machine [1]—in each rotor pole [4] at least one, preferably several selective magnetic flux barriers, preferably as substantially radial slots [8] being parallel with the main pole flux is/are provided in the area of the pole shoe.


81. 102301577 CONVERTER FOR SINGLE-PHASE AND THREE-PHASE OPERATION, D.C. VOLTAGE SUPPLY AND BATTERY CHARGER CN - 28.12.2011

Int.Class H02M 7/219 Appl.No 201080005790.2 Applicant Brusa Elektronik AG Inventor Krause Axel

Provided is a converter [1a.1c] for single-phase and three-phase operation which comprises a three-phase rectifier to which three coils (L_a, L_b, L_c) are connected on the mains side is described. A first coil (L_a) is provided on the mains side with a switch (S) which connects the first coil (L_a) to the mains during three-phase operation and connects it via a capacitor (C) either to the lower end (FP) of the rectifier or on the mains side to another coil (L_b, L_c) during single-phase operation. In addition, a d.c. voltage supply and a battery charger [5a.5c] which comprise the converter [1a.1c] according to the invention are described.

82. 102018101231 STATOR FÜR EINE ELEKTRISCHE MASCHINE UND VERFAHREN ZU DESSEN HERSTELLUNG DE - 25.07.2019

Int.Class H02K 3/50 Appl.No 102018101231 Applicant BRUSA Elektronik AG Inventor Oeschger Daniel

Die Erfindung betrifft einen Stator für eine elektrische Maschine, insbesondere für einen Elektromotor und/oder einen Generator, wobei der Stator ein Statorjoch [100] aufweist, das entlang seines innenliegenden Umfangsrandes sich parallel entlang einer Längsachse LA des Statorjochs [100] erstreckende Längsnuten [101] aufweist, die jeweils von Statorzähnen [102] separiert sind, in die Längsnuten [101] jeweils eine oder mehrere Formlitzen [106] eingebracht sind, die jeweils aus mehreren jeweils elektrisch isolierten Einzeldrähten bestehen, jeweilige Enden [112a,b] der Formlitzen [106] die Längsnuten [101] des Statorjochs [100] an einem jeweiligen Statorjochkopf [110a,b] verlassen und das Statorjoch [100] entlang der Längsachse LA jeweils um eine vorgegebene Länge L überragen, die Einzeldrähte jeder Formlitze [106] an deren Enden [112a,b] elektrisch leitend verbunden sind, und zumindest ein erstes Ende [112a] einer einen der Statorjochköpfe [110a,b] überragenden ersten Formlitze [106] mit einem zweiten Ende [112b] einer anderen denselben Statorjochkopf [110a,b] überragenden, aus einer anderen Längsnut [104] kommenden zweiten Formlitze [106] zur Ausbildung einer elektrischen Windung über ein separates elektrisch leitendes Verbindungselement [114] miteinander elektrisch leitend gefügt sind, wobei sich das erste Ende [112c] und das zweite Ende [112d] mechanisch nicht berühren. 

83. 2868516 METHOD FOR CONTROLLING THE ENERGY TRANSFER BETWEEN TWO RESONATORS OF A SYSTEM FOR CONTACTLESS ENERGY TRANSMISSION, AND RESONATOR DEVICE EP - 06.05.2015

Int.Class B60L 11/18 Appl.No 13190993 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

84. 2911264 CHARGING CIRCUIT FOR A BATTERY WITH ELEVATED OUTPUT VOLTAGE EP - 26.08.2015

Int.Class H02J 5/00 Appl.No 14156254 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Die Erfindung betrifft eine Ladeschaltung [1, 1a..1c] für einen Akkumulator (A) mit einem Transformator (T), einem an einer Sekundärspule (L₂) des Transformators (T) über erste gegenüberliegende Brückenpunkte (P₁₁, P₂₁) angeschlossenen Brückengleichrichter (B) und einem mit zweiten gegenüberliegenden Brückenpunkten (P₁₂, P₂₂) des Brückengleichrichters (B) verbundenen Ladeausgang (a). Zwischen einen ersten Brückenpunkt (P₁₁) und einen zweiten Brückenpunkt (P₁₂) ist ein erster Kondensator (C₁) geschaltet. Weiterhin ist zwischen diesen ersten Brückenpunkt (P₁₁) und dem anderen zweiten Brückenpunkt (P₂₂) ein zweiter Kondensator (C₂) geschaltet. Darüber hinaus betrifft die Erfindung ein Mobilteil (MT) für eine kontaktlose Ladeschaltung, ein Kraftfahrzeug [2] mit einem Mobilteil (MT), ein Kraftfahrzeug-Ladesystem [3] sowie eine Verwendung der Ladeschaltung [1, 1a..1c].

85. 3024130 DC/DC CONVERTER EP - 25.05.2016

Int.Class H02M 3/158 Appl.No 14003931 Applicant BRUSA ELEKTRONIK AG Inventor SCHIEDERMEIER MAX

Die Erfindung bezieht sich auf eine mehrphasige DC/DC-Wandlereinrichtung [10] mit einem Gleichspannungseingang [3], einem Gleichspannungsausgang [4] und parallel geschalteten Gleichspannungswandlern [1, 2, 2'], die jeweils zumindest ein von einer Steuereinrichtung [16] gesteuertes Schaltelement [11, 12, 13, 14; 21, 22, 21', 22'] aufweisen, dadurch gekennzeichnet, dass von den parallel geschalteten Gleichspannungswandlern [1, 2, 2'] zumindest ein erster Gleichspannungswandler [1] in Richtung vom Gleichspannungseingang [3] zum Gleichspannungsausgang [4] hin als Tief- und Hochsetzsteller und

zumindest ein zweiter Gleichspannungswandler [2, 2'] in Richtung vom Gleichspannungseingang [3] zum Gleichspannungsausgang [4] hin als Hochsetzsteller ausgebildet ist, wobei sich die Topologie des zumindest einen ersten Gleichspannungswandlers [1] von der Topologie des zumindest einen zweiten Gleichspannungswandlers [2, 2'] unterscheidet, und dass die DC/DC-Wandlereinrichtung [10] zumindest eine Schalteinrichtung [5] umfasst.

86. 112015004658 DC/DC-WANDLEREINRICHTUNG

DE - 20.07.2017

Int.Class H02M 3/158 Appl.No 112015004658 Applicant BRUSA Elektronik AG Inventor Friewald Kai

87. 107251392 DC/DC CONVERSION DEVICE

CN - 13.10.2017


Int.Class H02M 3/158 Appl.No 201580063327.6 Applicant BRUSA ELEKTRONIK AG Inventor SCHIEDERMEIER MAXIMILIAN

The invention relates to a multi-phase DC/DC conversion device [10] comprising a DC voltage inlet [3], a DC voltage outlet [4] and DC voltage converters [1, 2, 2'] connected in parallel, each having at least one switch element [11, 12, 13, 14; 21, 22, 21', 22'] controlled by a control device [18], characterised in that, of the parallel-connected DC voltage converters [1, 2, 2'], at least one first DC voltage converter [1] is formed in the direction from the DC voltage inlet [3] to the DC voltage outlet [4] as a step-down and step-up converter, and at least one second DC voltage converter [2, 2'] is formed in the direction from the DC voltage inlet [3] to the DC voltage outlet [4] as a step-up converter, wherein the topology of the at least one first DC voltage converter [1] differs from the topology of the at least one second DC voltage converter [2, 2'], and in that the DC/DC conversion device [10] comprises at least one switching device [5].

88. 102019116769 BRÜCKENSCHALTKEIS UND LADUNGSPUMPE

DE - 24.12.2019

Int.Class H02M 1/34 Appl.No 102019116769 Applicant BRUSA Elektronik AG Inventor Krause Axel

Die Erfindung betrifft einen Brückenschaltkreis und eine Ladungspumpe. Der vorgeschlagene Brückenschaltkreis, weist auf: einen ersten Kondensator [C_{DC1}], einen zweiten Kondensator [C_{DC2}], einen ersten Schalter [S_{0A}], einen zweiten Schalter [S_{UA}], eine erste Diode [D_{1A}] und eine zweite Diode [D_{2A}], wobei der erste Kondensator [C_{DC1}] und der zweite Kondensator [C_{DC2}] in Reihe geschaltet sind und einen Versorgungsschaltkreis [120] bilden, parallel zum Versorgungsschaltkreis [120] ein erster Halbbrückenschaltkreis [121_A] geschaltet ist, welcher den ersten Schalter [S_{0A}], den zweiten Schalter [S_{UA}], die erste Diode [D_{1A}], die zweite Diode [D_{2A}] und einen ersten resonanten Hauptschaltkreis [104_A] aufweist und wobei der erste Schalter [S_{0A}] und der zweite Schalter [S_{UA}] an einem ersten Brückenpunkt [BP_{0A}] in Reihe geschaltet sind und parallel zum ersten Kondensator [C_{DC1}] angeordnet sind, die erste Diode [D_{1A}] und die zweite Diode [D_{2A}] an einem zweiten Brückenpunkt [BP_{UA}] in Reihe geschaltet sind und parallel zum zweiten Kondensator [C_{DC2}] angeordnet sind, der erster resonanter Hauptschaltkreis [104_A] an dem ersten Brückenpunkt [BP_{0A}] und dem zweiten Brückenpunkt [BP_{UA}] angeschlossen ist, am ersten resonanten Hauptschaltkreis [104_A] ein Entlastungsschaltkreis [102"] in dem zweiten Brückenpunkt [BP_{UA}] angeschlossen ist und der Entlastungsschaltkreis [102"] als ein zweiter Halbbrückenschaltkreis [121_B] aufgebaut ist und so eingerichtet ist, dass er beim Schalten des ersten [S_{0A}] und/oder des zweiten [S_{UA}] Schalters, wenn im Wesentlichen kein Strom [I_{LR}] im Hauptschaltkreis [104] fließt, einen Stromfluss im Brückenpunkt [BP_{0A}] aufrecht erhält. 

89. WO/2016/079603 DC/DC CONVERSION DEVICE

WO - 26.05.2016

Int.Class H02M 3/158 Appl.No PCT/IB2015/054175 Applicant BRUSA ELEKTRONIK AG Inventor SCHIEDERMEIER, Maximilian

The invention relates to a multi-phase DC/DC conversion device [10] comprising a DC voltage inlet [3], a DC voltage outlet [4] and DC voltage converters [1, 2, 2'] connected in parallel, each having at least one switch element [11, 12, 13, 14; 21, 22, 21', 22'] controlled by a control device [18], characterised in that, of the parallel-connected DC voltage converters [1, 2, 2'], at least one first DC voltage converter [1] is formed in the direction from the DC voltage inlet [3] to the DC voltage outlet [4] as a step-down and step-up converter, and at least one second DC voltage converter [2, 2'] is formed in the direction from the DC voltage inlet [3] to the DC voltage outlet [4] as a step-up converter, wherein the topology of the at least one first DC voltage converter [1] differs from the topology of the at least one second DC voltage converter [2, 2'], and in that the DC/DC conversion device [10] comprises at least one switching device [5].

90. WO/2010/086788 CONVERTER FOR SINGLE-PHASE AND THREE-PHASE OPERATION, D.C. VOLTAGE SUPPLY AND BATTERY CHARGER

WO - 05.08.2010

Int.Class H02M 3/335 Appl.No PCT/IB2010/050333 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

A Converter [1a.1c] for single-phase and three-phase Operation which comprises a three-phase rectifier to which three coils [La, Lb, Lc] are connected on the mains side is described. A first coil [La] is provided on the mains side with a switch [S] which connects the first coil [La] to the mains during three-phase Operation and connects it via a capacitor [C] either to the lower end [FP] of the rectifier or on the mains side to another coil [Lb, Lc] during single-phase Operation. In addition, a d.c. voltage supply and a battery charger [5a.5c] which comprise the Converter [1a.1c] according to the invention are described.

91. WO/2011/033397 PERMANENT MAGNET EXCITED SYNCHRONOUS MACHINE WITH EMBEDDED MAGNETS

WO - 24.03.2011

Int.Class H02K 1/27 Appl.No PCT/IB2010/053366 Applicant BRUSA ELEKTRONIK AG Inventor Mathoy, Arno

The invention relates to a permanent magnet excited synchronous machine [1] with embedded magnets, which is particularly suitable for range extender generator. It consists of a stator [2] and rotor [3] being provided with exciter magnets [7]. The rotor [3] has at least two rotor poles [4], each is provided with one exciter magnet [7]. In order to increase the magnetic torque limit of the synchronous machine [1] - in each rotor pole [4] at least one, preferably several selective magnetic flux barriers, preferably as substantially radial slots [8] being parallel with the main pole flux is/are provided in the area of the pole shoe.

