



FEDERAL SUPREME COURT
IN THE NAME OF THE PEOPLE
JUDGMENT

X ZR 10/21

Delivered on:
January 24, 2023
Schönthal
Judicial Employee
as Clerk of the Court

in the patent nullity case

The X. Civil Senate of the Federal Supreme Court, at the oral hearing on January 24, 2023, by the Presiding Judge Dr. Bacher, Judges Hoffmann and Dr. Deichfuß, Judge Dr. Marx, and Judge Dr. Crummenerl

ruled:

The appeal against the judgment of the 6th Senate (Nullity Senate) of the Federal Patent Court of October 21, 2020, is dismissed at defendant's expense.

By law

Facts of the Case:

1 The defendant is the owner of European Patent 1 610 452 (patent in suit), which was granted with effect for the Federal Republic of Germany, and was filed on March 16, 2005, claiming two German priorities of June 24, 2004, and relates to an inverter.

2 Claim 1, to which five further claims are referred back, reads in the language of the proceedings:

Inverter with a casing (1), with electric and/or electronic components (5) having cooling bodies (4), with at least one choke and/or a transformer (5a), comprising a high grade rating for protection, and with a cooling unit (2) for cooling the electric and/or electronic components (5), characterized in that the casing (1) comprises at least two chambers (7, 8), the two chambers (7, 8) being separated by a wall (6), the components (5) being located on one side of the wall in one of the chambers (7), the cooling bodies (4) being located on the other side of the wall (6) in the other chamber (8), and the at least one choke and/or the transformer (5a) being located in the other chamber (8), wherein the other chamber (8) comprises the cooling unit (2).

3 The plaintiff claimed that the subject matter of the patent in suit went beyond the content of the documents originally filed and was not patentable. The defendant defended the patent in suit as granted and with six auxiliary requests in amended versions.

4 The Patent Court declared the patent in suit invalid. In its appeal against this decision, the defendant continues to pursue its claims made at first instance. The plaintiff opposes the appeal.

Reasons for Decision:

5 The admissible appeal is without merit.

6 1. The patent in suit relates to the cooling of components of an inverter
with a casing.

7 1. According to the description of the patent in suit, an inverter is often
located in a casing with a ventilation system to cool the electrical and electronic
components by supplying outside air.

8 Especially when used outdoor, this would also blow dirt, dust and moisture
into the casing. The pollution could lead to failures of the inverter.

9 2. Against this background, the patent in suit is based on the technical
problem of providing an inverter in which the cooling power is available essentially
unrestricted over a long period of time even under unfavorable conditions.

10 3. To solve this problem, claim 1 proposes a device whose features can
be structured as follows:

1. Inverter with a casing (1),
2. with electric and/or electronic components (5) having cooling bodies (4),
3. with at least one choke and/or one transformer (5a),
 - 3.1 comprising a high-grade rating for protection, and
4. with a cooling unit (2) for cooling the electric and/or electronic components (5),
5. the casing (1) comprises at least two chambers (7, 8),
 6. which are separated by a wall (6).
7. The components (5) being located on one side of the wall in one of the chambers (7).
8. The cooling bodies (4) being located on the other side of the wall (6) in the other chamber (8).
9. The at least one choke and/or the transformer (5a) being located in the other chamber (8).
10. The other chamber (8) comprises the cooling unit (2).

11 4. Some features require further consideration.

12 (a) Feature 1 indicates that it must be a device whose main function is to convert a DC voltage into an AC voltage.

13 Claim 1 does not contain an exhaustive list of the components that may be arranged in the casing provided according to feature 1. However, it is clear from the wording "inverter with a casing" that it is not sufficient for an inverter to be arranged together with any other components in any casing. Rather, the casing is claimed to be a component of a device whose function is, in any event, substantially limited to that of an inverter.

14 This is consistent with the statements in the description that an inverter "comprises" a casing (para. 4). The subsequent statements in the description refer to such an "inverter casing". The embodiment example also relates to an inverter that "comprises" a casing (para. 10).