92. WO/2019/141722 STATOR FOR AN ELECTRICAL MACHINE AND METHOD FOR PRODUCING SAID STATOR

WO - 25.07.2019

Int.Class H02K 3/28 Appl.No PCT/EP2019/051038 Applicant BRUSA ELEKTRONIK AG Inventor OESCHGER, Daniel

The invention relates to a stator for an electrical machine, in particular for an electric motor and/or a generator, wherein the stator has a stator yoke [100], which has longitudinal grooves [101], which extend along the inner peripheral edge of the stator yoke parallel to a longitudinal axis LA of the stator yoke [100] and which are separated by stator teeth [102], wherein one or more compressed strands [106] are inserted into the longitudinal grooves [101], which compressed strands each consist of a plurality of individual wires, which are each electrically insulated, wherein respective ends [112a,b] of the compressed strands [106] exit the longitudinal grooves [101] of the stator yoke [100] at a stator yoke head [110a,b] in question and each protrude from the stator yoke [100], while extending parallel to the longitudinal axis LA, by a specified length L, wherein the individual wires of each compressed strand [106] are electrically conductively connected at the ends [112a,b] of the compressed strand, and at least one first end [112a] of a first compressed strand [106], which first compressed strand protrudes from one of the stator yoke heads [110a,b], is electrically conductively joined to a second end [112b] of another, second compressed strand [106], which second compressed strand protrudes from the same stator yoke head [110a,b] and comes from another longitudinal groove [104], by means of a separate electrically conductive connecting element [114] in order to form an electrical winding, the first end [112c] and the second end [112d] mechanically not touching each other.

93. WO/2015/125114 CHARGING CIRCUIT FOR A RECHARGEABLE BATTERY WITH AN INCREASED OUTPUT VOLTAGE

WO - 27.08.2015

Int.Class H02J 5/00 Appl.No PCT/IB2015/051295 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

The invention relates to a charging circuit [1, 1a..1e] for a rechargeable battery [A], having a transformer [T], a bridge rectifier [B] connected to a secondary coil [L2] of the transformer [T] via first opposite bridge points [P11, P21], and a charging output [a] connected to second opposite bridge points [P12, P22] of the bridge rectifier [B]. A first capacitor [C1] is connected between a first bridge point [P11] and a second bridge point [P12]. A second capacitor [C2] is also connected between this first bridge point [P11] and the other second bridge point [P22]. The invention also relates to a mobile part [MT] for a contactless charging circuit, to a motor vehicle [2] having a mobile part [MT], to a motor vehicle charging system [3] and to a use of the charging circuit [1, 1a..1e].

94. **112015000898** LADESCHALTUNG FÜR EINEN AKKUMULATOR MIT ERHÖHTER AUSGANGSSPANNUNG

DE - 01.12.2016

Int.Class H02J 5/00 Appl.No 112015000898 Applicant BRUSA Elektronik AG Inventor Krause Axel

95. **WO/2015/063683** METHOD FOR REGULATING THE ENERGY TRANSMITTED BETWEEN RESONATORS OF A SYSTEM FOR CONTACTLESS ENERGY TRANSMISSION, AND RESONATOR ARRANGEMENT

WO - 07.05.2015

Int.Class B60L 11/18 Appl.No PCT/IB2014/065665 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

A method for regulating the energy transmitted between two resonators of a system for contactless energy transmission comprises the step of regulating the transmission power of a transmitter resonator contained in a primary part of the system. Said transmitter resonator is excited to oscillate with constant long excitation pulses from a direct voltage source with approximately constant voltage. The excitation pulses and the frequency thereof are generated depending on the required transmission power.

96. **112014004997** VERFAHREN ZUR REGELUNG DER ZWISCHEN RESONATOREN EINES SYSTEMS ZUR KONTAKTLOSEN ENERGIEÜBERTRAGUNG ÜBERTRAGENEN ENERGIE, SOWIE RESONATORANORDNUNG

DE - 14.07.2016

Int.Class B60L 11/18 Appl.No 112014004997 Applicant BRUSA Elektronik AG Inventor Krause Axel

97. **1020100063025** CURRENT-ENERGIZED SYNCHRONOUS MOTOR, PARTICULARLY FOR VEHICLE DRIVES

KR - 10.06.2010

Int.Class H02K 19/02 Appl.No 1020107003623 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY ARNO

The invention relates to a current-energized synchronous motor [1] which is suitable in particular for vehicle drives. It consists of a stator [2] and a rotor [3] carrying the energizer winding [7], the rotor [3] having at least two rotor poles [4] with one energizer winding [7] each. The essential feature of the invention is that at least one selective magnetic flux barrier, in particular in the form of a radial slot [8] along the main axis [4A] of the rotor pole [4], is provided in each rotor pole [4] for increasing the reluctance moment of the current-energized synchronous motor [1]. COPYRIGHT KIPO WIPO 2010

98. **2195907** CURRENT-ENERGIZED SYNCHRONOUS MOTOR, PARTICULARLY FOR VEHICLE DRIVES

EP - 16.06.2010

Int.Class H02K 1/24 Appl.No 08807465 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY ARNO

The invention relates to a current-energized synchronous motor [1] which is suitable in particular for vehicle drives. It consists of a stator [2] and a rotor [3] carrying the energizer winding [7], the rotor [3] having at least two rotor poles [4] with one energizer winding [7] each. The essential feature of the invention is that at least one selective magnetic flux barrier, in particular in the form of a radial slot [8] along the main axis [4A] of the rotor pole [4], is provided in each rotor pole [4] for increasing the reluctance moment of the current-energized synchronous motor [1].

99. **2188889** ZERO-VOLTAGE SWITCHING POWER CONVERTER

EP - 26.05.2010

Int.Class H02M 7/538 Appl.No 07825047 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

The zero-voltage converter is able to perform at extremely high power levels and bares significant benefits to all levels; system, inverter and circuitry level. Power losses are avoided by using a new developed resonant topology. EMI problems are reduced by power module integrated capacitors as well as smart selection of the terminal technology and under full utilization of the analog components and their potentials. The power module developed for this specific application is designed under a maxim of gaining highest power density as well as lowest stray inductances. High switching frequencies enable even special electro motors with extremely low leakage inductance to perform well. This is in particular beneficial for ultra high speed drives or motors with a high pole pair number. The mechanical concept of the inverter can specifically be adopted to the referring vehicle and to its available installation space. Thus, also [hybrid] electrical vehicles can be designed based on such highly innovative conception.

100. **20100301831** ZERO-VOLTAGE SWITCHING POWER CONVERTER

US - 02.12.2010

Int.Class H02M 7/5387 Appl.No 12675782 Applicant BRUSA Elektronik AG Inventor Krause Axel

The zero-voltage converter is able to perform at extremely high power levels and bares significant benefits to all levels; system, inverter and circuitry level. Power losses are avoided by using a new developed resonant topology. EMI problems are reduced by power module integrated capacitors as well as smart selection of the terminal technology and under full utilization of the analog components and their potentials. The power module developed for this specific application is designed under a maxim of gaining highest power density as well as lowest stray inductances. High switching frequencies enable even special electro motors with extremely low leakage inductance to perform well. This is in particular beneficial for ultra high speed drives or motors with a high pole pair number. The mechanical concept of the inverter can specifically be adopted to the referring vehicle and to its available installation space. Thus, also [hybrid] electrical vehicles can be designed based on such highly innovative conception.

101. **20100308686** CURRENT-ENERGIZED SYNCHRONOUS MOTOR, PARTICULARLY FOR VEHICLE DRIVES

US - 09.12.2010

Int.Class H02K 1/24 Appl.No 12675780 Applicant BRUSA Elektronik AG Inventor Mathoy Arno

A current-energized synchronous motor [1] suitable in particular for vehicle drives. It includes a stator [2] and a rotor [3] carrying the energizer winding [7]. The rotor [3] has at least two rotor poles [4] with one energizer winding [7] each. The rotor includes at least one selective magnetic flux barrier, in particular in the form of a radial slot [8] along the main axis [4A] of the rotor pole [4]. This flux barrier is provided in each rotor pole [4] for increasing the reluctance moment of the current-energized synchronous motor [1].

102. **20100091457** COOLING SYSTEM FOR ELECTRONIC STRUCTURAL UNITS

US - 15.04.2010

Int.Class H05K 7/20 Appl.No 12642756 Applicant BRUSA Elektronik AG Inventor Krause Axel

Cooling systems [1] suitable for cooling an electronic unit [2] or assembly. The cooling system is provided with a cooling channel [6]. An electronic unit [2] rests over a heat-conducting cooler wall [7]. A coolant guide apparatus [11] is provided in the cooling channel [6] and has insert conduit elements [13] for guiding the coolant onto the cooler wall indentations [12]. The end of each insert conduit [13] opening to the cooling channel [6] may be provided with an

inclined entry surface **[19]** and an inlet opening **[20]** towards the inner longitudinal channel **[14]**. A plurality of such coolant guides **[11]** may be arranged in series so that, for example, the same cooling medium flows through a plurality of semiconductor modules in succession.

103. 2548259 BALANCING THE STATES OF CHARGE OF CHARGE ACCUMULATORS

EP - 23.01.2013

Int.Class H01M 10/44 Appl.No 11713061 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Electrical systems for balancing charging or loading of parallel-arrayed charge accumulators [1, 2], particularly batteries, storage batteries, etc. The systems include circuitry used to supply voltage to a load [7] or to electrically charge the accumulators [1, 2], or both, via connections [3a, 3b, 4a, 4b] at the charge accumulator side and interface connections at the load or charger side. An electrical circuit [10] has at least one DC converter [11] that converts the differential voltage between the matching polarity connections [3a, 4a] at the charge accumulator side, or converts a voltage derived from this differential voltage. Voltage supply devices for loads, or charging devices for charge accumulators, may include circuits of this type.

104. 2609610 ELECTRICAL FUSE

EP - 03.07.2013

Int.Class H01H 85/00 Appl.No 11754746 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

The invention relates to an electrical fuse [1] having a fuse housing [2] and at least two electrical contacts [3] accessible from outside of the fuse housing [2], which are 5 connected to each other inside the fuse housing [2] via a fusible conductor [4]. To provide better thermal dissipation of the heat that is generated, a wall of the fuse housing [2] externally forms a fixing surface [12] for attaching the fuse [1].

105. 2625938 POWER ELECTRONIC VEHICLE COMPONENT

EP - 14.08.2013

Int.Class H05K 7/14 Appl.No 11768126 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A power electronic vehicle component, such as an on-board charging device, a converter or a voltage converter, for electric or hybrid vehicles. The power electronic vehicle component includes a housing [1], in which at least one power module [4] and at least one printed circuit board [2, 3] electrically communicating with the power module [4] are accommodated. The printed circuit board [2, 3] is electrically connected to the power module [4] via at least one plug connection [5], which is formed by connector parts [5a, 5b] of male and female type that can be pressed into one another, wherein one of the connector parts [5a] sits directly on the printed circuit board [2, 3] and the other connector part [5b] is fixed to the housing [1], in which the power electronics component [8] and the printed circuit board [2, 3] are accommodated, and connected to the power electronics component [8] via a connection cable [11].

106. 101785168 CURRENT-ENERGIZED SYNCHRONOUS MOTOR, PARTICULARLY FOR VEHICLE DRIVES

CN - 21.07.2010

Int.Class H02K 1/24 Appl.No 200880104158.6 Applicant Brusa Elektronik AG Inventor Mathoy Arno

The invention relates to a current-energized synchronous motor [1] which is suitable in particular for vehicle drives. It consists of a stator [2] and a rotor [3] carrying the energizer winding [7], the rotor [3] having at least two rotor poles [4] with one energizer winding [7] each. The essential feature of the invention is that at least one selective magnetic flux barrier, in particular in the form of a radial slot [8] along the main axis [4A] of the rotor pole [4], is provided in each rotor pole [4] for increasing the reluctance moment of the current-energized synchronous motor [1].

107. 20130193903 SYNCHRONOUS MACHINE WITH SWITCHING ELEMENT IN THE EXCITATION CIRCUIT

US - 01.08.2013

Int.Class H02P 1/46 Appl.No 13821576 Applicant Illiano Enzo Inventor Illiano Enzo

A separately excited synchronous machine [1b1k] with an excitation circuit on the side of the rotor includes an excitation winding [3] and a power supply for the excitation winding [3] as well as a switching element [8a, 8e] for connecting the power supply to the excitation winding [3]. Further, the synchronous machine [1b1k] comprises a first stator-side primary winding [5a5f] and a first rotor-side secondary winding [6a6f]. Moreover, the synchronous machine [1b1k] may comprise a) a tap of the first rotor-side secondary winding [6d] connected to a control element [9a, 9e] of the switching element [8a, 8e] or b) a second rotor-side secondary winding [14d], which is coupled to the first stator-side primary winding [5a5f] and connected to a control element [9a, 9e] of the switching element [8a, 8e].

108. 103609015 SYNCHRONOUS MACHINE WITH SWITCHING ELEMENT IN THE EXCITATION CIRCUIT

CN - 26.02.2014

Int.Class H02P 9/12 Appl.No 201280010896.0 Applicant BRUSA ELEKTRONIK AG Inventor ILLIANO, ENZO

A separately excited synchronous machine [1b1k] with an excitation circuit on the side of the rotor includes an excitation winding [3] and a power supply for the excitation winding [3] as well as a switching element [8a, 8e] for connecting the power supply to the excitation winding [3]. Further, the synchronous machine [1b1k] comprises a first stator-side primary winding [5a5f] and a first rotor-side secondary winding [6a6f]. Moreover, the synchronous machine [1b1k] may comprise a) a tap of the first rotor-side secondary winding [6d] connected to a control element [9a, 9e] of the switching element [8a, 8e] or b) a second rotor-side secondary winding [14d], which is coupled to the first stator-side primary winding [5a5f] and connected to a control element [9a, 9e] of the switching element [8a, 8e].

109. 2684288 SYNCHRONOUS MACHINE COMPRISING AN EXCITATION CIRCUIT WITH A SWITCHING ELEMENT

EP - 15.01.2014

Int.Class H02P 9/12 Appl.No 12708964 Applicant BRUSA ELEKTRONIK AG Inventor ILLIANO ENZO

A separately excited synchronous machine [1b1k] with an excitation circuit on the side of the rotor includes an excitation winding [3] and a power supply for the excitation winding [3] as well as a switching element [8a, 8e] for connecting the power supply to the excitation winding [3]. Further, the synchronous machine [1b1k] comprises a first stator-side primary winding [5a5f] and a first rotor-side secondary winding [6a6f]. Moreover, the synchronous machine [1b1k] may comprise a) a tap of the first rotor-side secondary winding [6d] connected to a control element [9a, 9e] of the switching element [8a, 8e] or b) a second rotor-side secondary winding [14d], which is coupled to the first stator-side primary winding [5a5f] and connected to a control element [9a, 9e] of the switching element [8a, 8e].

110. 20130293341 ELECTRICAL FUSE

US - 07.11.2013

Int.Class H01H 85/02 Appl.No 13816460 Applicant Krause Axel Inventor Krause Axel

The invention relates to an electrical fuse [1] having a fuse housing [2] and at least two electrical contacts [3] accessible from outside of the fuse housing [2], which are 5 connected to each other inside the fuse housing [2] via a fusible conductor [4]. To provide better thermal dissipation of the heat that is generated, a wall of the fuse housing [2] externally forms a fixing surface [12] for attaching the fuse [1].

111. 102007040750 STROMERREGTER SYNCHRONMOTOR INSBESONDERE FÜR FAHRZEUGANTRIEBE

DE - 05.03.2009

Int.Class H02K 19/06 Appl.No 102007040750 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY ARNO

Die Erfindung betrifft einen stromerregten Synchronmotor [1], der insbesondere für Fahrzeugantriebe geeignet ist. Er besteht aus einem Stator [2] und einem die Erregerwicklung [7] tragenden Rotor [3], wobei der Rotor [3] mindestens zwei Rotorpole [4] mit je einer Erregerwicklung [7] aufweist. Das Wesen der Erfindung wird darin gesehen, daß zur Erhöhung des Reluktanzmoments des stromerregten Synchronmotors [1] in jedem Rotorpol [4] mindestens eine selektive Magnet-Flußbarriere, insbesondere in Form eines radialen Schlitzes [8] längs der Hauptachse [4A] des Rotorpols [4] vorgesehen ist.

112. 2865076 STATOR

EP - 29.04.2015

Int.Class H02K 1/16 Appl.No 13765424 Applicant BRUSA ELEKTRONIK AG Inventor STÖCK MARTIN

Stators [1] for electrical machines, in particular a rotating field machine, such as a motor or generator, in particular for an electric vehicle, wherein a stator [1] has slots separated by stator teeth, into which shaped bars [3, 4], formed from a plurality of individual wires [10], are deployed, characterised in that in each case the two sidewalls of a stator tooth bounding adjacent slots in the region of the shaped bars [3, 4] run essentially parallel to one another.

113. 104604095 STATOR

CN - 06.05.2015

Int.Class H02K 1/16 Appl.No 201380032902.7 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY ARNO

Stators [1] for electrical machines, in particular a rotating field machine, such as a motor or generator, in particular for an electric vehicle, wherein a stator [1] has slots separated by stator teeth, into which shaped bars [3, 4], formed from a plurality of individual wires [10], are deployed, characterised in that in each case the two sidewalls of a stator tooth bounding adjacent slots in the region of the shaped bars [3, 4] run essentially parallel to one another.

114. 20150102699 STATOR

US - 16.04.2015

Int.Class H02K 3/04 Appl.No 14404501 Applicant BRUSA Elektronik AG Inventor Arno Mathoy

A stator having slots separated by stator teeth, into which shaped bars, formed from a plurality of individual wires, are deployed, wherein in each case sidewalls of a stator tooth bounding adjacent slots in a region of the shaped bars run essentially parallel to one another.

115. 2949500 DRIVE CIRCUIT AND FUEL CELL COMPRESSOR ENERGY SUPPLY AND REGULATION UNIT

EP - 02.12.2015

Int.Class B60L 1/00 Appl.No 14169996 Applicant BRUSA ELEKTRONIK AG Inventor MATT PHILIPP

Die Erfindung betrifft eine Energieversorgungs- und Regelungseinheit [1] zur Versorgung eines Antriebskreises, insbesondere eines Traktionsantriebskreises, und eines Brennstoffzellenkompressors über gesonderte Schnittstellen [6, 7], umfassend: - einen DC/DC-Wandler [10] mit einer Brennstoffzellen-Eingangsschnittstelle [11], - einen Wechselrichter [20], - eine Antriebskreis-Schnittstelle [7] zum Anschluss an einen Antriebskreis [36], und - eine Kompressormotor-Schnittstelle [6] zum Anschluss an einen Kompressormotor [3] eines Brennstoffzellenkompressors, wobei der Ausgang [12] des DC/DC-Wandlers [10] mit dem Eingang [21] des Wechselrichters [20] und mit der Antriebskreis-Schnittstelle [7] verbunden ist, und wobei der Ausgang [22] des Wechselrichters [20] mit der Kompressormotor-Schnittstelle [6] verbunden ist, und wobei der DC/DC-Wandler [10] und der Wechselrichter [20] in einem gemeinsamen Gehäuse [9] untergebracht sind.

116. 3103674 POSITIONING SYSTEM, METHOD FOR POSITIONING AND SYSTEM FOR INDUCTIVE ENERGY TRANSMISSION WITH POSITIONING SYSTEM

EP - 14.12.2016

Int.Class B60L 11/18 Appl.No 15171921 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Ein System zur gegenseitigen relativen Positionsbestimmung von zwei Übertragerelementen einer Anordnung zur induktiven Energieübertragung umfasst zumindest ein erstes Übertragerelement [S] mit einer vorzugsweise ebenen ersten Spule [1] und zumindest ein zweites Übertragerelement [R] mit einer vorzugsweise ebenen zweiten Spule [2]. Das erste Übertragerelement [S] kann eine magnetische Abschirmung [3] für die erste Spule [1] aufweisen. Mehrere Messspulen [4] sind mit einer Auswerteeinheit [5] verbunden, in welcher in den Messspulen [4] induzierte Ströme bzw. Spannungen ausgewertet und ein für den Abstand von erster Spule [1] und zweiter Spule [2] charakteristisches Signal generiert wird. Am ersten Übertragerelement [S] sind zumindest vier Messspulen [4] aufgebracht, deren Achsen parallel zur Ebene der ersten Spule [1] liegen. Jeweils zwei Messspulen [4] sind parallel zueinander und auf einander entgegengesetzten Seiten der Mitte der ersten Spule [1] angeordnet. Dabei schliessen die Achsen einer Gruppe von parallelen Messspulen [4] einen Winkel ungleich Null mit den Achsen der zweiten Gruppe von parallelen Messspulen [4] ein.

117. 3005526 CIRCUIT ASSEMBLY FOR THE PRIMARY PART OF A SYSTEM FOR CONTACTLESS ENERGY TRANSFER, AND TRANSFORMER ELEMENT

EP - 13.04.2016

Int.Class H02J 7/02 Appl.No 14728347 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A transfer element is provided as primary part for a system for contactless energy transfer to a secondary part. Said transfer element comprises at least one primary coil [7] and an energy supply and control electronics [2 to 15] for the primary coil [7]. The circuit arrangement for the primary part is accommodated in a common housing [11]. Preferably, each primary coil [7] is also accommodated in the common housing [11].

118. 2808976 CIRCUIT ASSEMBLY FOR THE PRIMARY PART OF A SYSTEM FOR CONTACTLESS ENERGY TRANSFER, AND TRANSFORMER ELEMENT

EP - 03.12.2014

Int.Class H02J 7/02 Appl.No 13169729 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Ein Übertragerelement ist als Primärteil für ein System zur kontaktlosen Energieübertragung auf ein Sekundärteil vorgesehen. Es umfasst zumindest eine Primärspule [7] und eine Energieversorgung und Ansteuerlektronik [2 bis 15] für die Primärspule [7]. Die Schaltungsanordnung für den Primärteil ist in einem gemeinsamen Gehäuse [11] untergebracht. Vorzugsweise ist auch jede Primärspule [7] im gemeinsamen Gehäuse [11] untergebracht.

119. 3435529 ANTI-JAMMER FOR A DC CIRCUIT

EP - 30.01.2019

Int.Class H02M 1/14 Appl.No 18185434 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Die Erfindung betrifft eine Entstörvorrichtung für einen Gleichstromkreis, eine Fahrzeugkomponente, ein Hochspannungs-Zwischenkreis und ein Fahrzeug. Die Entstörvorrichtung [300, 300a] für einen Gleichstromkreis [100, 100'], welcher zwei Leiter [103', 103c, 104', 104c] aufweist, zeichnet sich dadurch aus, dass die Entstörvorrichtung [300, 300a] umfasst: einen ersten Anschluss [VCc], zum Verbinden der Entstörvorrichtung [300, 300a] mit einem ersten Leiter [103', 103c] des Gleichstromkreises [100, 100']; einen zweiten Anschluss [Mc], zum Verbinden der Entstörvorrichtung [300, 300a] mit einem zweiten Leiter [104', 104c] des Gleichstromkreises [100, 100']; einen Sensor [300', 300a'], wobei der Sensor: berührungslos mit dem Gleichstromkreis [100, 100'] koppelbar ist und dazu eingerichtet ist, ein Übersteigen eines vorgebbaren Grenzwertes einer überlagerten Wechselfspannung in dem ersten Leiter [103', 103c] des Gleichstromkreises zu erkennen; und dazu eingerichtet ist, durch Einprägen eines Stromes in den ersten Anschluss [VCc] die Wechselfspannung im ersten Leiter des Gleichstromkreises im Wesentlichen auf den vorgebbaren Grenzwert zu verringern.

120. WO/2012/123847 SYNCHRONOUS MACHINE COMPRISING AN EXCITATION CIRCUIT WITH A SWITCHING ELEMENT WO - 20.09.2012Int.Class H02P 9/12 Appl.No PCT/IB2012/050987 Applicant BRUSA ELEKTRONIK AG Inventor ILLIANO, Enzo

A separately excited synchronous machine [1b1k] with an excitation circuit on the side of the rotor includes an excitation winding [3] and a power supply for the excitation winding [3] as well as a switching element [8a, 8e] for connecting the power supply to the excitation winding [3]. Further, the synchronous machine [1b1k] comprises a first stator-side primary winding [5a5f] and a first rotor-side secondary winding [6a6f]. Moreover, the synchronous machine [1b1k] may comprise a) a tap of the first rotor-side secondary winding [6d] connected to a control element [9a, 9e] of the switching element [8a, 8e] or b) a second rotor-side secondary winding [14d], which is coupled to the first stator-side primary winding [5a5f] and connected to a control element [9a, 9e] of the switching element [8a, 8e].