15 This does not necessarily exclude the possibility that the device has individual additional functions that supplement its function as an inverter. However, it does not cover casings which, in addition to an inverter, contain other components with other, unrelated functions.

16 b) Of central importance for the teaching of the patent in suit is the arrangement of the individual components in two chambers separated by a wall according to features 5 to 10.

17 aa) The separation between a chamber (8), which has a cooling unit according to feature 10, and a chamber (7) separated therefrom by a wall makes it possible to arrange in the other chamber such components according to feature 7, the function of which could be impaired by the air flow used for cooling in the one chamber.

18 Such components are cooled according to feature 2 with a cooling body arranged on the other side of the wall in the cooled chamber according to feature 8.

19 bb) Contrary to the opinion of the Patent Court, features 7 and 8 do not permit an arbitrary arrangement of said components as well as their cooling bodies. Rather, both the components and their cooling bodies must be arranged on the separating wall between the two chambers, namely on opposite sides.

20 This understanding is already supported by the wording of features 7 and 8, according to which the components mentioned must not only be arranged in different chambers, but on one or the other side of the wall separating these chambers. When viewed in isolation, these formulations could also be regarded as a pleonasm. However, the fact that the description expressly provides for an arrangement on opposite sides of the wall (para. 10, lines 50-55) and that claim 1 takes up this embodiment speaks against such an understanding.

21 cc) In addition, at least one choke or transformer is present according to feature 3.

22 This component is arranged in the second (cooled) chamber according to feature 9. To make this possible, the component comprises a high-grade rating for protection according to feature 3.1.

23 dd) Features 2 and 7 are not to be understood as an exhaustive list.

24 From these features, it can only be inferred that there must be at least one component arranged in the first chamber and assigned a cooling body located on the other side of the wall in the second chamber, and that, in addition, at least one choke or transformer with a high-grade rating for protection must be located in the second chamber.

25 This does not exclude that the inverter comprises further components which do not realize the mentioned features. Thus, it is conceivable that the first chamber also comprises components which do not require cooling (para. 12, lines 20-25). Furthermore, components which require cooling may be arranged in the second chamber, provided that these have a sufficient high-grade rating for protection.

26 ee) The Patent Court correctly regarded as a high-grade rating for protection a degree of protection which allows the arrangement of the component in question in the second chamber provided with a cooling unit.

27 (1) The classification into IP classes according to EN 60529 (NK9) referred to by the appeal is not of decisive importance in this context.

28 In the description, IP class 65 is cited as an example of a high-grade rating for protection (para. 6, line 23). However, as the appeal does not fail to recognize, this design is not mandatory.

29 Contrary to the opinion of the appeal, it also does not follow from this specification that the required degree of protection is to be determined on the basis of an IP class. Claim 1 does not refer to this classification. From this it is to be inferred that a grade for protection is sufficient which ensures sufficient protection against the environmental influences in the second chamber provided with a cooling unit.

30 (2) The level of protection that must then be provided depends on the respective conditions in the second (cooled) chamber.

31 If an air flow is used for cooling, the component must be sufficiently protected so that its function is adequately protected by particles possibly contained in the air flow or penetrating moisture. However, such a design is not mandatory for all conceivable embodiments, if only because feature 10 does not prescribe how the cooling unit is designed in detail. Even if cooling is provided by an air stream, different requirements may arise in individual cases because a filter may be connected upstream or downstream of the ventilator (para. 6, lines 24-26). Whether such a filter is used and what characteristics it has is not specified in claim 1.

32 (3) Furthermore, for feature 3.1, it does not matter whether the choke or
transformer is protected by a casing or in some other way, for example by being
cast in a casting compound.

33 In this respect, feature 3.1 only stipulates that the component itself has a
high-grade rating for protection. The way in which this is achieved is not specified.