121. WO/2012/025853 ELECTRICAL FUSE WO - 01.03.2012Int.Class H01H 85/00 Appl.No PCT/IB2011/053620 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

The invention relates to an electrical fuse [1] having a fuse housing [2] and at least two electrical contacts [3] accessible from outside of the fuse housing [2], which are 5 connected to each other inside the fuse housing [2] via a fusible conductor [4]. To provide better thermal dissipation of the heat that is generated, a wall of the fuse housing [2] externally forms a fixing surface [12] for attaching the fuse [1].

122. WO/2011/114247 BALANCING THE STATES OF CHARGE OF CHARGE ACCUMULATORS WO - 22.09.2011Int.Class H01M 10/44 Appl.No PCT/IB2011/050848 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

Electrical systems for balancing charging or loading of parallel-arrayed charge accumulators [1, 2], particularly batteries, storage batteries, etc. The systems include circuitry used to supply voltage to a load [7] or to electrically charge the accumulators [1, 2], or both, via connections [3a, 3b, 4a, 4b] at the charge accumulator side and interface connections at the load or charger side. An electrical circuit [10] has at least one DC converter [1.1] that converts the differential voltage between the matching polarity connections [3a, 4a] at the charge accumulator side, or converts a voltage derived from this differential voltage. Voltage supply devices for loads, or charging devices for charge accumulators, may include circuits of this type.

123. WO/2009/027938 CURRENT-ENERGIZED SYNCHRONOUS MOTOR, PARTICULARLY FOR VEHICLE DRIVES WO - 05.03.2009Int.Class H02K 1/24 Appl.No PCT/IB2008/053462 Applicant BRUSA Elektronik AG Inventor MATHOY, Arno

The invention relates to a current-energized synchronous motor [1] which is suitable in particular for vehicle drives. It consists of a stator [2] and a rotor [3] carrying the energizer winding [7], the rotor [3] having at least two rotor poles [4] with one energizer winding [7] each. The essential feature of the invention is that at least one selective magnetic flux barrier, in particular in the form of a radial slot [8] along the main axis [4A] of the rotor pole [4], is provided in each rotor pole [4] for increasing the reluctance moment of the current-energized synchronous motor [1].

124. WO/2009/027758 ZERO-VOLTAGE SWITCHING POWER CONVERTER WO - 05.03.2009Int.Class H02M 7/538 Appl.No PCT/IB2007/002516 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

The zero-voltage converter is able to perform at extremely high power levels and bares significant benefits to all levels; system, inverter and circuitry level. Power losses are avoided by using a new developed resonant topology. EMI problems are reduced by power module integrated capacitors as well as smart selection of the terminal technology and under full utilization of the analog components and their potentials. The power module developed for this specific application is designed under a maxim of gaining highest power density as well as lowest stray inductances. High switching frequencies enable even special electro motors with extremely low leakage inductance to perform well. This is in particular beneficial for ultra high speed drives or motors with a high pole pair number. The mechanical concept of the inverter can specifically be adopted to the referring vehicle and to its available installation space. Thus, also [hybrid] electrical vehicles can be designed based on such highly innovative conception.

125. WO/2012/046153 POWER ELECTRONIC VEHICLE COMPONENT WO - 12.04.2012Int.Class H05K 7/14 Appl.No PCT/IB2011/053894 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

A power electronic vehicle component, such as an on-board charging device, a converter or a voltage converter, for electric or hybrid vehicles. The power electronic vehicle component includes a housing [1], in which at least one power module [4] and at least one printed circuit board [2, 3] electrically communicating with the power module [4] are accommodated. The printed circuit board [2, 3] is electrically connected to the power module [4] via at least one plug connection [5], which is formed by connector parts [5a, 5b] of male and female type that can be pressed into one another, wherein one of the connector parts [5a] sits directly on the printed circuit board [2, 3] and the other connector part [5b] is fixed to the housing [1], in which the power electronics component [8] and the printed circuit board [2, 3] are accommodated, and connected to the power electronics component [8] via a connection cable [11].

126. WO/2013/190514 STATOR WO - 27.12.2013Int.Class H02K 1/16 Appl.No PCT/IB2013/055107 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY, Arno

Stators [1] for electrical machines, in particular a rotating field machine, such as a motor or generator, in particular for an electric vehicle, wherein a stator [1] has slots separated by stator teeth, into which shaped bars [3, 4], formed from a plurality of individual wires [10], are deployed, characterised in that in each case the two sidewalls of a stator tooth bounding adjacent slots in the region of the shaped bars [3, 4] run essentially parallel to one another.

127. WO/2020/002240 PRIMARY CIRCUIT DEVICE, SECONDARY CIRCUIT DEVICE AND SYSTEM FOR INDUCTIVE CHARGING WO - 02.01.2020Int.Class B60L 53/12 Appl.No PCT/EP2019/066675 Applicant BRUSA ELEKTRONIK AG Inventor ERLER, Martin

The invention relates to a secondary circuit device [104'] comprising a secondary coil [L2] for transmitting and/or receiving magnetic energy of a magnetic field [106] and for converting the magnetic energy into electrical energy, a rectifier unit [204] for rectifying the electrical energy, and a secondary-side detection unit [401], wherein: the secondary coil [L1] is connected to the rectifier unit [204] via an energy conducting unit [402']; the energy conducting unit [402'] is designed for transmitting electrical active energy and an electrical reactive energy; the energy conducting unit [402'] is connected to an inlet [403] of the rectifier unit [204]; the rectifier unit [204] has an outlet [404, 220] for providing the electrical active energy as voltage and/or current; the secondary-side detection unit [401] is connected to the inlet [403] and/or the outlet [404] of the rectifier unit [401], in order to detect an over-voltage at the inlet [403] and/or the outlet [404] of the rectifier unit [401] and/or an external magnetic field; and, when the over-voltage is detected at the inlet [403] and/or the outlet [404] of the rectifier unit [204], the secondary-side detection unit [401] is designed such that it influences the energy conducting unit [402'] and/or the magnetic field [106] in order to limit the transmission of the electrical active energy.

128. WO/2014/199255 CIRCUIT ARRANGEMENT FOR THE PRIMARY PART OF A SYSTEM FOR CONTACTLESS ENERGY TRANSFER, AND TRANSFER ELEMENT WO - 18.12.2014Int.Class H02J 7/02 Appl.No PCT/IB2014/061652 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

A transfer element is provided as primary part for a system for contactless energy transfer to a secondary part. Said transfer element comprises at least one primary coil [7] and an energy supply and control electronics [2 to 15] for the primary coil [7]. The circuit arrangement for the primary part is accommodated in a common housing [11]. Preferably, each primary coil [7] is also accommodated in the common housing [11].

129. 2385617 DC/DC CONVERTER WITH CONTROL

EP - 09.11.2011

Int.Class H02M 3/158 **Appl.No** 10162157 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

Es wird eine Steuerung [2] und ein Verfahren für einen Gleichstromsteller [1] angegeben, wobei der Gleichstromsteller [1] einen Eingang [E], einen Ausgang [A], einen Masseanschluss [GND] sowie zumindest eine Halbbrücke umfasst. Die Halbbrücke umfasst zwei in Serie geschaltete Schaltglieder (TR1..TR4) und eine mit deren Verbindungspunkt verbundene Induktivität [L1,L2]. Erfindungsgemäss ist die Steuerung [2] dazu vorbereitet, den Strom [IL1,IL2] durch die Induktivität [L1,L2] zu messen und das masseseitig/eingangsseitig gelegene Schaltglied (TR2,TR4) / (TR1,TR2) auszuschalten, wenn der Strom einen gewissen Betragswert überschreitet. Schliesslich wird auch ein mit der erfindungsgemässen Steuerung [2] verbundener Gleichstromsteller [1] angegeben.

130. 2385604 METHOD AND CELL MONITORING UNIT FOR MONITORING A BATTERY, CENTRAL MONITORING UNIT AND BATTERY

EP - 09.11.2011

Int.Class H02J 7/00 **Appl.No** 10162353 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

Es wird ein Verfahren zur Überwachung eines Akkumulators [1] mit mehreren Zellen [2, 2a..2n] angegeben, bei dem ein Parameter einer Zelle [2, 2a..2n] gemessen und an eine zentrale Überwachungseinheit [4] übermittelt wird. Erfindungsgemäss erfolgt die Übermittlung des Messwerts mit Hilfe eines pulsweitenmodulierten Signals. Weiterhin werden eine erfindungsgemässe Zellüberwachungseinheit [3, 3a..3n], eine erfindungsgemässe zentrale Überwachungseinheit [4] sowie ein erfindungsgemässer Akkumulator [1] zur Durchführung des erfindungsgemässen Verfahrens angegeben.

131. 2489990 DISPLAY DEVICE FOR AN ELECTRIC VEHICLE

EP - 22.08.2012

Int.Class G01D 7/08 **Appl.No** 11154564 **Applicant** BRUSA ELEKTRONIK AG **Inventor** BRUSA JOSEF

Die Erfindung betrifft eine Anzeigevorrichtung für ein Elektrofahrzeug [19], umfassend: - ein Anzeigefeld [3] - eine Verarbeitungseinrichtung [12] zur Ansteuerung des Anzeigefeldes [3], wobei die Verarbeitungseinrichtung [12] ausgebildet ist, um den aktuellen Ladezustand der Batterie zu ermitteln und dem Anzeigefeld [3] bereitzustellen, wobei der aktuelle Ladezustand auf dem Anzeigefeld [3] durch ein erstes graphisches Anzeigeelement [1] darstellbar ist. Für ein intuitives Erfassen der Informationen ist die Verarbeitungseinrichtung [12] ausgebildet, um in Abhängigkeit mindestens eines Fahrparameters, mindestens einen, zukünftig zu erwartenden Ladezustand zu ermitteln und dem Anzeigefeld [3] zur visuellen Darstellung bereitzustellen, und ist der zukünftige Ladezustand auf dem Anzeigefeld [3] als zweites graphisches Element [2] darstellbar, wobei die Positions-, Ausrichtungs-, Form- oder Größenkoordinaten des ersten graphischen Elementes [1] und des zweiten graphischen Elementes [2] auf dem Anzeigefeld [3] derart relativ zueinander festgelegt sind, dass das zweite graphische Element [2] jene Position, Ausrichtung, Form oder Grösse des ersten graphischen Elementes [1], die dem zukünftigen Ladezustand entspricht, anzeigt oder zumindest andeutet.

132. 20130106429

US - 02.05.2013

Int.Class G01R 31/36 **Appl.No** 13641782 **Applicant** Krause Axel **Inventor** Krause Axel

133. 20130038303 CONTROLLER AND A METHOD FOR A DC CONVERTER, AND ALSO A DC CONVERTER

US - 14.02.2013

Int.Class H02M 7/5387 **Appl.No** 13643090 **Applicant** Krause Axel **Inventor** Krause Axel

A controller [2] and a method for a DC converter [1], wherein the DC converter [1] comprises an input [E], an output [A], a connection to ground [GND], and also at least two half-bridges with two switching elements each (TR1 . . . TR4) connected in series and an inductance [L1, L2] each connected with the point connecting the two switching elements. In accordance with the invention the controller [2] is equipped to measure the current [IL1, IL2] through the inductances [L1, L2], and controls the switching elements (TR2, TR4)/(TR1, TR2) positions on the ground side/input side always with negative/positive current through the inductance [L1, L2] into an off-state. Finally a DC converter [1] connected with the controller [2] is also specified.

134. 2567453 A CONTROLLER AND A METHOD FOR A DC CONVERTER, AND ALSO A DC CONVERTER

EP - 13.03.2013

Int.Class H02M 3/158 **Appl.No** 11723676 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

A controller [2] and a method for a DC converter [1], wherein the DC converter [1] comprises an input [E], an output [A], a connection to ground [GND], and also at least two half-bridges with two switching elements each (TR1..TR4) connected in series and an inductance [L1, L2] each connected with the point connecting the two switching elements. In accordance with the invention the controller [2] is equipped to measure the current [IL1, IL2] through the inductances [L1, L2], and controls the switching elements (TR2, TR4)/(TR1, TR2) positions on the ground side/input side always with negative/positive current through the inductance [L1, L2] into an off-state. Finally a DC converter [1] connected with the controller [2] is also specified.

135. 2567444 METHOD AND CELL MONITORING UNIT FOR MONITORING AN ACCUMULATOR; CENTRAL MONITORING UNIT AND ACCUMULATOR

EP - 13.03.2013

Int.Class H02J 7/00 **Appl.No** 11722568 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

A method for monitoring a charge accumulator [1] with several cells [2, 2a..2n], wherein a parameter of a cell [2, 2a..2n] is measured and transmitted to a central monitoring unit [4] by means of a pulse-width modulated signal. The pulse-width modulated signals emanating from the individual cells [2, 2a..2n] are synchronously transmitted and summed. Furthermore, a cell monitoring unit [3, 3a..3n] according to the invention, a central monitoring unit [4] according to the invention and an accumulator [1] according to the invention are set forth for implementing the method.

136. 2523304 BATTERY CHARGER AND METHOD FOR SAME

EP - 14.11.2012

Int.Class H02J 7/02 **Appl.No** 11165457 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

Es wird ein Batterieladegerät [1] angegeben, welches einen Wechselspannungseingang [2], einen Gleichspannungsausgang [3], einen Eingang [4] für einen Schutzleiter [PEN] und einen mit dem Wechselspannungseingang [2] verbundenen Gleichrichter [5] umfasst. Zusätzlich weist das Batterieladegerät [1] eine Spannungsmesseinrichtung [7] auf, welche zur Messung der Spannung [U 1 , U 2] zwischen dem Schutzleiter [PEN] und zumindest einem Ausgangsspannungspotential des Gleichrichters [5] eingerichtet ist. Weiterhin wird ein Verfahren zum Betrieb eines solchen Batterieladegerätes [1] angegeben.

137. 2507854 TERMINAL FOR ACCUMULATOR CELLS

EP - 10.10.2012

Int.Class H01M 2/20 Appl.No 10798617 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A terminal [3a..3h] for the electrical connection of a plurality of electrochemical cells [2] of an accumulator, which terminal comprises a U-shaped outer rail [4a..4f] and an actuating element [5a..5g], is described. According to the invention, the actuating element [5a..5g] is coupled to a clamping element [6a..6f..6h] in such a way that the clamping element [6a..6f..6h] is pressed against at least one limb [4a'..4f''] of the outer rail [4a..4f] on actuation of the actuating element [5a..5g].

138. 20120282820 TERMINAL FOR ACCUMULATOR CELLS

US - 08.11.2012

Int.Class H01R 13/648 Appl.No 13511139 Applicant Axel Krause Inventor Axel Krause

A terminal [3a . . . 3h] for the electrical connection of a plurality of electrochemical cells [2] of a accumulator, which terminal comprises a U-shaped outer rail [4a . . . 4f] and an actuating element [5a . . . 5g], is described. According to the invention, the actuating element [5a . . . 5g] is coupled to a clamping element [6a . . . 6f . . . 6h] in such a way that the clamping element [6a . . . 6f . . . 6h] is pressed against at least one limb [4a' . . . 4f'] of the outer rail [4a . . . 4f] on actuation of the actuating element [5a . . . 5g].

139. 102656720 TERMINAL FOR ACCUMULATOR CELLS

CN - 05.09.2012

Int.Class Appl.No 201080054951.7 Applicant Brusa Elektronik AG Inventor Krause Axel

A terminal [3a..3h] for the electrical connection of a plurality of electrochemical cells [2] of an accumulator, which terminal comprises a U-shaped outer rail [4a..4f] and an actuating element [5a..5g], is described. According to the invention, the actuating element [5a..5g] is coupled to a clamping element [6a..6f, 6h] in such a way that the clamping element [6a..6f, 6h] is pressed against at least one limb [4a'..4f''] of the outer rail [4a..4f] on actuation of the actuating element [5a..5g].

140. 2625937 POWER ELECTRONIC VEHICLE COMPONENT

EP - 14.08.2013

Int.Class H05K 7/14 Appl.No 11764318 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A power electronic vehicle component, such as an on-board charging device, a converter, or a voltage converter, for electric or hybrid vehicles. The power electronic vehicle component includes a housing [1], in which at least one power module [4] and at least one printed circuit board [2, 3] electrically communicating with the power module [4] are accommodated. The printed circuit board [2, 3] is electrically connected to the power module [4] via at least one plug connection [5] which is formed by connector parts [5a, 5b] of male and female type that can be pressed into one another, wherein one of the connector parts [5a] sits directly on the printed circuit board [2, 3] and the other connector part [5b] sits directly on the power module [4].

141. 2707937 BATTERY CHARGING DEVICE AND PROCESS FOR OPERATING THE SAME

EP - 19.03.2014

Int.Class H02J 7/02 Appl.No 12722897 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A battery charging device [1] that includes an alternating voltage input [2], a direct voltage output [3], an input [4] for a protective conductor [PEN], and a rectifier [5] connected with the alternating voltage input [2]. Additionally, the battery charging device [1] includes a voltage measuring unit [7] adapted to measure the voltage [U_i, U₂] between the protective conductor [PEN] and at least one output voltage potential of rectifier [5]. Furthermore, a process is proposed for operating such battery charging devices [1].

142. 102014201903 ROTOR FÜR EINE SYNCHRONMASCHINE

DE - 06.08.2015

Int.Class H02P 25/00 Appl.No 102014201903 Applicant BMW AG Inventor Friese Falko

Die Erfindung betrifft einen Rotor für eine Synchronmaschine eines Kraftfahrzeuges, wobei der Rotor aufweist: eine Erregerspule zur Erzeugung eines Magnetfeldes, das für ein Rotieren des Rotors in einem Stator der Synchronmaschine notwendig ist; eine Versorgungsschaltung, über die Energie kontaktlos auf den Rotor derart übertragbar ist, dass die Erregerspule das Magnetfeld erzeugt; und eine Schutzschaltung zum Schutz der Versorgungsschaltung, wobei die Schutzschaltung derart eingerichtet ist, dass sie die Versorgungsschaltung durch eine Schutzfunktion schützt, wenn eine Induktionsspannung an der Erregerspule einen Wert annimmt, der einen Schwellenwert übersteigt.

143. 2985898 DC/DC CONVERTER HAVING TWO MODES OF OPERATION

EP - 17.02.2016

Int.Class H02M 3/158 Appl.No 14180724 Applicant BRUSA ELEKTRONIK AG Inventor SCHIEDERMEIER MAX

Die Erfindung betrifft einen Gleichspannungswandler [5] mit zumindest zwei Betriebsmodi, umfassend: eine erste [3] und zweite Verbindungsleitung [4], die jeweils gleichnamige Pole des Gleichspannungswandlers [5] verbinden, eine Primärspule [15] und eine Sekundärspule [16], die induktiv miteinander gekoppelt sind, wobei eine erste Schalteinrichtung [10] zwischen der ersten [3] und zweiten Verbindungsleitung [4] geschaltet und mit der Primärspule [15] verbunden ist, wobei die Primärspule [15] in zumindest einem Schaltzustand der ersten Schalteinrichtung [10] parallel zum Gleichspannungseingang [1] geschaltet ist und in zumindest einem weiteren Schaltzustand der ersten Schalteinrichtung [10] von der ersten und/oder zweiten Verbindungsleitung [3; 4] getrennt ist, und wobei eine zweite Schalteinrichtung [20] in der zweiten Verbindungsleitung [4] geschaltet und mit der Sekundärspule [16] verbunden ist, wobei in zumindest einem Schaltzustand der zweiten Schalteinrichtung [20] die zweite Verbindungsleitung [4] unterbrochen und die Unterbrechung in der zweiten Verbindungsleitung [4] durch eine Umleitung über die Sekundärspule [16] umgangen ist, und wobei in zumindest einem weiteren Schaltzustand der zweiten Schalteinrichtung [20] unabhängig von der Sekundärspule [16] eine galvanische Verbindung zwischen dem ersten Pol des Gleichspannungseingangs [1] und dem gleichnamigen ersten Pol des Gleichspannungsausgangs [2] hergestellt ist.

144. 20170047162 TRANSMITTER COILS FOR CONTACTLESS ENERGY TRANSMISSION SYSTEMS WITH COUPLING ENHANCEMENT AND STRAY FIELD REDUCTION

US - 16.02.2017

Int.Class H01M 10/46 Appl.No 14953012 Applicant BRUSA Elektronik AG Inventor Adina Muntean

Transmitter coils [1, 1a . . . 1f] for contactless energy transmission systems [8] include a winding [2] with a number of turns of at least one conductor. Such winding [2] occupies ring area [3] between an outer larger unequalateral rectangle [4] and an inner smaller unequalateral rectangle [5]. This ring area [3] is wider on the longer side [x₁] of the outer rectangle [4] than it is on shorter side [x₂]. Transmitters [6] with such transmitter coils [1, 1a . . . 1f] may include a number of conductors and a number of power supplies [7, 7a, 7b] that may be switched and/or controlled independently of each other. Energy transmission systems [8] with such transmitter coils [1a . . . 1f]/such transmitters [6] as well as receiver coils [10] installed in motor vehicles [9], are also disclosed.

145. WO/2011/138726 METHOD AND CELL MONITORING UNIT FOR MONITORING AN ACCUMULATOR; CENTRAL MONITORING UNIT AND ACCUMULATOR

WO - 10.11.2011

Int.Class H02J 7/00 Appl.No PCT/IB2011/051929 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

A method for monitoring a charge accumulator [1] with several cells [2, 2a..2n], wherein a parameter of a cell [2, 2a..2n] is measured and transmitted to a central monitoring unit [4] by means of a pulse-width modulated signal. The pulse-width modulated signals emanating from the individual cells [2, 2a..2n] are synchronously transmitted and summed. Furthermore, a cell monitoring unit [3, 3a..3n] according to the invention, a central monitoring unit [4] according to the invention and an accumulator [1] according to the invention are set forth for implementing the method.

146. [WO/2012/028992](#) BRUSH-SLIP RING SYSTEM FOR ELECTRICAL ROTARY MACHINES, IN PARTICULAR CURRENT-ENERGIZED SYNCHRONOUS MOTOR WO - 08.03.2012

Int.Class [H01R 39/10](#) **Appl.No** PCT/IB2011/053674 **Applicant** BRUSA ELEKTRONIK AG **Inventor** HOLZNER, Andreas

The invention relates to a brush-slip ring system [2] for electrical rotary machines, in particular current-energized synchronous motors [1] having a rotor [4] and a fixed part, e.g. stator [3] associated with said rotor. Said brush-slip ring system [2] comprises slip rings [18, 19] fastened to the rotor [4] and brushes [15] arranged in said fixed part of the machine. Each of the brushes [15] is connected to each of the slip rings [18, 19] in a sliding frictional connection so as to transmit energizing current to windings of the rotor [4]. The slip rings [18, 19] are connected on a printed circuit board [17] and are arranged coaxially and radially spaced apart from one another. The brushes [15] are oriented in axial direction of the rotor [4]. The slip rings [18, 19] and the printed circuit board [17] of said brush-slip ring system [2] are integrated by an insulating casing [20] to form an integrated slip ring unit [14], and this integrated slip ring unit [14] is co-rotatably fastened to a face of the rotor [4].

147. [WO/2011/067695](#) TERMINAL FOR ACCUMULATOR CELLS WO - 09.06.2011

Int.Class [H01M 2/20](#) **Appl.No** PCT/IB2010/055343 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

A terminal [3a..3h] for the electrical connection of a plurality of electrochemical cells [2] of an accumulator, which terminal comprises a U-shaped outer rail [4a..4f] and an actuating element [5a..5g], is described. According to the invention, the actuating element [5a..5g] is coupled to a clamping element [6a..6f..6h] in such a way that the clamping element [6a..6f..6h] is pressed against at least one limb [4a..4f] of the outer rail [4a..4f] on actuation of the actuating element [5a..5g].

148. [WO/2011/138736](#) A CONTROLLER AND A METHOD FOR A DC CONVERTER, AND ALSO A DC CONVERTER WO - 10.11.2011

Int.Class [H02M 3/158](#) **Appl.No** PCT/IB2011/051948 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

A controller [2] and a method for a DC converter [1], wherein the DC converter [1] comprises an input [E], an output [A], a connection to ground [GND], and also at least two half-bridges with two switching elements each [TR1..TR4] connected in series and an inductance [LI, L2] each connected with the point connecting the two switching elements. In accordance with the invention the controller [2] is equipped to measure the current [IL1, IL2] through the inductances [LI, L2], and controls the switching elements [TR2, TR4]/[TR1, TR2] positions on the ground side/input side always with negative/positive current through the inductance [LI, L2] into an off-state. Finally a DC converter [1] connected with the controller [2] is also specified.