34 II. The Patent Court gave the following main reasons for its decision:

35 The subject matter of the patent in suit goes beyond the content of the
application. From the application, only those embodiments were to be taken as
belonging to the invention in which the lossy components comprising a cooling
body were arranged on one side of the wall between the two chambers and these
cooling bodies were arranged on the other side of this wall. Features 6 to 8 did not
contain any specification in this respect. Furthermore, the application disclosed the
choke and the transformer as mutually exclusive alternatives. Feature 3 goes
beyond this with the wording "and/or". According to the content of the application,
the cooling unit does not only cool the components comprising a heat sink, but
also the choke or the transformer. Feature 4 did not contain such a definition.

36 Furthermore, the subject matter of the patent in suit was suggested on the
basis of the Japanese disclosure Hei 11-234963 (NK11). NK11 concerned a motor
drive device. Specifically, from the point of view of the skilled person, a graduate
engineer (FH) or bachelor of mechanical engineering with basic knowledge in
electrical engineering/electronics and with several years of experience in the field
of construction and design of casings for electrical/electronic devices, in particular
inverters for indoor and outdoor use, it is recognizably a matter of an inverter for
supplying a motor. The inverter contains components with cooling bodies as well

as a transformer and a cooling unit. The casing has two chambers separated by a separating plate. The figures and the description show that the components are arranged on one side of this separating plate and the cooling bodies on the other side, and that the transformer is located in the chamber with the cooling bodies and the cooling unit. Only feature 3.1 could not be explicitly taken from NK11. However, the skilled person would take from NK11 that the outside air brought in by the ventilators could contain dust and moisture and that the separating wall was intended to protect the components located in the non-ventilated chamber from this, while the transformer was to be positioned in the cooling air flow. Against this background, the skilled person would naturally choose a transformer with a sufficiently high-grade rating for protection, because otherwise it could overheat due to the excessive dust exposure or it could lead to a short circuit or corrosion due to the moisture. In addition, windings and transformers are usually encapsulated in cast resin and thus meet the IP65 protection requirements as standard.

37 The subject matter of the patent in suit is also not patentable in the versions of the auxiliary requests.

38 III. These statements withstand review on appeal as a result.

39 1 Contrary to the opinion of the Patent Court, the subject matter of the patent in suit does not go beyond the content of the originally filed documents.

40 a) The subject matter of the patent in suit is not impermissibly extended because feature 6, in contrast to the claim formulated in the application (NK3), does not provide that the wall serves "to accommodate the lossy components".

41 As has been pointed out above, according to the granted version of claim 1, it follows from features 7 and 8 that the components provided for in feature 2 and their cooling bodies are to be arranged on opposite sides of the separating wall in the sense of feature 6.

42 Thus, the lossy components do not necessarily have to be accommodated in the wall; these components only have to be located at that point of the wall on which the cooling body is located opposite. However, it is not apparent from the application that the accommodation in the wall is the only embodiment claimed as belonging to the invention. In particular, there is nothing to indicate that the described functions of the invention can only be realized with this embodiment. Rather, it is sufficiently clear from the application that it is sufficient to arrange a component to be cooled and its cooling body on different sides of the separating wall.

43 b) Contrary to the opinion of the Patent Court, such embodiments are already disclosed in the application as belonging to the invention, in which both a choke and a transformer with a high-grade rating for protection are arranged in the second (cooled) chamber.

44 Already in the application it is stated that other lossy components such as a transformer with a high-grade rating for protection could be arranged in the cooled chamber because these are insensitive to contamination due to the high-grade rating for protection (NK3, para. 9; also patent specification, para. 11). In line with this, it is explained that an arrangement in the first chamber is not necessary for components which themselves have a high-grade rating for protection, such as encapsulated wound goods like transformers or chokes (NK3, para. 10, lines 51-54; also patent specification, para. 12, lines 17-20).

45 From this it is sufficiently clear that the number of such components is not limited and that both transformers and reactors can be arranged together in the second (cooled) chamber, provided they have a sufficient grade rating for protection.