149. [WO/2012/046152](#) POWER ELECTRONIC VEHICLE COMPONENT WO - 12.04.2012

Int.Class [H05K 7/14](#) **Appl.No** PCT/IB2011/053888 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

A power electronic vehicle component, such as an on-board charging device, a converter, or a voltage converter, for electric or hybrid vehicles. The power electronic vehicle component includes a housing [1], in which at least one power module [4] and at least one printed circuit board [2, 3] electrically communicating with the power module [4] are accommodated. The printed circuit board [2, 3] is electrically connected to the power module [4] via at least one plug connection [5] which is formed by connector parts [5a, 5b] of male and female type that can be pressed into one another, wherein one of the connector parts [5a] sits directly on the printed circuit board [2, 3] and the other connector part [5b] sits directly on the power module [4].

150. [WO/2012/153276](#) BATTERY CHARGING DEVICE AND PROCESS FOR OPERATING THE SAME WO - 15.11.2012

Int.Class [H02J 7/02](#) **Appl.No** PCT/IB2012/052303 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

A battery charging device [1] that includes an alternating voltage input [2], a direct voltage output [3], an input [4] for a protective conductor [PEN], and a rectifier [5] connected with the alternating voltage input [2]. Additionally, the battery charging device [1] includes a voltage measuring unit [7] adapted to measure the voltage [Ui, U2] between the protective conductor [PEN] and at least one output voltage potential of rectifier [5]. Furthermore, a process is proposed for operating such battery charging devices [1].

151. [WO/2020/002229](#) SWITCHING DEVICE FOR A COIL WO - 02.01.2020

Int.Class [B60L 53/12](#) **Appl.No** PCT/EP2019/066662 **Applicant** BRUSA ELEKTRONIK AG **Inventor** BÖHLER, Lukas

A switching device [701] for a coil [L1] is specified, having an input connection [704], for connection to a coil electronics system [403] and/or to a resonant circuit capacitance [221], an output connection [705], for connection to an end of the coil [L1] and/or to a resonant circuit capacitance [221], and a disconnecting device [706], wherein the disconnecting device [706] is able to be switched between an on state and an off state, the disconnecting device [706] connects the input connection [704] and the output connection [705] to an on impedance [703] in the on state and the disconnecting device [706] connects the input connection and the output connection to an off impedance [702] in the off state, the off impedance [702] has an increased value compared to the on impedance [703], the off impedance [702] permits a flow of current between the input connection [704] and the output connection [705] and the off impedance [702] is formed so as to damp at least one external signal [503] of a prescribable frequency, said external signal being coupled into the coil [L1].

152. [WO/2020/002219](#) BASE STATION FOR A POWER TRANSMISSION SYSTEM WO - 02.01.2020

Int.Class [H02J 50/12](#) **Appl.No** PCT/EP2019/066651 **Applicant** BRUSA ELEKTRONIK AG **Inventor** BÖHLER, Lukas

A base station [105] for a power transmission system is described, having a generator device [201], for generating a time-dependent power having a prescribable duty ratio [Θ] and a prescribable frequency [f], a primary circuit [202] having a primary coil [L1, Lprim], a primary measuring device for measuring a real power [P1] and/or an apparent power [S1] in the primary circuit, and a control device, wherein the primary circuit [202] is connected to the generator device [201] and to the primary measuring device, wherein the control device [302] is connected to the primary measuring device and to the generator device, wherein the control device [302] is configured to keep the prescribable duty ratio constant while it varies the prescribable frequency starting from a starting frequency, wherein the control device [302] is configured to use the primary measuring device to measure the real power [P1] and/or the apparent power [S1] while it varies the prescribable frequency, wherein the control device is further configured to keep the prescribable frequency constant and to vary the prescribable duty ratio when a prescribable real power limit value [P1x] and/or apparent power limit value [S1x] is/are exceeded and wherein the control device [302] is further configured to exclude a prescribable combination of values for the prescribable frequency and the prescribable duty ratio when varying the frequency [f] and/or when varying the duty ratio [Θ].

153. [3026684](#) TRANSMISSION COIL FOR A CONTACTLESS ENERGY TRANSMISSION SYSTEM WITH IMPROVED ANTIFERROMAGNETICALLY COUPLING FILM AND IMPROVED STRAY FIELD EP - 01.06.2016

Int.Class H01F 38/14 **Appl.No** 14195289 **Applicant** BRUSA ELEKTRONIK AG **Inventor** MUNTEAN ADINA

Die Erfindung betrifft eine Sendespule [1, 1a..1f] für ein kontaktloses Energieübertragungssystem [8], umfassend eine Wicklung [2] mit mehreren Windungen zumindest eines Stromleiters. Die Wicklung [2] belegt einen Ringbereich [3] zwischen einem aussenliegenden grösseren ungleichseitigen Rechteck [4] und einem innenliegenden, kleineren, ungleichseitigen Rechteck [5]. Der Ringbereich [3] ist dabei auf der längeren Seite [x 1] des aussenliegenden Rechtecks [4] breiter als auf dessen kürzerer Seite [x 2]. Zudem wird ein Sender [6] mit einer solchen Sendespule [1, 1a..1f] mit mehreren Stromleitern und mehreren unabhängig voneinander schalt- und/oder steuerbare Stromversorgungen [7, 7a, 7b] angegeben. Schliesslich betrifft die Erfindung auch ein Energieübertragungssystem [8], mit einer solche Sendespule [1a..1f] / einem solchen Sender [6] sowie eine in einem Kraftfahrzeug [9] eingebaute Empfangsspule [10].

154. 20140055090 DEVICE FOR INDUCTIVELY CHARGING AT LEAST ONE ELECTRIC ENERGY STORE OF AN ELECTRIC VEHICLE US - 27.02.2014

Int.Class H02J 7/00 **Appl.No** 14113579 **Applicant** Axel Krause **Inventor** Axel Krause

The invention relates to systems, devices, and components for inductively charging an electric energy store of an electric vehicle [1] via a charging section [2]. The device includes a registration device [20] for localizing the electric vehicle [1] on the charging section [2], an electrical energy source [3] preferably embodied as a high-frequency-energy source, a system of primary conductor loops each with at least one primary winding provided in the charging section [2] for supplying AC current via the electrical energy source [3], a secondary conductor loop arranged on the electric vehicle [1] having at least one secondary winding at least partially permeated by the induction flux, an energy supply line [4], and switching devices [5] for connecting the energy supply line [4] and the system of the primary conductor loops to the electrical energy source [3]. All primary conductor loops of the charging section [2], and the secondary conductor loop may be implemented as double dipole loops [6,7,8].

155. 2709871 DEVICE FOR INDUCTIVELY CHARGING AT LEAST ONE ELECTRIC ENERGY STORE OF AN ELECTRIC VEHICLE EP - 26.03.2014

Int.Class B60L 5/00 **Appl.No** 12722878 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

The invention relates to systems, devices, and components for inductively charging an electric energy store of an electric vehicle [1] via a charging section [2]. The device includes a registration device [20] for localizing the electric vehicle [1] on the charging section [2], an electrical energy source [3] preferably embodied as a high-frequency-energy source, a system of primary conductor loops each with at least one primary winding provided in the charging section [2] for supplying AC current via the electrical energy source [3], a secondary conductor loop arranged on the electric vehicle [1] having at least one secondary winding at least partially permeated by the induction flux, an energy supply line [4], and switching devices [5] for connecting the energy supply line [4] and the system of the primary conductor loops to the electrical energy source [3]. All primary conductor loops of the charging section [2], and the secondary conductor loop may be implemented as double dipole loops [6,7,8].

156. 2445747 CIRCUIT ARRANGEMENT FOR POWER DISTRIBUTION IN A MOTOR VEHICLE EP - 02.05.2012

Int.Class H02M 1/00 **Appl.No** 10728377 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

A circuit arrangement [1] for power distribution in a motor vehicle is described, which comprises a transformer [T 1, T 1a..T 1n] having at least three transformer windings [W 1, W 1a..W 1n, W 2, W 2a..W 2n, W 3, W 3a..W 3n]. A first and second on-board supply inside the vehicle and a power supply which is outside the vehicle can be connected to the circuit arrangement [1], which supplies are coupled via the transformer windings [W 1, W 1a..W 1n, W 2, W 2a..W 2n, W 3, W 3a..W 3n] and converters [UR 1, UR 2, UR 2a..UR 2n, UR 3, UR 3a..UR 3n]. The third converter [UR 3, UR 3a..UR 3n] can be connected via a first change-over switch [US 1, US 1'] alternatively to the first on-board supply inside the vehicle or to the power supply outside the vehicle. A plurality of first converters [UR 1] and/or a plurality of second converters [UR 2, UR 2a..UR 2n] and/or a plurality of third converters [UR 3, UR 3a..UR 3n] each being connected to the transformer windings [W 1, W 1a..W 1n, W 2, W 2a..W 2n, W 3, W 3a..W 3n] can be switched in series or in parallel are provided.

157. 2524834 DEVICE FOR INDUCTIVE CHARGING OF AT LEAST ONE ELECTRICAL ENERGY STORAGE DEVICE OF AN ELECTRIC CAR EP - 21.11.2012

Int.Class B60L 5/00 **Appl.No** 11166529 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE AXEL

Die Erfindung betrifft eine Vorrichtung zum induktiven Laden zumindest eines elektrischen Energiespeichers eines Elektrokraftfahrzeuges [1] auf einer Ladestrecke [2]. Die Vorrichtung umfasst eine Registrierungseinrichtung [20] zur Lokalisierung des Elektrokraftfahrzeuges [1] auf der Ladestrecke [2], eine elektrische Energiequelle [3] in bevorzugter Ausführung als Hochfrequenz-Energiequelle, ein zur Speisung durch die elektrische Energiequelle [3] mit Wechselstrom vorgesehenes System in der Ladestrecke [2] hintereinander verlegter primärer Leiterschleifen mit zumindest je einer Primärwindung, eine am Elektrokraftfahrzeug [1] angeordnete, sekundäre Leiterschleife mit zumindest einer zumindest anteilig vom Induktionsfluss durchflossenen Sekundärwindung, eine Energiezuführungsleitung [4] und Schalteinrichtungen [5] zur Verschaltung der elektrischen Energiequelle [3], der Energiezuführungsleitung [4] und des Systems der primären Leiterschleifen. Alle primären Leiterschleifen der Ladestrecke [2] und die sekundäre Leiterschleife sind erfindungsgemäss als Doppeldipolschleifen [6,7,8] ausgebildet.

158. 2891575 TRANSFER ELEMENT FOR A SYSTEM FOR INDUCTIVE ENERGY TRANSFER EP - 08.07.2015

Int.Class H02J 7/02 **Appl.No** 14150069 **Applicant** BRUSA ELEKTRONIK AG **Inventor** BÖHLER LUKAS

Ein Übertragerelement [U] für ein System zur induktiven Energieübertragung zwischen zwei Übertragerelementen umfasst zumindest eine im Wesentlichen ebene Spule [2], welche in einem Gehäuse [1] aufgenommen ist. Zumindest eine Messanordnung [4, 4a] für die Kapazität und/oder die Spannung ist zwischen der Spule [2] und/oder dem Gehäuse [1] bzw. einer elektrisch leitenden Struktur [3] gegenüber einem Bezugspotential mit zumindest einem dieser Elemente [1, 2, 3] verbunden.

159. 20120098331 CIRCUIT ARRANGEMENT FOR POWER DISTRIBUTION IN A MOTOR VEHICLE US - 26.04.2012

Int.Class B60L 1/00 **Appl.No** 13320899 **Applicant** Krause Axel **Inventor** Krause Axel

A circuit arrangement [1] for power distribution in a motor vehicle is described, which comprises a transformer [T₁, T_{1a} . . . T_{1n}] having at least three transformer windings [W₁, W_{1a} . . . W_{1n}, W₂, W_{2a} . . . W_{2n}, W₃, W_{3a} . . . W_{3n}]. A first and second on-board supply inside the vehicle and a power supply which is outside the vehicle can be connected to the circuit arrangement [1], which supplies are coupled via the transformer windings [W₁, W_{1a} . . . W_{1n}, W₂, W_{2a} . . . W_{2n}, W₃, W_{3a} . . . W_{3n}] and converters [UR₁, UR₂, UR_{2a} . . . UR_{2n}, UR₃, UR_{3a} . . . UR_{3n}]. The third converter [UR₃, UR_{3a} . . . UR_{3n}] can be connected via a first change-over switch [US₁, US_{1'}] alternatively to the first on-board supply inside the vehicle or to the power supply outside the vehicle. A plurality of first converters [UR 1] and/or a plurality of second converters [UR₂, UR_{2a} . . . UR_{2n}] and/or a plurality of third converters [UR₃, UR_{3a} . . . UR_{3n}] each being connected to the transformer windings [W₁, W_{1a} . . . W_{1n}, W₂, W_{2a} . . . W_{2n}, W₃, W_{3a} . . . W_{3n}] can be switched in series or in parallel are provided.

160. WO/2010/150139 CIRCUIT ARRANGEMENT FOR POWER DISTRIBUTION IN A MOTOR VEHICLE WO - 29.12.2010

Int.Class B60L 11/18 **Appl.No** PCT/IB2010/052697 **Applicant** BRUSA Elektronik AG **Inventor** KRAUSE, Axel

A circuit arrangement [1] for power distribution in a motor vehicle is described, which comprises a transformer [T 1, T 1a..T 1n] having at least three transformer windings [W 1, W 1a..W 1n, W 2, W 2a..W 2n, W 3, W 3a..W 3n]. A first and second on-board supply inside the vehicle and a power supply which is

outside the vehicle can be connected to the circuit arrangement [1], which supplies are coupled via the transformer windings [W 1, W 1a..W 1n, W 2, W 2a..W 2n, W 3, W 3a..W 3n] and converters[UR 1, UR 2, UR 2a..UR 2n, UR 3, UR 3a..UR 3n]. The third converter [UR 3, UR 3a..UR 3n] can be connected via a first change-over switch[US 1, US 1 ']alternatively to the first on- board supply inside the vehicle or to the power supply outside the vehicle. A plurality of first converters[UR 1] and/or a plurality of secondconverters[UR 2, UR 2a..UR 2n] and/or a plurality of thirdconverters[UR 3, UR 3a..UR 3n]each being connected to the transformer windings[W 1, W 1a..W 1n, W 2, W 2a..W 2n, W 3, W 3a..W 3n]can be switched in series or in parallel are provided.

161. WO/2012/156846 DEVICE FOR INDUCTIVELY CHARGING AT LEAST ONE ELECTRIC ENERGY STORE OF AN ELECTRIC VEHICLE

WO - 22.11.2012

Int.Class B60L 5/00 Appl.No PCT/IB2012/052105 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

The invention relates to systems, devices, and components for inductively charging an electric energy store of an electric vehicle [1] via a charging section [2]. The device includes a registration device [20] for localizing the electric vehicle [1] on the charging section [2], an electrical energy source [3] preferably embodied as a high-frequency-energy source, a system of primary conductor loops each with at least one primary winding provided in the charging section [2] for supplying AC current via the electrical energy source [3], a secondary conductor loop arranged on the electric vehicle [1] having at least one secondary winding at least partially permeated by the induction flux, an energy supply line [4], and switching devices [5] for connecting the energy supply line [4] and the system of the primary conductor loops to the electrical energy source [3]. All primary conductor loops of the charging section [2], and the secondary conductor loop may be implemented as double dipole loops [6,7,8].

162. 20130162260 METHOD AND CELL MONITORING UNIT FOR MONITORING A RECHARGEABLE BATTERY

US - 27.06.2013

Int.Class G01R 31/36 Appl.No 13817444 Applicant Krause Axel Inventor Krause Axel

A method for monitoring a rechargeable battery [1] with multiple cells [2, 2a . . . 2n] is described, as well as a cell monitoring unit [3, 3a . . . 3n] for such, in which in a normal mode [MN] a measurement [UCa, UCb] of a parameter of a cell [2, 2a . . . 2n] is determined using a reference value [URa, URb] provided for each cell [2, 2a . . . 2n]. In addition, in a test mode [MT] the reference values [URa, URb] of adjacent cells [URb] used for determining measurements [UCa, UCb] of the parameter in question and provided for each cell [2, 2a . . . 2n] are compared with each other in a periodically recurring manner. An error signal is issued if the comparison result exceeds a predefinable limit value.

163. 2640594 ENERGY SUPPLY UNIT FOR AN ELECTRIC VEHICLE AND ELECTRIC VEHICLE

EP - 25.09.2013

Int.Class B60L 11/18 Appl.No 11778719 Applicant BRUSA ELEKTRONIK AG Inventor MATT PHILLIPP

An energy supply unit [15] for an electric motor vehicle [1b] comprises a first interface [10] on the alternating voltage side to a vehicle-external power network, a second interface [16] on the direct voltage side for the connection to an onboard power system of the electric motor vehicle [1b], and an AC/DC converter [17] arranged in a current path between the first interface [10] and the second interface [16]. Additionally, the energy supply unit [15] comprises a third interface [18] on the alternating voltage side, for the connection to an alternating voltage generator [12] and a switching device [19] to connect the second interface [16] to the first interface [10] or the third interface [18] via the AC/DC converter [17]. The AC/DC converter [17] may be connected to said vehicle-external power network or to said alternating voltage generator [12], which is driven by a combustion engine [11]. In addition, an electric motor vehicle [1 b] having such an energy supply unit [15] is set forth.

164. 20130162032 ENERGY SUPPLY UNIT FOR AN ELECTRIC VEHICLE AND ELECTRIC VEHICLE

US - 27.06.2013

Int.Class B60L 9/12 Appl.No 13821206 Applicant Matt Phillipp Inventor Matt Phillipp

An energy supply unit [15] for an electric motor vehicle [1b] comprises a first interface [10] on the alternating voltage side to a vehicle-external power network, a second interface [16] on the direct voltage side for the connection to an onboard power system of the electric motor vehicle [2b], and an AC/DC converter [17] arranged in a current path between the first interface [10] and the second interface [16]. Additionally, the energy supply unit [15] comprises a third interface [18] on the alternating N voltage side, for the connection to an alternating voltage generator [12] and a switching device [19] to connect the second interface [16] to the first interface [10] or the third interface [18] via the AC/DC converter [17]. The AC/DC converter [17] may be connected to said vehicle-external power network or to said alternating voltage generator [12], which is driven by a combustion engine [11]. In addition, an electric motor vehicle [1b] having such an energy supply unit [15] is set forth.

165. 2614574 METHOD AND CELL MONITORING UNIT FOR MONITORING A RECHARGEABLE BATTERY

EP - 17.07.2013

Int.Class H02J 7/00 Appl.No 11755142 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A method for monitoring a rechargeable battery [1] with multiple cells [2, 2a..2n] is described, as well as a cell monitoring unit [3, 3a..3n] for such, in which in a normal mode [MN] a measurement [UCa, UCb] of a parameter of a cell [2, 2a..2n] is determined using a reference value [URa, URb] provided for each cell [2, 2a..2n]. In addition, in a test mode [MT] the reference values [URa, URb] of adjacent cells [URb] used for determining measurements [UCa, UCb] of the parameter in question and provided for each cell [2, 2a..2n] are compared with each other in a periodically recurring manner. An error signal is issued if the comparison result exceeds a predefinable limit value.

166. 2808196 TRANSFORMER ELEMENT

EP - 03.12.2014

Int.Class B60L 11/18 Appl.No 13169731 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Ein Übertragerelement 1, 1 a, vorzugsweise als Sekundärteil eines induktiven Ladesystems für Elektrofahrzeuge, weist eine Sekundärspule 2 und eine im Gehäuse 3 integrierte Elektronik 4 auf. Das Gehäuse 3 umfasst auch einen topfartigen Abschnitt 6 aus magnetisch abschirmendem Material mit einer offenen Seite 7.

167. 2927954 FASTENING SYSTEM FOR A POWER MODULE

EP - 07.10.2015

Int.Class H01L 23/40 Appl.No 14163131 Applicant BRUSA ELEKTRONIK AG Inventor BERKMANN MARTIN

Ein Befestigungssystem für ein Leistungsmodul [1] besteht aus einem Formkörper [2] mit einer ebenen Fläche [2a] zur Anlage an eine Tragstruktur und einer Mehrzahl von aus dem Formkörper [2] herausragenden Kontaktpins [3] und umfasst weiters ein Anpresselement [5] für das Leistungsmodul [1] auf der der Tragstruktur gegenüberliegenden Seite des Leistungsmoduls [1]. Zumindest ein Verbindungselement [11] ist zur Befestigung des Anpresselementes [5] an der Tragstruktur und zur Beaufschlagung des Anpresselementes [5] mit einer Anpresskraft auf die Tragstruktur hin vorgesehen. Am Anpresselement [5] sind Abschnitte [9, 10] ausgeformt, deren äussere Randbereiche [10] in befestigter Stellung von Leistungsmodul [1] und Anpresselement [5] elastisch auf Randbereiche des Leistungsmoduls [1] einwirken und diese Randbereiche auf die Tragstruktur hin mit einer Anpresskraft beaufschlagen. Weiter betrifft die Erfindung ein Leistungsmodul [1] für die Verwendung mit einem solchen Befestigungssystem sowie ein Anpresselement [5] zur Verwendung in einem solchen Befestigungssystem.

168. 2910403 INDUCTIVE CHARGING APPARATUS

EP - 26.08.2015

Int.Class B60L 11/18 Appl.No 14155956 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

Die Erfindung bezieht sich auf eine induktive Ladevorrichtung [1] zum Laden eines elektrischen Energiespeichers [3] eines Fahrzeuges [2], umfassend eine Primärspule [4] und einen der Primärspule [4] vorangeschalteten Wechselrichter [5] zur Umwandlung einer Gleichspannung in eine Wechselspannung, wobei der Wechselrichter [5] einen Gleichspannungseingang [6] und einen Wechselspannungsausgang [7] umfasst und wobei zwischen dem Gleichspannungseingang [6] und dem Wechselspannungsausgang [7] zumindest eine Schalterstufe [8, 9] und zumindest ein Filter [13] geschaltet sind. Zur Erzeugung einer möglichst sinusförmigen Wechselspannung ohne Oberwellen, wobei der Wirkungsgrad der Leistungsübertragung nicht beeinträchtigt werden soll, umfasst der Filter [13] einen Streufeldtransformator [10] mit einem ersten Wicklungsabschnitt [11] und einem zweiten Wicklungsabschnitt [12].

169. [3003773](#) TRANSFER ELEMENT

EP - 13.04.2016

Int.Class [B60L 11/18](#) Appl.No 14731377 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE AXEL

A transfer element [1, 1a], preferably as a secondary part of an inductive charging system for electric vehicles, comprises a secondary coil [2] and an electronic system [4] integrated into the housing [3]. The housing [3] comprises a pot-shaped section [6] of a magnetically shielding material, which has an open side [7], the secondary coil [2] surrounding the section [6] from the outside.

170. [3041007](#) SHIELD FOR A CONTACTLESS ENERGY TRANSMISSION SYSTEM WITH IMPROVED COUPLING AND IMPROVED LEAKAGE FIELD

EP - 06.07.2016

Int.Class [H01F 27/36](#) Appl.No 14195251 Applicant BRUSA ELEKTRONIK AG Inventor

Die Erfindung betrifft eine Abschirmung [1a..1d] aus einem Material mit einer magnetischen Leitfähigkeit beziehungsweise Permeabilität von $\mu_r \geq 4$, insbesondere aus Ferrit, für eine ringförmige Sendespule/Empfangsspule [10] eines kontaktlosen Energieübertragungssystems [12]. Die Abschirmung [1a..1d] schliesst dabei einen Ringbereich [A] zwischen einem aussenliegenden grösseren Rechteck [B] und einem innenliegenden, kleineren Rechteck [C] wannenförmig ein. Im Bereich des aussenliegenden Rechtecks [B] weist die Abschirmung [1a..1d] auf zwei gegenüberliegenden Seiten flügelartige und insbesondere parallel zum Wannenboden [2] ausgerichtete Fortsätze [5] auf. Zudem wird ein Sender/Empfänger [9, 9a, 9b] mit einer solchen Abschirmung [1a..1d] und einer in den Ringbereich [A] eingebetteten Sendespule/Empfangsspule [10] angegeben. Schliesslich betrifft die Erfindung auch ein Energieübertragungssystem [12], mit einer solchen Abschirmung [1a..1d] / einem solchen Sender [9a] sowie einer in einem Kraftfahrzeug [14] eingebaute Empfangsspule [9b].

171. [3051669](#) WINDING FOR A STATOR, ELECTRIC MACHINE, AND METHOD FOR MANUFACTURING THE WINDING FOR A STATOR

EP - 03.08.2016

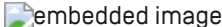
Int.Class [H02K 3/12](#) Appl.No 15152755 Applicant BRUSA ELEKTRONIK AG Inventor STÖCK MARTIN

Eine Wicklung für einen Stator [2] einer elektrischen Maschine besteht aus miteinander mechanisch als auch elektrisch leitend verbundenen Formlitzten [1]. Zumindest einige der Einzeldrähte [7] jeder Formlitze [1] sind an zumindest einem Ende [1a] durch eine Hülse [4] aus elektrisch leitendem Material mechanisch und elektrisch leitend miteinander und mit der Hülse [4] verbunden. Die Hülsen [4] zweier in der Wicklung in Richtung des Stromflusses aufeinanderfolgender Formlitzten [1] sind mechanisch und elektrisch leitend verbunden.