46 The fact that the description elsewhere states that the component to be cooled, for example a transformer, is located in the other chamber if the component has a high-grade rating for of protection (NK3, para. 4, lines 41-45; likewise patent specification, para. 6, lines 6-10), does not lead to a different assessment against this background. In this passage, too, "the component to be cooled" is only listed by way of example, without it being apparent that there may only be one component of this type in each case.

47 c) The subject matter of the patent in suit also does not go beyond the content of the application because claim 1 does not specify that the components with a high-grade rating for protection provided for in feature 3 must also be cooled.

48 It can be left open whether and to what extent it follows from the requirement in feature 9 that these components must be arranged in the second (cooled) chamber that these components are cooled at least to some extent. The application likewise does not give rise to any limitations in this respect.

49 The claim 1 formulated in the application does indeed provide that the cooling unit also serves to cool the components with a high-grade rating for protection provided with the reference sign (5a). However, the description merely states that these components can be arranged in the cooled chamber for this purpose (NK3, para. 9; likewise patent specification, para. 11). The latter is also provided for in feature 9. Further mandatory requirements cannot be inferred from the application.

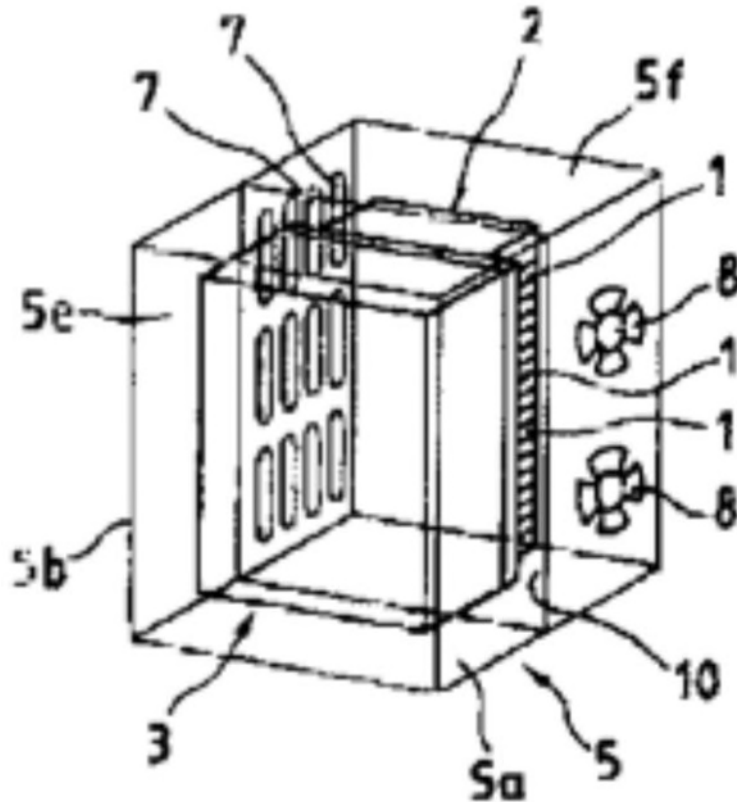
50 2. However, the Patent Court rightly decided that the subject matter of the
patent in suit was not based on inventive step because it was obvious on the basis
of NK11.

51 a) As the Patent Court correctly held, NK11 does not disclose all the
features of claim 1.

52 aa) NK11 discloses a motor drive device with an integrated inverter suitable
for motors in industrial robots (para. 10).

53 NK11 states that inverters known in the prior art would be arranged in a
casing and comprise a cooling body with vertically running cooling fins. The cooling
effect of such devices is too low if these do not have a ventilator (para. 3 et. seq.).
Such designs are not sufficiently efficient because the air flow for the vertical
cooling fins has to be diverted at least at one point (paras. 7-9).

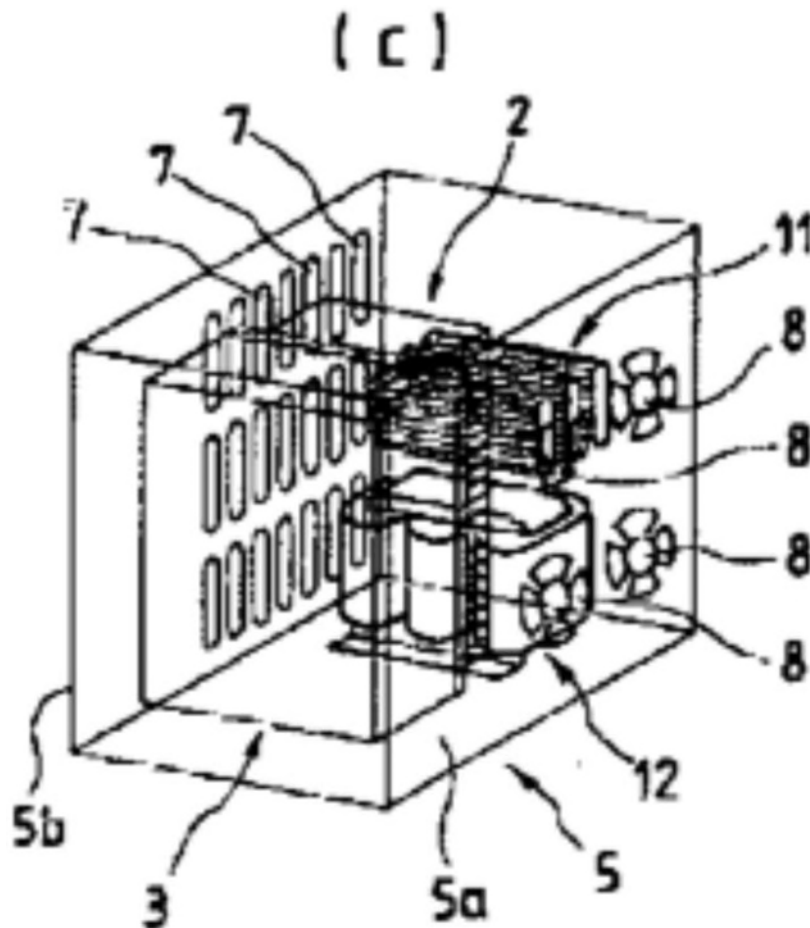
54 For improvement, NK11 proposes a device as exemplified in Figure 1b reproduced below.



55 The device comprises an inverter (3) with a cooling body (2) having horizontally extending cooling fins (NK11b, paras. 12 and 16). Two ventilators (8) and several exhaust vents (7) are provided in the rear area of two opposite outer walls (NK11b, para. 17 et seq.). To safely protect the inverter and a low-current component for a control circuit from heat, a partition plate (10) is provided to divide the housing body (5) into two spaces (5e, 5f). The front space (5e) containing the inverter (3) is tightly sealed. The cooling body (2) is mounted in the rear compartment (5f). This prevents air heated by the cooling body (2) from coming into contact with the inverter. At the same time, damage to the inverter by penetrating dust or moisture can be prevented (NK11b, para. 13 and 21).

56 Other low-current components, such as for a control circuit, which do not heat up easily are disposed together with the inverter (3) on the side of the tightly sealed space (5e). Electrical components that heat up easily, such as a resistor (11) provided inside or outside the inverter or a transformer (12) provided outside, are arranged near the heat sink (2) in such a way that they do not overlap the blowing direction and are cooled together with the heat sink by the blowing air (NK11b, para. 22 et seq.).

57 The arrangement of a resistor (11) and a transformer (12) is shown by way of example in Figure 1c reproduced below.



58 bb) Thus, as the appeal does not dispute, features 2 and 3 as well as
features 4 to 10 are disclosed.

59 cc) Contrary to the view of the appeal, feature 1 is also disclosed.

60 According to the findings of the Patent Court, the inverter (3) represents only
one component of the drive device disclosed in NK11. However, it is clear from the
above description and from Figures 1b and 1c that NK11 in any case also includes
devices in which the housing contains, in addition to the inverter, only individual
additional components which interact with the inverter.