172. [102017117183](#) ENTSTÖRVORRICHTUNG FÜR EINEN GLEICHSTROMKREIS

DE - 31.01.2019


Int.Class [H02M 1/14](#) Appl.No 102017117183 Applicant BRUSA Elektronik AG Inventor Krause Axel

Die Erfindung betrifft eine Entstörvorrichtung für einen Gleichstromkreis, eine Fahrzeugkomponente, ein Hochspannungs-Zwischenkreis und ein Fahrzeug. Die Entstörvorrichtung [300, 300a] für einen Gleichstromkreis [100, 100'], welcher zwei Leiter [103', 103c, 104', 104c] aufweist, zeichnet sich dadurch aus, dass die Entstörvorrichtung [300, 300a] umfasst: einen ersten Anschluss [VCc], zum Verbinden der Entstörvorrichtung [300, 300a] mit einem ersten Leiter [103', 103c] des Gleichstromkreises [100, 100']; einen zweiten Anschluss [Mc], zum Verbinden der Entstörvorrichtung [300, 300a] mit einem zweiten Leiter [104', 104c] des Gleichstromkreises [100, 100']; einen Sensor [300', 300a'], wobei der Sensor: berührungslos mit dem Gleichstromkreis [100, 100'] koppelbar ist und dazu eingerichtet ist, ein Übersteigen eines vorgebbaren Grenzwertes einer überlagerten Wechselspannung in dem ersten Leiter [103', 103c] des Gleichstromkreises zu erkennen; und dazu eingerichtet ist, durch Einprägen eines Stromes in den ersten Anschluss [VCc] die Wechselspannung im ersten Leiter des Gleichstromkreises im Wesentlichen auf den vorgebbaren Grenzwert zu verringern. 

173. [102018121268](#) VERFAHREN UND VORRICHTUNG ZUR SPANNUNGSANPASSUNG DES GLÄTTUNGSKONDENSATORS EINES DC-DC-WANDLERS VOR KONNEKTIERUNG EINER HOCHVOLT-BATTERIE

DE - 05.03.2020

Int.Class [H02M 1/36](#) Appl.No 102018121268 Applicant BRUSA Elektronik AG Inventor Krause Axel

Die Erfindung betrifft ein Verfahren und eine Vorrichtung zum Betrieb eines an eine Primärbatterie [12] anschließbaren bidirektionalen Spannungswandlers [18] mit einem primärseitigen Glättungskondensator [16, C1DC], mit einem induktiven Transformator [Tr1] und mit einem sekundärseitigen Klemmkondensator [Cclamp], wobei vor einer Konnektierung der Primärbatterie [12] die Spannung an dem primärseitigen Glättungskondensator [16, C1DC] durch eine zyklische Übertragung von Ladung aus dem Klemmkondensator [Cclamp] an die Spannung der Primärbatterie [12] angepasst wird. Hierdurch lässt sich die Spannung des primärseitigen Glättungskondensators vor der Konnektierung der Primärbatterie an die Spannung der Primärbatterie anpassen und damit Stromspitzen beim Anschließen der Primärbatterie [12] vermeiden. 

174. [WO/2020/043883](#) METHOD AND DEVICE FOR THE VOLTAGE MATCHING OF THE SMOOTHING CAPACITOR OF A DC-TO-DC CONVERTER BEFORE A HIGH-VOLTAGE BATTERY IS CONNECTED

WO - 05.03.2020

Int.Class [H02H 11/00](#) Appl.No PCT/EP2019/073223 Applicant BRUSA ELEKTRONIK AG Inventor KRAUSE, Axel

The invention relates to a method and to a device for operating a bidirectional voltage transformer [18] that can be connected to a primary battery [12]. Said voltage transformer has a primary-side smoothing capacitor [16, C1DC], an inductive transformer [Tr1] and a secondary-side clamping capacitor [Cclamp]. Before the primary battery [12] is connected, the voltage at the primary-side smoothing capacitor [16, C1DC] is matched to the voltage of the primary battery [12] by means of a cyclical transfer of charge from the clamping capacitor [Cclamp]. The voltage of the primary-side smoothing capacitor can thereby be matched to the voltage of the primary battery before the primary battery is connected, and thus current spikes can be avoided during the connecting of the primary battery [12].

175. [WO/2011/128842](#) METHOD AND DEVICE FOR THE MAGNETIZATION OF MAGNETIC MATERIAL PIECES OF A ROTOR IN A PERMANENTLY EXCITED SYNCHRONOUS MACHINE, AND ROTOR FOR SUCH A SYNCHRONOUS MACHINE

WO - 20.10.2011

Int.Class [H02K 15/03](#) Appl.No PCT/IB2011/051573 Applicant BRUSA ELEKTRONIK AG Inventor MATHOY, Arno

The invention relates to a method and a device for magnetizing magnetic material pieces [13A, 13B, 13C] of a rotor [5] in a synchronous machine, in particular hybrid synchronous machine [1], as well as a rotor [5]. In the method, the magnetic material pieces [13A, 13B, 13C], which are embedded in the rotor [5] and which are originally unmagnetized, are magnetized by means of the use of a magnetization coil [17] of a magnetization device [18]. Provision is made, in the vicinity of the magnetic material pieces [13A, 13B, 13C], for closed hollow spaces [15A, 15B, 15C], which can only be accessed in axial direction, for simplifying the assembly and for shortening the magnetization clock times in the rotor [5]. The magnetization of the embedded magnetic material pieces [13A, 13B, 13C] into permanent magnets [13D, 13E, 13F] of the preassembled rotor [5] is carried out by means of at least two or more magnetizing magnetization coils [17], which are at least partially inserted into the hollow spaces [15A, 15B, 15C]. The magnetization coils [17] are preferably separated.

176. WO/2012/032428 METHOD AND CELL MONITORING UNIT FOR MONITORING A RECHARGEABLE BATTERY

WO - 15.03.2012

Int.Class H02J 7/00 **Appl.No** PCT/IB2011/053656 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

A method for monitoring a rechargeable battery [1] with multiple cells [2, 2a..2n] is described, as well as a cell monitoring unit [3, 3a..3n] for such, in which in a normal mode [MN] a measurement [UCa, UCb] of a parameter of a cell [2, 2a..2n] is determined using a reference value [URa, URb] provided for each cell [2, 2a..2n]. In addition, in a test mode [MT] the reference values [URa, URb] of adjacent cells [URb] used for determining measurements [UCa, UCb] of the parameter in question and provided for each cell [2, 2a..2n] are compared with each other in a periodically recurring manner. An error signal is issued if the comparison result exceeds a predefinable limit value.

177. 3651316 ROTOR FOR A SYNCHRONOUS DRIVE MOTOR

EP - 13.05.2020

Int.Class H02K 1/27 **Appl.No** 19207635 **Applicant** BRUSA ELEKTRONIK AG **Inventor** ZHOU TIAN

Die Erfindung betrifft einen Rotor für einen Synchron-Antriebsmotor eines elektrisch betriebenen Kraftfahrzeugs mit mehreren Rotorpolen, wobei jeder Rotorpol mindestens drei radial hinter einander angeordnete Magnetlagen [16, 17, 18] mit Kavitäten [10 - 34] umfasst, wobei eine äußerste Magnetlage [18] mindestens eine mit permanentmagnetischem Material gefüllte Kavität [22] und jede weitere Magnetlage [17, 18] mindestens zwei mit permanentmagnetischem Material gefüllte Kavitäten [26, 30] umfasst, ferner jede Magnetlage [16, 17, 18] eine Erstreckung eines Abschnitts einer Ellipse [36, 38, 40] aufweist, ferner sich die Mittelpunkte aller Ellipsen [36, 38, 40] innerhalb der kleinsten Ellipse [36] der äußeren Magnetlage [16] liegen, wobei jede zu einer der mindestens drei Magnetlagen gehörende Kavität in einer Radialebene eine Schnittfläche [48+49] definiert, und jede dieser Schnittflächen [48,49] einer Magnetlage [16, 17, 18] von der zugehörigen Ellipse [16, 17, 18] in zwei Teil-Schnittflächen [48, 49] geteilt wird, wobei in der zweiten und jeder weiteren Magnetlage [17, 18] zwischen den Kavitäten jeweils Stege [56, 46] aus dem Rotormaterial ausgebildet sind und diese Stege [56, 46] an der schmalsten Stelle mindestens doppelt so breit sind wie die jeweiligen Außenstege [50, 52] der gleichen Magnetlage [17, 18].

178. 112015000884 INDUKTIVE LADEVORRICHTUNG

DE - 15.12.2016

Int.Class B60L 11/18 **Appl.No** 112015000884 **Applicant** BRUSA Elektronik AG **Inventor** Krause Axel

Die Erfindung bezieht sich auf eine induktive Ladevorrichtung [1] zum Laden eines elektrischen Energiespeichers [3] eines Fahrzeuges [2], umfassend eine Primärspule [4] und einen der Primärspule [4] vorangeschalteten Wechselrichter [5] zur Umwandlung einer Gleichspannung in eine Wechselspannung, wobei der Wechselrichter [5] einen Gleichspannungseingang [6] und einen Wechselspannungsausgang [7] umfasst und wobei zwischen dem Gleichspannungseingang [6] und dem Wechselspannungsausgang [7] zumindest eine Schalterstufe [8, 9] und zumindest ein Filter [13] geschaltet sind. Zur Erzeugung einer möglichst sinusförmigen Wechselspannung ohne Oberwellen, wobei der Wirkungsgrad der Leistungsübertragung nicht beeinträchtigt werden soll, umfasst der Filter [13] einen Streufeldtransformator [10] mit einem ersten Wicklungsabschnitt [11] und einem zweiten Wicklungsabschnitt [12].

179. WO/2014/191880 TRANSFER ELEMENT

WO - 04.12.2014

Int.Class B60L 11/18 **Appl.No** PCT/IB2014/061653 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

A transfer element [1, 1a], preferably as a secondary part of an inductive charging system for electric vehicles, comprises a secondary coil [2] and an electronic system [4] integrated into the housing [3]. The housing [3] comprises a pot-shaped section [6] of a magnetically shielding material, which has an open side [7], the secondary coil [2] surrounding the section [6] from the outside.

180. WO/2012/066438 ENERGY SUPPLY UNIT FOR AN ELECTRIC VEHICLE AND ELECTRIC VEHICLE

WO - 24.05.2012

Int.Class B60L 11/18 **Appl.No** PCT/IB2011/054670 **Applicant** BRUSA ELEKTRONIK AG **Inventor** MATT, Phillipp

An energy supply unit [15] for an electric motor vehicle [1b] comprises a first interface [10] on the alternating voltage side to a vehicle-external power network, a second interface [16] on the direct voltage side for the connection to an onboard power system of the electric motor vehicle [1b], and an AC/DC converter [17] arranged in a current path between the first interface [10] and the second interface [16]. Additionally, the energy supply unit [15] comprises a third interface [18] on the alternating voltage side, for the connection to an alternating voltage generator [12] and a switching device [19] to connect the second interface [16] to the first interface [10] or the third interface [18] via the AC/DC converter [17]. The AC/DC converter [17] may be connected to said vehicle-external power network or to said alternating voltage generator [12], which is driven by a combustion engine [11]. In addition, an electric motor vehicle [1 b] having such an energy supply unit [15] is set forth.

181. WO/2015/125107 INDUCTIVE CHARGING DEVICE

WO - 27.08.2015

Int.Class B60L 11/18 **Appl.No** PCT/IB2015/051279 **Applicant** BRUSA ELEKTRONIK AG **Inventor** KRAUSE, Axel

The invention relates to an inductive charging device [1] for charging an electrical energy storage device [3] of a vehicle [2], comprising a primary coil [4] and an inverter [5] located upstream of the primary coil [4] for conversion of a direct-current voltage into an alternating voltage, wherein the rectifier [5] comprises a direct current voltage input [6] and an alternating voltage output [7] and wherein at least one switch stage [8, 9] and at least one filter [13] are switched between the direct current voltage input [8] and the alternating voltage output [7]. In order to produce an alternating voltage which is as sinusoidal as possible without harmonics, where the efficiency of the power transmission should not be adversely affected, the filter [13] comprises a leakage transformer [10] having a first winding section [11] and a second winding section [12].