61 This satisfies the criteria for the realization of feature 1 shown above.

62 dd) Not directly and unambiguously disclosed, as the Patent Court correctly
assumed, is feature 3.1.

63 From the above explanations in NK11, it only follows that the transformer
heats up easily and is therefore housed in the ventilated housing part (5f). The
supplementary explanations, according to which the housing part (5e) separated
from it provides protection against dust and moisture, among other things, may
suggest that the transformer is not sensitive in this respect. However, this
circumstance is not explicitly mentioned in NK11. Conclusions in this regard are
also not so obvious that they can be read along. Rather, they require
supplementary, technical considerations.

64 b) The Patent Court rightly came to the conclusion that the subject matter
of the patent in suit was obvious on the basis of NK11.

65 As already explained above, it follows from the description in NK11 that only the tightly closed room (5e) protects against dust and moisture effects as caused by the air flow used for cooling. As the Patent Court correctly pointed out, this gave reason to select the electrical and electronic components arranged in the room (5f) in such a way that they are sufficiently protected against the effects to be expected there. This also and in particular applies to the transformer (12) provided there. The fact that suitable transformers, in particular also those with protection class IP65, were available before the priority date of NK11 and thus before the priority date of the patent in suit, is also not doubted by the appeal.

66 3. Likewise, the Patent Court rightly decided that the auxiliary requests are not subject to a different assessment.

67 a) The modification of the main motion, marked with an apostrophe, provides for the replacement of the term "and/or" between the words "choke" and "transformer" by "or".

68 Whether the term "or" is to be understood as inclusive or exclusive does not require a final decision. Designs in which only a choke or only a transformer is arranged in the ventilated area are in any case suggested by NK11. NK11 makes it sufficiently clear that it is not the number and composition of the individual components that is important, but only the cooling requirement and the degree of protection.

69 b) According to auxiliary claim 1, feature group 3 is to be amended to the effect that the inverter comprises at least one choke which has a high-grade rating for protection in that it is designed as a molded winding. It is further provided that one chamber has a higher-grade rating for protection than the other and that the choke is located in the latter chamber.

70 This design was also suggested by NK11 for the reasons already stated regarding the modified main request.

71 According to the findings of the Patent Court, the inductance indispensable for an inverter can consist of a choke, a transformer or a combination of these components, depending on the individual case. Against this background, it was obvious to arrange a choke in the less well protected part of the housing instead of the transformer disclosed in NK11.

72 The Patent Court further noted that chokes are commonly potted.

73 c) Auxiliary request 1' provides, in addition to the features of auxiliary request 1, that the components (5) and the choke are each accommodated by the wall (6).

74 These features are disclosed in NK11, as the Patent Court correctly pointed out.

75 (d) Auxiliary request 1' provides, in addition to auxiliary request 1', that the choke is located on the wall side of the wall.

76 As the Patent Court also correctly pointed out, this design is not to be judged differently.

77 e) According to auxiliary request 2, claim 1 in the version of auxiliary request 1' is to be supplemented to the effect that the choke itself has a high-grade rating for protection of IP65 and the cooling unit is designed as a ventilator.

78 The latter feature is disclosed in NK11. The first mentioned one was also obvious for the reasons already explained for the granted version, because IP65 offers reliable protection against dust and moisture.

79 In this context, it can be left open whether it follows from the "IP65" requirement that the required protection must be provided by an enclosure

surrounding the choke. Such a design was also obvious on the basis of NK11. From the considerations that had to be made regarding the need for protection of the components arranged in the other chamber, it also emerged that the way in which this protection is effected is not of decisive importance.

80 f) After auxiliary request 2', the feature already provided for in auxiliary
request 1" is to be added.

81 There is also no deviating assessment with regard to this combination.

82 IV. The decision on costs is based on Sec. 121 (2) Patent Law and Sec. 97
(1) ZPO.

Bacher

Hoffmann

Deichfuß

Marx

Crummenerl

Lower court:

Federal Patent Court, decision of October 21, 2020 - 6 Ni 15/19 (EP) -